Jennifer Aakre

1. Contact Information

Name: Jennifer Aakre

Email: jaakre@treknorth.org

Home Address:
2007 Agate Ln NW
Solway, MN 56678 US

Home Phone: 218-308-1206

Cell Phone : 218-308-1206

Institution Name: TrekNorth Jr. and Sr. High School

Institution Address:
2400 Pine Ridge Ave.
Bemidji, MN 56601 US

Institution Phone: 218-444-1888

Classroom/Office Extension:

Institution Fax: 218-444-1893

Institution Website: www.treknorth.org

Other relevant websites: jaakre.edublogs.org

Supervisor's Name: Kristin Gustafson

Supervisor's Email Address: kgustafson@treknorth.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): We are a public charter school of 250 students in grades 6-12, located in a town of 13,000 people. Our students come from the local area, as well as surrounding communities including two Native American reservations. Our school uses a three-pronged approach to preparing our students for life after high school, including Advanced Placement classes, Outdoor Adventure Program trips, and Service Learning Project trips. We are in one of the poorest counties in the state, with many of our students dealing with housing and food insecurity.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 250

f. School Ethnicity:
36 % - American Indian or Alaska Native
1 % - Asian
1 % - Black or African American
4 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
48 % - White
10 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 60

h. Average class or audience size 16

i. Total number of students/audiences you teach in a year 130

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

We always start the day after Labor Day and usually end the week after Memorial Day. This year our Christmas break is December23-January 3. This is a bit longer than usual.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): English (Writing)

Bachelor's Degree (Minor): Communication

Masters Degree (Discipline): Environmental Studies

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 13

c. How many years have you been working at your current institution?: 12

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
General Science (grades 5-8), and Life Science teaching licenses; member National Science Teachers Association and Minnesota Science Teachers Association, Reader for the Advanced Placement Environmental Science essays by College Board, approved to teach College in the High School for Environmental Science through Northland Technical College.

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8), Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science, Secondary Earth Science, Secondary Physical Science

Other Subjects Advanced Placement Environmental Science, Secondary Health,

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Being able to do science in a polar region would expand my knowledge base on the types of research being done, the process of carrying out the research, as well as the implications of the data obtained. I could pass this along to my students in my classes, broadening the scope of our current coverage of these topics. It might also allow me to incorporate some labs that are similar to what was done in the field or incorporate real-world data we collected. Continuing contact with scientists would also allow my students to be involved in ongoing research while giving them insight into the role that professionals in the field play in the larger picture of climate change research. I have been following some of the teachers chosen for PolarTREC and would be so excited to have an opportunity to be involved in the work they are doing and share that with my classes and the greater community.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I imagine utilizing my experiences to help explain concepts to students in all of my classes by connecting it to our curriculum and state standards. I enjoy creating curriculum so I would like to write lessons incorporating as much of my expedition as possible in order to encourage questioning and curiosity among my students. I would also be able to connect the scientific method processes we use, such as analyzing and communicating data, to ways that they apply to scientists working in the field. I feel this will help it become more concrete for my students by being able to use actual examples from my experiences. I also work with our Geography teachers when we cover the same material--this experience could allow us to co-develop lessons on polar regions, and potentially the impacts of the research being done in those areas.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

Reading what past PolarTREC participants have done to share their experience with the wider community has helped me think about what I could do. I could easily incorporate my experiences into other classes at our school, as well as other schools in our town. We also have a local science center that I could work with to do some

programming or even potentially an exhibit or do a program at our local library, tieing my talk in with age-appropriate books on topics that connect with my project. Our community offers Lifelong Learning talks that are attended by senior citizens in the area. I've presented at both state and regional science teacher conferences, and these could be an outlet for sharing what I learned, the research that is happening, and the opportunity that PolarTREC offers. I have written curriculum in the past, and plan on writing curriculum after my time with PolarTREC, which could be presented at a conference. Finally, I have a website that I use for blogging with my classes and by incorporating my experiences into that website I could reach an audience far outside my community.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

With my 8th graders, we begin every new topic with a question on our class blog, such as our upcoming one, "Explain how the heating of the Earth's surface and atmosphere by the sun produces wind." This allows me to see where their understanding is and what misconceptions they might have. I use wide reading where they choose books on the topic to read at the beginning of class. I present new information in a variety of ways to reach the most students, so we might read about it, make models, watch a video, and discuss it. To gauge their understanding and see where I might need to reteach we will do a variety of assessments where the students might take a quiz, explain the concept to me, or even make an animation as one of my students did to show why we have seasons. When we are done with the unit they will again answer the question on the blog to show me (and themselves!) how much they have learned. I use a similar approach for my older students with more complex topics, but with as many field trips as I can to help explain what we are studying.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

The older I get the more comfortable I have become with uncertainty. I probably would not have applied for this opportunity 20 years ago as there was too much about the place or the research procedures that I wouldn't know. I become more aware each day of all that I don't know and am humbled by it, but I also see it as a new challenge to learn. I have developed a great sense of wonder and adventure which seems like they would come in handy with all the new things I would be learning and new experiences. Seeing the silver lining in situations is a way I could contribute to the team, as I'm sure things don't always go as planned, or even if they

do there may be aspects (like hordes of mosquitos) that make it less than wonderful at times. I also don’t mind doing repetitive tasks or whatever needs to be done, as I am generally flexible. I believe that these traits could make me a valuable member of the team as I am willing to do whatever is required to contribute to the success of the trip.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

One example of how I operate on a team comes from my time on the Pine Ridge Reservation in South Dakota. The place where I volunteer puts us in work crews doing construction tasks, usually with people we don’t know. Because I have been there many times I can be a team member but also a leader in certain areas of the projects we do. I am also comfortable being at the beginning of the learning curve in a group, such as last summer when I was chosen to help score the AP Environmental Science Free Response Questions. I worked to understand exactly how to grade the essays, asked questions whenever I was uncertain and had no problem admitting when I was stumped. I’m on various committees at school and at the local animal shelter where I work with a variety of people, and I take on leadership roles when appropriate but am also comfortable being a “worker bee” when that is appropriate.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

The speakers were interesting, the workshop on methane in the Arctic was great, and my students were engaged and respectful--the trifecta of a great field trip. Riding on the heels of Greta Thunberg letting the world leaders have it at the U.N., the seven of us attended the Nobel Conference on Climate Change. The students were from my AP Environmental Science class, where we have been discussing climate change for the past three weeks. Really, we are always discussing it, as it touches on every topic in the class. During the travel times and meals, we had really good discussions about what the speakers had said, what the students had done in their workshops (like writing a song using data points as notes!) and what questions we all had. Many of us felt the most powerful talk came from Sheila Watt-Cloutier, an Inuit activist and author from Canada. Some of my students are Native American, so the discussion of the effects on indigenous populations resonated with them in a way other topics did not. As we wearily pulled into school Wednesday night I felt so proud of these young people and how they had engaged with this topic.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
While I am very interested in the effects of climate change on the Arctic, going to either of these locations would be such a benefit to my professional development and a great personal experience.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
My preference would be no longer than six weeks. I have no dates at this time that would conflict.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
My main area of interest involving climate change is the impact on indigenous people. One of the pieces of curriculum that I've created that I'm most proud of is whether climate change is a human rights abuse, which utilizes the petition to the Inter-American Commission on Human Rights, as well as other sources. Part of this is due to my work with my Native American students and helping them connect with the issue of climate change. I'm also intrigued by ice cores--how they are collected, and how the information in them is read and analyzed. Ice cores and ocean sediment cores are part of my curriculum in both my middle school and high school classes as a way to help students understand the concept of how the planet has changed. Finally, I enjoy reading and learning about wolves and the role they play in ecosystems, and how that is changing with the changing climate. I frequently bring my classes on an overnight trip to the International Wolf Center so they can experience these magnificent animals and learn more about them. Hearing them howl is always the highlight of the trip for me and my students as well.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have experience backpacking, canoeing, kayaking, rock climbing, biking, and camping. Most of my recent outdoor trips have been hiking and biking day trips. I have become involved in trail running which takes me to various locations around the state. I am also certified in First Aid/CPR.

b. Provide a basic statement of your general health and physical condition.
I am in very good health. I run regularly, running in races ranging from 5K to marathon distances. I am currently training for a trail half-marathon in October which will be my longest trail run so far. I am also active in other ways such as biking, walking, and yoga. While I could stand to lose a few pounds, my doctor says she is not worried because I am active, eat well, and have good numbers for blood pressure and cholesterol.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I have been using computers regularly for over 20 years, Macs for the past 13. My school requires that we have a technology goal every year, so I am always learning more and implementing different tech uses in my classroom.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I utilize laptops daily, focusing mainly on Google applications such as Classroom, Keynote, Docs, Photos, etc., however, I also use Word and its applications. I use Chrome as my browser, or Safari if I need a different one. I have also used document cameras at school, and digital cameras. I utilize these both at school and at home

e. List any additional skills or information that you wish to be considered.
My technology goal this year is to increase my knowledge of coding. We also have tech workshops at our school every year where we can learn about new ways to utilize software and hardware in our planning and classes. I am also working on implementing a program called B3 Benchmarking which will help our school track our energy usage.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
Wow--I first heard about it around five years ago, maybe through the newsletter of the National Science Teaching Association?

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Kristin Gustafson

Title and affiliation Director, TrekNorth Jr. and Sr. High School

Email Address kgustafson@treknorth.org

Phone Number 218-444-1888

Reference 2

Name Greg Moen

Title and affiliation Science Teacher, TrekNorth Jr. and Sr. High School

Email Address gmoen@treknorth.org

Phone Number 218-444-1888

Reference 3

Name Joe Czapiewski

Title and affiliation Owner/Principal Consultant, JFC Strategic Services

Email Address joe@jfcstrategicservices.com

Phone Number 218-556-3651

Lyanne Abreu

1. Contact Information

Name: Ms. Lyanne Abreu

Email: abreu.lyanne@gmail.com

Home Address:
8251 SW 36 St
Miami, FL 33155

Home Phone: 786-367-8710

Cell Phone : 786-367-8710

Institution Name: TERRA Environmental Research Institute

Institution Address:
11005 SW 84th Street
Miami, FL 33173 US

Institution Phone: 305-412-5800

Classroom/Office Extension:

Institution Fax: 305-412-5801

Institution Website: terrawolves.com

Other relevant websites:

Supervisor's Name: Mrs. Jennifer Knepper-Illa

Supervisor's Email Address: jknepper@dadeschools.net

2. Demographic Information

a. Gender: Female

Race: Hispanic or Latino

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): TERRA Environmental Research Institute is a Miami-Dade Public magnet high school located in the suburbanized region of Kendall in South Florida. The median household income in this area is $69,277. The school is outfitted with promethean boards in each classroom which are each connected to Wi-Fi and ActivInspire. There are three computer labs within the school and several computer carts for student use.

d. Type of School (or students you work with): Public

Other Type of School It is a magnet school for the environmental sciences but otherwise a public school.

e. What is the population of your annual audience or school (estimates are fine) 1800

f. School Ethnicity:
0 % - American Indian or Alaska Native
3 % - Asian
2 % - Black or African American
82 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
12 % - White
1 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 40%

h. Average class or audience size 25 students per class / 6 classes a day

i. Total number of students/audiences you teach in a year I have approximately 150 students per year.

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

End Date of Current School Year – June 5th, 2020 Start Date of upcoming School year – August 12, 2020 Christmas Break – December 19, 2020 – January 3rd, 2021 Summer Break – June 5th, 2020 – August 12th, 2020

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Wildlife Ecology and Conservation

Bachelor's Degree (Minor): Education

Masters Degree (Discipline): Science Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 15 years

c. How many years have you been working at your current institution?: 7 years

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
State Teaching Credentials 1. Florida Educator Certificate 2. California Teacher Certification 3. Oregon Professional Teaching License 2019 National Geographic Grosvenor Teacher Fellow 2019 Claes Nobel Educator of Distinction Award 2010 Toyota Fullbright Teacher Fellow

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment Department Chair of the Environmental Academy Club Sponsor of Sprouts (Environmental Club)

b. What subjects do you teach? Check all Secondary Biology

Other Subjects Secondary Environmental Science

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

This program connects the realm of polar magic to scientific study. The fascination of the wild mingled together with the urgency of a message that it is currently unraveling – that we need to act now – to protect our natural spaces is what motivates me. If a student can dream big and ask the most ridiculous questions, then they are on the right track to scientific inquiry. If a teacher can dream big and participate in the most relevant science being performed today, then they will keep students curious about the world around them. This program brings about the most authentic relationship to polar regions via the scientific community and to be able to pass on that experience with students through the lens of explorers while studying STEM disciplines is perhaps the strongest tool I can use to propel students to act regarding the state of the planet. I hope to gain more knowledge regarding both the hard and soft skills of research, to collaborate with scientists, and to build community by sharing their experiences as well as my own among all types of learners in South Florida.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I want to build community by actively seeking groups throughout South Florida through organizations, collaboration and workshops to teach them how polar regions are directly to our region. From bookstore and library talks, to visiting private and public schools throughout South Florida, I would like to have meaningful discussions with people across this area. Through use of video footage and virtual reality with a 360 camera and time lapse photography, I want to take people on a journey to not only the polar regions, but see a day in the life of collecting data for people to get personal with a researcher journey into these last remaining wild places so people can truly understand the importance of the researchers, the research, and be motivated to inspire change.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

By telling stories through pictures and film while making it relevant to the individuals I am speaking with. It is important to engage individuals by first showing them the

similarities you have with them no no matter the age. Allowing for open discussion and asking questions to have a baseline for their understanding of the content, as well as to surprise them in the story you tell is critical. Although science is the foundation of conversation, there are many ways to excite curiosity. To laugh at the discomforts while appreciating the polar regions is key in relating to other educators, professionals and the general public. The science is important, but the story is what will truly help advocate for the science being discussed.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I believe having a level of humility when speaking about the world around you is necessary in developing a connection with the audience. It is important to connect the science with the audience by not attempting to sound pompous while eliciting curiosity by way of discussion. Photographs and short video clips of footage can help facilitate this. If the audience can ask questions and interact the presenter via media, a veil is lifted from the austerity of a one-way conversation. Laughter also brings about interest and expands an audience's interaction. Lastly, prompting questions about the present while imparting hope for the future. Finding a way of intertwining these components into a discussion has allowed me to provide productive learning environments.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

Tell me what to do once and I will do it, not unwillingly or mediocrely, I will do it meticulously with enthusiasm. I can wake up early and will go to sleep late or not at all depending on the task. I don't complain. I find a level of satisfaction and true inspiration by being pushed to the limits. I like to laugh and make fun of the absurd like when there's a hail storm in the middle of a hike. I have backcountry experience as a former backpacking instructor, whitewater raft guide and wilderness first responder. I think rationally, and come up with alternative solutions as things do not always go as planned. I am easy going but have a strong work ethic.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

A native garden space, outdoor area, and vegetable garden was built in my school within the past two years with the help of my students. I would proudly consider my students my main team members as we worked together on a daily basis to help

realize the potential in dead urban spaces. My principal was interested in paving the area as it was a patch of grass and weeds that was not aesthetically pleasing and I offered to change it if he gave my a chance, which he did. In the past two years, it has become a space of increased biodiversity with native species of flowering plants, trees, pathways, and benches. I gave the students the tools and showed them how to use them from levels, picks and drills to pavers, and shovels, and we worked extensively on building raised beds, benches, carving out pathways and creating pockets of flowering species. They felt such a responsibility towards keeping the area pristine that they still notify me of student polluters and pick up trash. Oftentimes I delegate, but not without working on the task myself. If my students are working, I work as well, its a team effort.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

The 5-minute bell rings and high school students are self-herded to their next class where they sit, listen, write a few words, and on to the next. The idea of exploration, curiosity, and sometimes even laughter is lost in the intense immersion of public education. Always trying to get ahead, students are falling behind. As a result, we did a things a bit differently today – we went to the great urban outdoors – our local park. It started with their mission – to come up with a story given a list of items they had to photograph (i.e. lizards, trash, insects). They immediately dispersed throughout. Some students hung off branches while another student captured the perfect shot, others climbed the grounded roots of a large banyan tree having spotted a large Cuban anole. Still others contemplated stillness for a shot of an insect walking on bark. They staged interesting pictures of trash and then threw it away, all while having conversation, laughing and showing me giant banana spiders. I know that tonight, when parents ask them what they did they will have a story to tell.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Arctic

Please explain your preference
I would choose either but because I will be traveling to the Falkland Islands, South Georgia, and Antarctica in the next month with National Geographic and Lindlblad Expeditions for fourteen school days, I will not be able to ask my administration for even more time off. Therefore the summer months which are the Arctic months are more conducive for traveling. I can work between 3-6 weeks.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I will not be able to travel until June 15th or after August 8th. I can travel any time in between.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
My passion lies in outdoor systems, specifically between animal life and their interaction with their surroundings.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

I am open to working with anyone.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
During my undergraduate years at the University of Florida, I was a backpacking and canoeing instructor for the outdoor program TRiP (Travel and Recreation Program). I am an alumni of both National Outdoor Leadership School (NOLS) and Outward Bound participating in month long programs such as the Outdoor Educator program in the Yukon, Canada, as well as Hurricane Island Outward Bound. I was a raft guide for two seasons in Colorado and one season in California and have done month long solo backpacking trips throughout the Dolomites in Italy and the National Parks of New Zealand. I was a Wilderness First Responder for seven years and feel comfortable camping outside for extended periods of time.

b. Provide a basic statement of your general health and physical condition.
I would like to believe I am physically capable and am a healthy individual. I can carry a 40 pound pack for 10 miles across rough terrain. My resting pulse is 65 bpm, I eat well and I sleep extremely well no matter if on snow, on a large boulder or in my bedroom.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am equally familiar with Macs and PC and would consider myself highly proficient when using either operating system.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use my laptop daily from writing assignments on Word to creating Powerpoints for my students. I make short films through iMovie with footage I record on my iPhone as well as my Sony camera. I use excel spreadsheets to help organize financial data from grants received. I have a Sony a6500 with two lenses that I use personally to take pictures and footage of varying topics. I have a Macbook Air and keep most of my data stored on the icloud. I do not have a preference for internet browsers and usually use multiple ones if doing research.

e. List any additional skills or information that you wish to be considered.
I am fluent in English, Spanish and French.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Svea Anderson

Former PolarTREC, TREC, or TEA teacher. Please provide their name
Svea Anderson

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Elizabeth Ginory

Title and affiliation Science Department Chair at TERRA Environmental Research Institute

Email Address eginoryperez@dadeschools.net

Phone Number 786-234-2900

Reference 2

Name Monica Mejia

Title and affiliation Environmental Academy Teacher at TERRA Environmental Research Institute

Email Address mmejia6@dadeschools.net

Phone Number 305-970-0541

Reference 3

Name Mariaguadalupe Vilchez

Title and affiliation Former student current undergraduate at the University of Florida

Email Address mvilchez02@gmail.com

Phone Number 786-657-9010

Kirsten Alburg

1. Contact Information

Name: Ms. Kirsten Alburg

Email: kirsten.alburg@nsbsd.org

Home Address:
PO Box 1204
Barrow (Utqiagvik), AK 99723 US

Home Phone: 907-367-3556

Cell Phone : 907-367-3556

Institution Name: North Slope School District Ipalook Elementary School

Institution Address:
2070 Ahkovak St
Barrow (Utqiagvik), AK 99723 US

Institution Phone: 907-852-4711

Classroom/Office Extension: 793309

Institution Fax:

Institution Website: www.nsbsd.org

Other relevant websites:

Supervisor's Name: Monica Grund

Supervisor's Email Address: Monica.Grund@nsbsd.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): K-12 Public School, rural communities, technology access, low-mid economics.

d. Type of School (or students you work with): Public

Other Type of School I teach Middle/High low/middle economic, multicultural students about the Arctic during May/June in the lower 48 states.

e. What is the population of your annual audience or school (estimates are fine) 600

f. School Ethnicity:
65% % - American Indian or Alaska Native
15% % - Asian
% - Black or African American
% - Hispanic or Latino
10 % - Native Hawaiian or Other Pacific Islander
10 % - White
% - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 100

h. Average class or audience size 20

i. Total number of students/audiences you teach in a year 300

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
August 5th-May 17th. Christmas: Dec 18th-January 3rd.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Elementary Education K-8th grade.

Bachelor's Degree (Minor): Human Development

Masters Degree (Discipline): Instructional Design (Online Course Development) Educational media.

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 20

c. How many years have you been working at your current institution?: 4

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Educational Photography Award, UAF K-8 Alaska Teaching Certification Teacher of the Year. Bering Strait School District.

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Primary (Grades 1-5), Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Elementary Education, Middle School English/Language Arts, Middle School Math, Middle School Science, Middle School Social Studies

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

My motivation for this project is to photograph, as well as learn more about Polar Science and be able to use it to educate children, not only in my classroom, but throughout the country via creating online courses, my photography presentations that I do at schools, and through creating an Arctic focused kid's magazine.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I will share this experience through photography school presentations, via an Arctic focused kids magazine for classrooms that I already am developing, and using the content in online kids courses that I hope to develop in the future.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I hope to present to schools using photography as well as and some film to our school specifically, but others also about the project I worked on and how they can connect with Polar Science (service learning). I would also love to be an educational liason between teachers and Polar Scientist throughout AK and the country. I also plan on using social media to highlight professional images and educational facts to my personal connections. I would like to get out of the classroom in the future and play a bigger (wider) role in Arctic Education in schools/classrooms throughout the state and country using student leadership, career development, and service learning.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I love to bring in experts in the field. I just brought in scientist Leslie Pierce to talk to the class about wildlife adaptations and Bowhead Whales. I was able to use my photography to show the changes in colors of the Arctic Fox and Snowy Owls. I’m a huge fan of student leadership and service-learning opportunities in more complex topics, concepts or issues.

e. Describe the particular strengths you would bring to the PolarTREC

program and to a field research team. (200 words maximum)
First, I'm a photographer as well as an educator and I would love to be able to be able to help with documenting the experience this way. In addition, I'm very physically active and not afraid to work hard in the field. I have been a program director, grant director, and outdoor leadership instructor for many years, as well as a career development and service-learning educator and can help teams come up with service ideas to reach kids. I have led lots of outdoor leadership trips with kids, including starting a canoe guiding eco-tourism school on the Kenai. I have taught all around the state of Alaska and have a lot of connections that possibly could help research teams in the future.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)
I currently work with a team of 2nd grade teachers, as well as a teacher in the IPK school team. I currently work hard to bring in authentic learning experiences (scientists, presenters, find service-learning projects, grants, etc.) to staff, to help enrich the content we teach. In the past, I was an outdoor leadership, healthy living, grant director and program manager. I trained teachers on how to incorporate physical activity into their curriculum, answered questions, and provided support for their aspirations. Working together as a team, including positive communication, is a strength that I have as I understand that everyone bring something special to the plate and contribute value in helping achieve a goal.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Today, I was invited to go on an expedition across the tundra with my neighbor Jack. We packed all of our camera gear, jumped on his 4-wheeler (often referred to as a Honda), and took off from our oceanside apartment to discover more about the beautiful land we called home. As we drove past the runway on the outside of town our eyes caught a white and grey bird perched on the top of a telephone phone. The Snowy Owl, with its' layers of feathers, sharp talons and focused yellow eyes, looked perfectly adapted to survive in the harsh Arctic environment. As we pulled our camera equipment out to capture the beauty of our new Tundra friend, Jack and I discussed how interesting it is that males are almost all white, while female owls have more flecks of black plumage, however, juvenile snowy owls have black feathers until they turn white. The Snowy Owl before us, with its black highlights, seemed to be, in fact, a female.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Arctic

Please explain your preference
Please explain your preference: I currently live in Barrow (Utqiagvik) and it's the most relevant place for me to go on a PolarTREC expedition. However, I would love to go to the Antarctic as well in the future.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
3 weeks would be great, at the beginning of August or after school gets out in May. If there is one that I could participate in during the weekends and afterschool (and one day per week during the school year), since I currently live in the Arctic, that would work as well.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I would love to have the opportunity to do something that is unique. Like to go on a research ship to study water-based science or marine mamals, participate in a polar bear tagging or monitoring, get involved in the NASA rover project, but to be honest, I'm open and happy to do anything. Those would be a few highlights. I would love to have a project that could find value in my photography and would be excited to have me out there taking pictures as well as helping out. The only thing that I'm not really excited about would be a permafrost study. I've done a lot of work with UAF and Kenji over my career. I would love to see other aspects of Polar Science.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest
I would love to have the opportunity to do something that is unique. Like to go on a research ship to study water-based science or marine mamals, participate in a polar bear tagging or monitoring, get involved in the NASA rover project, but to be honest, I’m open and happy to do anything.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I use to be a certified Wilderness First Aid Instructor for the Red Cross and I use to have my WFR cert. Sadly both have expired. I'm an experience camper, hiker, boater (a big sailor), I've been an outdoor leadership instructor and wilderness canoe guide for over 7 years. If chosen, I can certainly look into getting recertified in Wilderness First Aid.

b. Provide a basic statement of your general health and physical condition.
I'm in great condition and work out 5-7 days a week. Biker, runner, skier, etc.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
Mac and I feel proficient.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
Laptop computers, digital cameras, Power Point, Excel, photo and movie software.

e. List any additional skills or information that you wish to be considered.
Photography and some videography

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Kaare Erickson. UIC Science.

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
National Education Union. Contact principals, science teachers associations, etc.
Social Media

12. References

Reference 1

Name Monica Grund

Title and affiliation Vice Principal Ipalook Elementary

Email Address monica.grund@nsbsd.org

Phone Number 503-803-2886

Reference 2

Name Kaare Erickson

Title and affiliation UIC Science

Email Address kaare.erickson@UICCS.com

Phone Number 907-297-8633

Reference 3

Name Dr. David Jones

Title and affiliation Ipalook School Principal

Email Address David.jones@nsbsd.org

Phone Number 907-852-4711

Cynthia Ardecki

1. Contact Information

Name: Ms. Cynthia Ardecki

Email: me2gapacker@yahoo.com

Home Address:
11373 Cromwell Court
Woodbridge, VA 22192 US

Home Phone:

Cell Phone : 703 232 4697

Institution Name: Gar-Field High School

Institution Address:
14000 Smoketown Road
Woodbridge, VA 22192 US

Institution Phone: 703 730 7000

Classroom/Office Extension: 571 298 0399

Institution Fax: 703 580 1228

Institution Website: Gar-Field.org

Other relevant websites:

Supervisor's Name: Lisamarie Kane

Supervisor's Email Address: Kanelm@pwcs.edu

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): K-12, public suburban school (25 miles from Washington, DC). Majority minority school, lower economics, partial technology access.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 2,248 as of June 2019.

f. School Ethnicity:
0 % - American Indian or Alaska Native
8 % - Asian
21 % - Black or African American
58 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
9 % - White
4 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 69

h. Average class or audience size 25

i. Total number of students/audiences you teach in a year 100

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

School begins 1 week prior to Labor Day each year. Holiday (Christmas) break is approximately 1.5 weeks surrounding Christmas. Spring break is 1 week prior to Easter each year. School ends early June.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Therapeutic Recrecation

Bachelor's Degree (Minor): Concentration in Psychology

Masters Degree (Discipline): Special Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 22

c. How many years have you been working at your current institution?: 14

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
ED/LD K-12, passed the Praxis (testing) for Earth Science and Biology, completed the Mentorship process and have been working as a mentor in school for 8 years.
President of the Happy Club Member of School Planning Council at GF

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12), Special Education

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Math

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Participation in PolarTREC will help bring life to the least explored continent and give me a better understanding of a world I have yet to explore. I want to help broadcast this unique place to others who only dream about going. Every experiment begins with a question, and for me, my question is how are things connected? How does climate change affect a remote location? How is Antarctica affected by human activity? What adaptations in nature have been necessary for survival on the Antarctica? Why should students in Virginia care about understanding environmental changes? PolarTREC will be a live science lab that can be brought into the heart of every student to help answer that question. A Special Education teacher has a unique perspective and wears many hats. I teach and am a case manager to students. I am a visible presence in the school, and because I visit all the classes, students outside my immediate group recognize me. Participation in PolarTREC will give me an exclusive platform to show each student how we are all connected and that we are all affected by global issues.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Because I interact with all the teachers at my school, as well as teach, I reach almost 2000 students. Using digital media, it is possible to reach classrooms within my school district, our nation and across the globe. I am excited to do presentations, projects and share the research, personalities and environment of Antarctica. Within my own school, I envision collaboration with teachers across the curricula of school departments, including units on travel, exploration, budgeting, culture, weather, plants and rocks, body systems, politics and diverse global issues. I would love to make mini documentaries, use Facebook Live and Instagram which could be resources for student projects. An interactive school website and video sharing site for each subject or co-curricular topics that student develop could be jump started by an adventure such as this. My photos could also be used to hook students on the wildlife and geography of Antarctica. My personal journaling would record my feelings, experiences and my in-the-moment thoughts so that I will have a personal account of my existence there. Documenting introspection of how humans and social systems are connected across the globe will help develop my blog entries, and after

the trip I can share my experiences through formal presentations and interpersonal conversations.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I live in the Washington, DC metro area, a place that demographically has a high percentage of diversity. Environmental groups search for ways to include the non-white population in environmental education and experiences, and as minorities become an ever-larger portion of the population, it is vital that they understand climate change and other environmental issues; caring about and understanding the environment now will influence future generations. This subject transcends race and class structure and is unifying—all of humankind needs to bind together. We are all connected. Through the National Parks and Master Naturalist program, I interact with the public and park staff regarding natural resources. As an avid outdoorswoman who spends much time outdoors, I love to share my passion and I feel the responsibility to give back and help preserve nature for others. Participation in national science organizations and professional teacher organizations will extend my reach. Discussions and presentations on Antarctica for my educator peers, student groups at other schools, the general public through our public library system, which offers opportunities to advertise and report on personal experiences, and even a presentation at local gyms regarding the physical demands of travel are all possibilities!

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

My energy in the classroom is what typically captures my students' attention and interest and gets them excited about learning new concepts. Song, dance and role-playing help students to remember and enjoy what we do in class. In addition, multimedia such as video clips and rhythmic repetition are used to connect. With Socratic seminars, student thinking can evolve. I enjoy helping my students visualize themselves in new environments. While in the classroom, I make a point of bringing up situations where students might use each concept in the future, how it will help them, and why they should be knowledgeable in each particular area. By associating real life events, I am reiterating the importance of lifelong learning and connected thinking. Most importantly, I develop real relationships with my students by getting to know them. When that happens, they trust me and know that I am pushing them to become more than they dreamed of being. My students experience the outdoor

classroom and experiential learning. With the addition of my Antarctic experience, they will become more informed students who will be aware of the climate and environment around them and realize how we are all globally connected.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I am energetic and courageous! I enjoy meeting new people and am up for trying any adventure. I am confident and helpful to others and am a team player. I am happy to pitch in, I use my skills and I am good at putting people at ease. Perhaps my greatest strength is my optimism; I excel at keeping spirits up when things get tough. Over 20 years of teaching all levels (elementary, middle and high) has provided me with a unique skillset and I am good mentally, physically and emotionally. Being an avid explorer, I love our planet and nature, and am motivated to learn what I can and to share with others. Knowledge can lead to change. I am constantly curious to see what's around the corner. Passion to constantly seek greater knowledge attracts others to do so as well. Because of my work in Special Education, IEPs and federal guidelines, I am detail oriented. I am adaptable and experienced in many climates. I am self-reliant and flexible and can think outside the box.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

A team composed of members with diverse skills is the most effective and identifying who has the perfect skills for each job is an integral part of the goal-oriented solution. I am good at recognizing others' strengths, I possess good leadership qualities and am happy to sally forth to get the job done. At the same time, I am not unhappy to allow others to run the show; I do not need to be in charge. The final product is my main goal, and I am good at encouraging and supporting others towards successful collaboration. In science, investigators work in teams led by a principal investigator. In Antarctica, the teams must integrate their efforts to achieve success. The medical people, the support staff, the cooks, the maintenance people all have a role to play in achieving the mission. The teacher is part of that effort. I recently was told that when my trail maintenance people make up the work groups, I am consistently identified as the one who will organize others in case of an emergency; keeping others calm, identifying who will work best in each necessary role, and can be depended on to persevere until the crisis is over.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

The English 11 class is studying the Puritans, specifically the sermon of Jonathan Edwards titled “Sinners in the Hands of an Angry God”. This excerpt is from a 6-hour sermon that discusses the wrath of God and how those who aren’t born again will go to hell. Over and over Edwards uses imagery to demonstrate how this angry God views man as sinners who are dangled over a fire like loathsome spiders, and that if God should wish, we would fall like a lead ball towards hell. Very depressing and frightening. The notes that followed stated that the congregation screamed in terror and that Edwards had to ask for silence several times during his talk. This great imagery instigated a wonderful discussion from my students that included excerpts from sermons that they had heard themselves, other descriptions that paralleled the theme of “wrath”, and a wonderful account of a snake that was sighted during a walk by one of the students, which made him very frightened. It made me glad that the students were able to connect this story from long ago to present day situations.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
My preference is to go to Antarctica! I want to understand life in such a cold place. I want to experience ice and icebergs! I want to witness polar-realm penguins in their natural environment! I want the opportunity to feel extreme winds! I want to see the least explored continent and bring this experience to life for my students. This is a world away from what I am used to, still Antarctica is touched with humankind's behavior. I have brought the Appalachian Trail and Kilimanjaro to my students, now is the time for Antarctica!

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I'm happy to be there as long as you want/need me!

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I am interested in all things outside. I love learning about terrestrial systems, ecology and effects of humans. Why things grow here and why animals live there. Because of my love of nature, I became a Master Naturalist and I enjoy volunteering with the National Park Service. Since my most enjoyable time is spent outside, I like knowing about the weather, atmosphere and climate. Hiking and backpacking are my passions; understanding environmental change will help me plan and organize my future adventures. I recently read about disappearing glaciers in Mont Blanc, a place I have hiked; it saddens me to know that future generations may not be able to have the opportunities to explore remote and unique places as I have due to climate change and global warming. I have seen diverse ecosystems and had a lifetime of experiences seeing them change due to human activity. I want to be on the frontline of the fight and bring this same passion to the future generations. We are all connected. We must be the change we want to see.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest
I would also be interested in adaptations to life in a cold climate and understanding environmental change in the Polar regions.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I am a skilled outdoorswoman. I am a passionate four-season hiker and backpacker. I have experience canoeing, kayaking and being in the backcountry far from civilization. I have studied the predator-prey relationship of the wolves and moose at Isle Royale. I have CPR and Wilderness First Aid training, and I am a trainer for Leave No Trace. I am a certified chainsaw operator for the national park service and have taken classes in brain tanning animal hides, blacksmithing and making fire by friction. I have backpacked in many countries: Tanzania, Slovenia, France, Switzerland, Italy and Spain, and of course, the United States. Among other hikes, I have completed the Appalachian Trail, the Tour du Mont Blanc, the el Camino de Santiago, and summitted Mt. Kilimanjaro. Hiking all over the world has taught me to be flexible, to ask if I am unsure, and that although we are all unique, we are all connected. I am prepared to be more than an observer.

b. Provide a basic statement of your general health and physical condition.
I am in good physical health! I run daily (am preparing for a marathon) and hike and backpack frequently. I work out with a trainer weekly and am used to being on my feet most of the day.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I use a PC desktop and laptop daily and I describe myself as good/above average on them.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
In addition to my PC laptop and desktop computers, I use a Smartboard and Epson projector in the classroom. I own and am familiar with digital cameras, tablets, and have used a variety of browsers in my computer use. I can use Excel, PowerPoint, and Word software. I am acquainted with movie and video software as well as kindles and other ereaders. I participate in social media and can snapchat, tweet, create a unique Facebook page, produce Facebook live lessons, and use Instagram to reach the broadest audience spectrum possible.

e. List any additional skills or information that you wish to be considered.
I am an excellent seamstress, calm under pressure, and excited and energetic about learning. I am proficient with many power tools. I can downhill and cross-country ski,

and snowshoe. I am an excellent planner and organizer. I can overcome obstacles.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
Google; opportunities for teachers. I've applied before!

b. Please suggest other places we might advertise this opportunity for teachers
Teacher association publications

12. References

Reference 1

Name David Nebhuut

Title and affiliation Department of the Treasury, RET

Email Address DavidNebhut@verizon.net

Phone Number 571 465 1041

Reference 2

Name Lisamarie Kane

Title and affiliation Assistant Principal, Gar-Field High School

Email Address kanelm@pwcs.edu

Phone Number 703 730 7000

Reference 3

Name Teresa Kitchen

Title and affiliation Biology Teacher, Gar-Field High School

Email Address kitchetc@pwcs.edu

Phone Number 703 730 7000

Kellie Arenz

1. Contact Information

Name: Ms. Kellie Arenz

Email: faschink@gmail.com

Home Address:
118 Ferris Drive
North Prairie, WI 53153 US

Home Phone: 7154973390

Cell Phone : 7154973390

Institution Name: Park View Middle School

Institution Address:
930 North Rochester Street
Mukwonago, WI 53149 US

Institution Phone: 2623636292

Classroom/Office Extension: 27059

Institution Fax: 262.363.6320

Institution Website: https://www.masd.k12.wi.us/schools/middle/

Other relevant websites:

Supervisor's Name: Dustin Lehman

Supervisor's Email Address: lehmadu@masd.k12.wi.us

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): My school is located in the suburban Village of Mukwonago. The Village has a population of about 8,100 residents. My school, Park View Middle School, has about 800 seventh and eighth graders that attend. My school and surrounding community are the best. Although we are a Title 1 school, the community does its best to step in and support teacher-led initiatives and activities. Technology is accessible.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 800

f. School Ethnicity:
0 % - American Indian or Alaska Native
1 % - Asian
1 % - Black or African American
2 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
94 % - White
2 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 11

h. Average class or audience size 30

i. Total number of students/audiences you teach in a year 450 and Counting per year

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

School Starts- September 3, 2019 Christmas Break-December 21-January 1, 2020 Spring Break- March 21-March 29, 2020 School Ends- June 10, 2020 Summer Break- June 10-August 27, 2020

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Middle Childhood Early Adolescence

Bachelor's Degree (Minor): Biology

Masters Degree (Discipline): Educational Technology

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 9

c. How many years have you been working at your current institution?: 7

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Project Lead the Way Certifications for STEM Design and Modeling, Energy and the Environment, Automation and Robotics, Flight and Space Awarded April 2017 Teacher of the Month (Local Rotary Club) Frequently recognized for being a visionary by administration in my building and in the district office. Selected for Honeywell Educator at Space Academy in 2017 Selected for Naval Academy Teacher program in 2018 Selected for Smithsonian Science Educator Academy for Teachers- Energy Edition in 2018 Selected for Teacher Air Camp in 2019 on scholarship Recognized by my students for the most creative lessons

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science

Other Subjects Automation and Robotics Flight and Space

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I absolutely have a love for learning and, through unique experiences, I pass information, excitement, and love of learning on through lessons to my students. While researching PolarTREC, I was motivated by seeing that this is an opportunity to work with real researchers from the scientific community working in an area that I have only dreamed about visiting and exploring. Through this experience, I hope to gain excitement, knowledge, insight, and passion about things that really and truly do matter for our future existence. I hope to gain knowledge that can be shared in my community and that can, in turn, benefit and better the world.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Sharing my experience with my students is easy to think about. Of course I will have a slideshow day that talks all about what I learned and the adventures I went one. Of course I will print pictures from the adventures and adorn my classroom walls with them. Most of all, I will incorporate, little by little, facts, statistics, and lessons that I learned on the trip into my day to day activities with my students. Seeing a teacher excited about learning is, not doubt, going to excite students. On top of these information sharing moments, I would love to develop professional development opportunities for my colleagues and interactive lessons for my students.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

As for teachers, I will put together a meeting and opportunity so I can share out my experiences and adventures with pictures, stories, and more. When teachers hear all about what I learned and the excitement, they are more likely to get excited as well about these most-important science concepts. I also hope to work my way into other classrooms in my district and CESA to share out lessons I've developed through this experience. For the community and general public, I am planning on hosting a STEM & Space Night that is sponsored by my district and for the general public, in which I can share out my experiences, lessons learned, and even the opportunity in which I worked so hard for.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200

words maximum)
When learning new and complex topics (Fluid Dynamics, Forces of Flight, Coding, etc), I start with an attention-grabbing story (some from other professional development opportunities) and show pictures so students can understand the real-world significance of what they are about to learn. Once finished with the pictures and stories, I mentor students though a lab/experiment/activity in which they can start to be exposed to the concepts. Students finish with a larger project to show significant growth in their learning targets.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)
I am a woman of many strengths including the ability to persevere through tough and complicated circumstances and problems. I have the science background so I can work with the field research team and the teacher/classroom background so I can help develop lessons to use at a variety of levels in the classroom. I have a Masters in Educational Technology so I am a valuable asset when researchers are in the field and need technology assistance and I am an avid hiker/camper/outdoors woman that can assist in remote areas. I can bring excitement, laughter, and awe to any situation. I am the well-rounded individual that wants to be there and wants to learn...and most of all, wants to share ideas and experiences with anyone that will listen.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)
I am a team player and collaborator. I can be a leader (I'm the Head of the Career and Technical Education Department at my school) as well as a good listener and mentor (I mentor new teachers and also am a building coach for Infinite Campus Software for teachers that have questions and need problems solved.). For the past seven years, I have collaborated with multiple teachers to create what is now known as "The Makers and Breakers Engineering Club" that holds meetings outside of the regular school day.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

One of the most important days I had last week was Wednesday. Wednesday was not only the day my Automation and Robotics students were learning all about energy transfer through building mechanisms, but it was the day my Flight and Space students were launching and motorizing their paper airplanes. Wednesday was also the day for professional development as well as my Building Leadership Team (Yes, BLT, like the sandwich) meeting as Department Head of Career and Technical Education to discuss important field trip requirements and other important decisions. Unfortunately, my daughter got sick Tuesday and I spent much of Tuesday night in Urgent Care with her. My very important Wednesday at school became my very important Wednesday at home taking care of my beautiful daughter. Don't worry, my work Wednesday did become my work Thursday, and Friday, and Saturday...

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I am will to traverse to the Arctic and/or to the Antarctic locations as I know I can learn and be a valuable asset in either environment.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
3-6 weeks is how long I would prefer to participate in the expedition and I am open any time.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
The scientific topics that interest me most are Space Science as well as Technology and Engineering because those are the concepts that excite that sparkle in my eye and make me want to learn and know more. Over the last seven years, my teaching assignment has been focused on Engineering and Technology. As I have been immersed in it, the problem-solving, creativity, and skill have fascinated me. In the past three years, my teaching assignment has also been focused on Flight and Space. Space has always fascinated me, but throw in engineering problems, unknown lights, NASA's Space Launch System, SpaceX (and other competitors) and meteorites and I'm a kid again.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify) I would really enjoy an expedition in this subject area

Other Areas of Scientific Interest
Collection/study of meteorites is also another scientific interest I have.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have plenty of experience outdoors camping, hiking, canoeing, boating, kayaking, and much more. I am CPR certified as well as first-aid and AED certified. I am currently learning all about foraging and am working on my recreational pilots license. With having two older brothers in Boy Scouts and my dad as the leader, I grew up exploring and wondering, rock-climbing and mountain climbing (Longs Peak, CO). Recently, I was open-water scuba certified as well.

b. Provide a basic statement of your general health and physical condition.
In general, I am a healthy 32 year old female with minimal health conditions. I am physically fit and in good condition.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am most familiar with laptops, desktops, and chrome books. I use Chrome as a browser, but can adapt to any (Firefox, Explorer, Safari). I have trained numerous teachers with the computers and my skill level is advanced.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
On a regular basis, I operate a lab of 30+ PC desktop computers, professionally since I teach Automation and Robotics. Students use them for recording results to researching, to coding. I use a Google Chrome Book professionally to access information, email, and important documents whenever I need to. I run two laser projectors for my classroom whole group presentation methods as well as two 3-D printers for students to print off their projects completed at home or school. I am familiar with most software and if I am not, I will learn it in a matter of no time. Excel, PowerPoint, photo and movie software are very familiar to me. I also use coding software called RobotC and was as 3-D modeling software called Autodesk Inventor when teaching the Engineering Design Process. I also run a class set of 18 drones using Droneblocks software on iPads for students to have a codable drone experience before high school. I do also use manufactured robots in which Sphero EDU, Cosmo, and Cue apps run for differentiating instruction for students with needs. Personally, I use a desktop computer at home as well as my smart phone to accomplish larger tasks that I can't at school.

e. List any additional skills or information that you wish to be considered.

I am a hard worker who can follow directions and learn things quickly. I do have experience with the Spanish Language, but I am not a fluent speaker.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL
https://www.polartrec.com/

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Dustin Lehman

Title and affiliation Coordinator of College and Career Readiness

Email Address lehmadu@masd.k12.wi.us

Phone Number 262- 363-6200, x25525

Reference 2

Name Kari Adams

Title and affiliation Library Technical Specialist

Email Address adamska@masd.k12.wi.us

Phone Number 262-352-3248

Reference 3

Name Luke Spielman

Title and affiliation Principal at Park View Middle School

Email Address spiellu@masd.k12.wi.us

Phone Number 262-363-6292 ext 27500

2020-2021 PolarTREC Educator Application

Elizabeth Backman

1. Contact Information

Name: Ms. Elizabeth Backman

Email: liza@belahs.org

Home Address:
10808 Shore Front Parkway, Apt 2
Rockaway Park , NY 11694 US

Home Phone:

Cell Phone : 3347077843

Institution Name: Brooklyn Emerging Leaders Academy

Institution Address:
125 Stuyvesant Ave.
Brooklyn , NY 11221 US

Institution Phone: 347-473-8830

Classroom/Office Extension:

Institution Fax:

Institution Website: www.belahs.org

Other relevant websites:

Supervisor's Name: Nicia Fullwood

Supervisor's Email Address: nicia@belahs.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I teach at an urban 9-12 all-girls public charter high school located in Bedford-Stuyvesant in Brooklyn, NY. The school is a 1:1 technology school, which means all students have laptops. However, some students do not have access to Wi-Fi while at home. The school is a Title I school, which means 95% of students would be eligible to receive free or reduced-price lunch (although in New York City, all lunch is free).

d. Type of School (or students you work with): Public

Other Type of School Charter School

e. What is the population of your annual audience or school (estimates are fine) 190 (but we will be growing over the next year to 250)

f. School Ethnicity:
1% % - American Indian or Alaska Native
1% % - Asian
58% % - Black or African American
39% % - Hispanic or Latino
0% % - Native Hawaiian or Other Pacific Islander
1% % - White
N/a % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 100%

h. Average class or audience size 25

i. Total number of students/audiences you teach in a year 100

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

All dates listed below are approximate. End of '19-'20 School Year: June 26 Start of '20-'21 School Year: August 24 (Summer Break 2020: June 26-August 24) Thanksgiving Break '20: November 20-November 30 Winter Break '20-'21: December 18-January 5 Mid-Winter Break '21: February 21-February 21 Spring Break '21: April 1-April 11

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Chemistry and Geology

Bachelor's Degree (Minor):

Masters Degree (Discipline): Masters of Arts in Teaching (Earth Science)

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: This is my second year as a full time educator.

c. How many years have you been working at your current institution?: 2

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
NYS 9-12 Earth Science Certification NYS 9-12 Chemistry Certification GLOBE Certified Teacher

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Chemistry, Secondary Earth Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

At the end of my first-grade year, my teacher bought me a Children's Atlas as a parting gift. After years of sifting through the pages, I became most interested in the two-page spread on Antarctica. I'm not quite sure why those pages were the most interesting to me—they were mostly blank, but I think it was because of the allure of a continent mostly untouched by humans, semi-unknown—a puzzle waiting to be put together. When I got to college, going to Antarctica as a scientist became a personal goal of mine, and it fueled my interest in both Chemistry and Geology. As I got older, and my interests diversified, going to Antarctica seemed more like a dream than an attainable goal—I would settle for any place that was cold and semi-mysterious. Having an experience in which I get to know a piece of the puzzle, and can share that piece with others, motivates me to do PolarTREC. Professionally, I hope to be a part of science in a new and interesting way. I hope this will deepen my knowledge of Earth Science, and I hope that I can bring back the experience to share with my students and fellow educators.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I enjoy talking with my students about my personal experiences with science because I believe it gives them an "in" with science that often you don't find in the science classroom. We often talk about "scientists" as if they are icons who exist in a vacuum. I try to break that barrier by asserting myself as a scientist as often as possible and supporting my assertion by discussing research and science that I have personally done. This includes sharing my personal reports with my students that, although currently above their level and understanding of science, provide students with tangible understandings of an important part of science--the "report". In this case, I would share whatever products come out of the PolarTREC experience (beyond just the journaling and photos). Sharing my work with my students also means allowing students to ask questions about the experience as well as the outcome. This would likely result in a Q&A session open to the entire school (not just my students) upon my return. Depending upon the experience itself, I may also try to create a mini-experience (lab or otherwise) that mimics some of the same processing skills that I used during my time doing research.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

The American Museum of Natural History occupies an important place for science teaching in New York City. As a graduate of the museum’s MAT program, I would hope to be able to contribute to its professional development (PD) activities. Most prominent is Chancellor’s Day, a day-long PD in which teachers from all over New York City come to the museum to engage in science-specific PD opportunities. Also, I would like to work with the current cohort of pre-service teachers in the MAT program at the museum, as well as other alumni of the program. I am also still in touch with some of my college and high school teachers, and I would love to share my experiences and the team’s findings with them. Beyond the blog associated with PolarTREC, I’m not sure how I would reach the general public but I look forward to finding creative ways to bring science research to light beyond my network.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

My teacher prep program focused very heavily on using the 5E method, a method of inquiry, in the Earth Science classroom, which I still rely on often in all of my science classes. For example, in Chemistry, students participate in an Inquiry lab in which they mix together many different Sodium and Nitrate compounds, and then determine solubility rules based on their collected data. In Earth Science, my classes are heavily dominated by the use of models. An Earth Science 5E experience that occurs in our weathering, deposition, and erosion unit begins with students exploring where to build houses by using a stream table models and toy houses that they can manipulate. Students then have to do research to explain where and why they would (or wouldn't) build a house in a certain space along a stream. Something I am working on as a teacher is really allowing the students to grapple with topics on their own before showering them with the information I want them to understand. Both the 5E method and POGIL (mentioned in my journal entry) allow me to get students started processing information and coming to conclusions on their own, with myself acting only as a facilitator and supporter of their learning.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

One unique strength of mine is my intuitive orientation towards instruments. Understanding how instruments work (or often don’t work) is something I enjoy. In the field, this would particularly come in handy when something is not working, because I can often diagnose what about the instrument isn’t working. Another strength of mine is my breadth of knowledge of the sciences. While my narrow field might be labeled as “analytical geochemistry”, I believe my personal interests lie within analytical chemistry, physical chemistry, mineralogy, and hard-rock geology, although these interests are expanding through my teaching. For example, now I find myself interested in weather systems and astronomy in ways that I haven’t been in the past. A strength I bring to PolarTREC (although not into the field) is my writing talent. My writing has been described to me as “easy to read” due to its semi-stream of consciousness outline. While I wouldn’t classify myself as the most grammatically correct writer, I believe that I am able to keep the interest of the general public with my writing style.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I’ve always been heavily involved in extracurriculars. In high school, I was a member of two bands, theatre, show choir, and several dance studios, all while taking IB/AP classes. Most of the strengths I have when I work with a team, I learned by being a

member of these various groups. Being someone who loves to be busy, I need deadlines to help organize my life and the products I create. I have learned to love a good solid deadline. My creative side also tends to shine in group settings--my sorority sisters always commented that I was the “artsy one” of the group. But to me, my creative side means putting those extra finishing touches on a product--hand-painting matching t-shirts for the sorority, creating a beautiful Excel spreadsheet that will scale grades for teachers, or making sure the presentation looks spotless. I think the last, and perhaps most important, strength I gained from being a busybody is knowing when to be flexible with myself and with others. Life will always arise and get in the way. Being flexible to me means learning how to bend the goals, outputs, inputs, or whatever in order to keep going and achieve something worthwhile.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

The highlight of the week was not a day but a moment. This year, I introduced POGILs to my chemistry class. POGIL, as stated on their website, is “Process Oriented Guided Inquiry Learning. It is a student-centered, group-learning instructional strategy and philosophy developed through research on how students learn best.” In a POGIL students look at data or information and are asked to make sense of it through scaffolded questions. To determine how effective POGILs are in my personal classroom, I’ve been conducting an investigation where, for a low stakes topic, only one class will get the POGIL. I was expecting to determine effectiveness by analyzing their unit assessments, but I found my answer much sooner than expected. It was a simple Do-Now question, “Which of these instruments is more precise?” In both classes, students picked the graduated cylinder over the beaker. But in the class that had the POGIL one student confidently explained to me, “It’s like the scales from the POGIL we did. The scale where there was more information and less estimation was more precise.” WOW! All my doubts about POGILs and their use in the classroom have been wiped away. Are POGILs effective? Yes. Case closed.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
While my heart has always yearned to understand Antarctica, I would be grateful and excited to study at either pole--both seem like a treasure trove of interesting new science waiting to be unveiled.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I would like to participate in an expedition for at least three weeks. I believe an ideal amount of time would be 4 weeks, but I would be okay with anything up to 6 weeks maximum.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I am highly interested in the use of instruments to do science. In college, my senior thesis focused on trying to improve the use of the portable X-Ray Fluorescence instrument for quantitative use in the field. "Use in the field" in temperate areas is one thing; in extreme conditions, the challenges must be even greater, which makes them even more interesting. I think instruments are interesting because they sit at the threshold of theory and experimentation: to understand how the instrument works, you need to understand the theory behind it, but the use of the instrument itself serves an experimental purpose. I love this synergy--how improving our instruments (our theory) can improve our data (investigations/experiments). It's a big win for everyone involved! A current budding interest of mine is astronomy. As part of my master's degree, I completed a small research project comparing simulating galaxies to the Baryonic Tully-Fisher relation. This experience was fun, particularly because it applied my (somewhat basic) coding skills to a scientific topic, and gave me new insight into astronomy research.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I do not want to be considered for an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have a general experience with hiking and camping both in personal settings and during field camp-like excursions. I received my Lifeguard certification (includes FirstAid, CPR, and AED training) when I was 17, although I have not gotten it renewed.

b. Provide a basic statement of your general health and physical condition.
I am an overall healthy 24-year-old woman. I am currently a little out of shape, but it is not difficult for me to get back in shape when needed.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am familiar with both Mac and PC, although I use Mac more often for my day-to-day work. I would describe myself as having an intermediate skill level--that is I understand some basic coding (MATLAB, Python, using the terminal on a Mac), and I am strong using both the Google education suite (Google Docs, Slides, Sheets, etc.) as well as the standard Microsoft suite (Microsoft Word, PowerPoint, Excel).

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I typically use a MacBook laptop computer for my day-to-day work. My school is a google suite school, so most of my materials are created using Google suite products (google classroom, docs, sheets, slides, etc.) Although occasionally, I will use Microsoft Word or PowerPoint if I need a stronger word processor or presentation application. In one of my classrooms, I have recently been creating a lot of videos for the purpose of pursuing a flipped classroom. For that, I screen record myself taking notes in Microsoft OneNote using an iPad. I then process the video using iMovie before I post it for my students. I also frequently use my phone to check emails and notifications, as well as using it to scan “plickers”--a cost-saving alternative to clickers that are often used at the collegiate level.

e. List any additional skills or information that you wish to be considered.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL
www.polartrec.com

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
The SCAR (Scientific Committee on Antarctic Research) news list-serve may be a place to advertise.

12. References

Reference 1

Name Julie Contino

Title and affiliation Senior Specialist in Science and Teacher Education; Mentor

Email Address jcontino@amnh.org

Phone Number 212-496-3623

Reference 2

Name Cristina Trowbridge

Title and affiliation Senior Manager of Professional Development; Mentor

Email Address ctrowbridge@amnh.org

Phone Number 646-831-9670

Reference 3

Name Saleemah Madyun

Title and affiliation Science Teacher; Colleague and Co-Teacher

Email Address saleemah@belahs.org

Phone Number 347-930-8069

Lisa Ball

1. Contact Information

Name: Ms. Lisa Ball

Email: lball@usd497.org

Home Address:
2425 McKinley Ct
Lawrence, KS 66047 US

Home Phone: 7855501426

Cell Phone : 7855501426

Institution Name: Lawrence High School

Institution Address:
1901 Louisisana St
Lawrence, KS 66046 US

Institution Phone: 7858325050

Classroom/Office Extension:

Institution Fax: 7853304501

Institution Website: https://www.usd497.org/Domain/27

Other relevant websites:

Supervisor's Name: Dr. Cynthia Johnson

Supervisor's Email Address: cynthia.johnson@usd497.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Our school is in a university town, but we also have rural students and several children's shelters. There are two high schools in town and ours is more the most urban and diverse of the two schools.

d. Type of School (or students you work with): Public

Other Type of School NA

e. What is the population of your annual audience or school (estimates are fine) 1800

f. School Ethnicity:
5 % - American Indian or Alaska Native
4 % - Asian
8 % - Black or African American
11 % - Hispanic or Latino
1 % - Native Hawaiian or Other Pacific Islander
64 % - White
9 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 30

h. Average class or audience size 26

i. Total number of students/audiences you teach in a year 155

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
(dates are for 2019-2020) August 8--first day of school for teachers August 20--first day of school for students November 27-29--fall break December 23-January 3--

winter break March 9-13--spring break May 22-last day of school

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Biology

Bachelor's Degree (Minor): Secondary Education , Chemistry

Masters Degree (Discipline): Ecology and Evolutionary Biology

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 17 at the secondary level

c. How many years have you been working at your current institution?: 9 years

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Lawrence High School Allen Press Award Nominee 2018 and 2019 Earthwatch Teach Live From the Field Team, Teacher Facilitator 2009 and 2017 (Caterpillars & Climate Change, Louisiana and New Mexico) Lawrence Education Association Mini-Grant Recipient 2015 Toyota International Teacher Program Galapagos Team Member 2010 Target Field Trip Grant Recipient 2009 and 2012 Lawrence Schools Foundation Grant Recipient 2005 and 2013 Teaching Award, University of Kansas Division of Biological Sciences 1998 National Geographic Research Grant 1995 Bergstrom Ornithology Grant (Association of Field Ornithologists) 1995 Outstanding Senior in Biology, Southern Nazarene University 1993

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology

Other Subjects AP Environmental Science (secondary) Environmental Science and Ecology (secondary)

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Ms. Frizzle of Magic School Bus fame is my personal professional heroine. Along with the same ginger locks, we share a deep love for science and teaching. I also love to immerse my students in hands-on learning as often as possible, but sometimes it is a challenge just to get funding to take kids on a non-magical bus to the wetlands just three miles away. The engagement tool that I draw upon for connecting students to real life science has been my own professional experience in science research. I love to share the experiences I have had over the years doing research in the tropics and collaborating with scientists around the US. These experiences have shaped my teaching and help me connect students to real science. They also have kept me excited and immersed in the field of science and I have a deep desire to continually return to research to fortify my teaching. I am especially interested in polar research because my Kansan students have a strong sense of disconnect when it comes to issues regarding the polar regions and the oceans. I want to be able to bring important polar environmental issues into my classroom firsthand.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I know that Skyping with classes is not always possible, but when I have been able to do this, my students were so excited to feel like they were part of my research adventure, so I would love the chance to Skype from the field again. II enjoy social media and would definitely love to share my experience with my audience through platforms such as Instagram, Twitter, and Facebook. I especially love Instagram because it catches the attention of my students, and a great picture paired with just a few choice words can make a big impact. Additionally, I would be incorporating my experience into my curriculum that I have developed for the three preps I teach, Advanced Biology, AP Environmental Science, and Environmental Science and Ecology. My research experience would give me more stories from the field to share and would inspire labs and activities I could carry out in my classroom. My extended school audience is my Environmental Club, which is one of the largest school clubs. I love that I can share science with them in a non-threatening (ungraded) environment They are always looking for ways to connect to environmental issues and to get involved with activism.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

Teaching is a vocation for me, it does not end when I step out of my classroom. I feel a special obligation to share information with others about complex environmental topics such as climate change. There are many out there who don’t “trust” the science, but sometimes having a personal connection to someone who has studied and researched the topic personally can make all the difference in their willingness to listen and learn. I have been a guest speaker for elementary classrooms, have shared with local conservation organizations, have given presentations for professional science organizations, have participated in poster presentations, and have presented to my fellow science educators. I have provided interviews and write ups for local news organizations. If I were chosen for PolarTREC, I would be thrilled to share my experience and learning with others in all of these ways and more. I am a big fan of social media and would be really excited to blog, Facebook, Tweet, etc. to provide more interface between the public and polar researchers.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200

words maximum)

A standard teaching tool that I love to use is to introduce a new or complex topic with a case study, especially one that has a cliffhanger with a big reveal at the end! My environmental science textbook uses this technique and I have built upon it and now supplement with my own stories from real life. This hook gets the target audience interested and engaged, Then providing a chance for the students to participate in research or a relevant lab activity to give them ownership of the learning works well for me. I also enjoy trying innovative approaches to teaching new topics. I am an “early adopter,” happy to take a risk on a new app, a new software, or new game. I love Socratic seminars, new online quiz games, and new adaptations of old games (such as Jenga). Breakout boxes really make learning collaborative and fun. Movement is another element I like to add to my classroom. Kinesthetic learning is another way to engage the brain. If we can play a game, use the four corners opinion approach, or just act something out, we can have fun while learning and sometimes even be silly!

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

One important strength I bring to the program is experience working, traveling, and living with fellow researchers and teaching colleagues. I enjoy meeting new people and learning from them. Another strength I bring is passion for science and learning. I am a lifelong learner and I get so excited by the opportunity to engage in new learning and sharing it with others. If I do not get the opportunity to engage in some kind of new learning or research for a while, I feel stagnant because it has been such an important part of my life. I enjoy brainstorming and one of my strengths is organizing and planning. I like to have an end goal and a timeline for how to get from point A to point B. I have a strong work ethic and a great deal of physical endurance which would be beneficial for field work. My ultrarunning hobby means that I spend many hours running each week, sometimes alone, and in extreme temperatures. The mental toughness that the sport has taught me has helped me through many situations outside of my running. I am excited by adventure and can keep myself entertained for long stretches of time.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

One of my favorite teams was my first science department I worked with, which was at a junior high. The three of us biology teachers could not have been more different. There was little collaboration when I joined the department. We found ways to use

each other’s strengths to make a unified team, and found humor in our differences. I was the lead planner, another became the curriculum editor, and the third was great at heading up the lab prep. I look back at how we grew together and really miss that extra collaboration time we were given at that level. Another memorable team effort I love to reflect on was my opportunity to serve in a teacher mentor role with Earthwatch. I had worked with the same primary investigator seven years before, but at a different field site. I was able to bring my past experiences with the research project (Climate Change and Caterpillars) and my years of teaching to help our diverse team feel like we were making a meaningful contribution to the research project and to produce curriculum products that were required by the project but would also end up being very useful in our classrooms.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Last weekend marked my third pilgrimage to the Land Institute's Prairie Festival in Salina, Kansas. The middle of Kansas seems an unlikely place to spend one's weekend when seeking scientific enlightenment, but it is my own personal "eco-revival." I am extraordinarily lucky to have the Land Institute just two hours from my home, because it is the center of a global research collaborative working to find solutions to the current carbon crisis. We spent two days sitting in an open-air barn on the tallgrass prairie, revelling in the stories and reports of soil scientists, physicists, biologists, and artists. We ate perennial test crops in delicious stirfry bowls and mingled together--farmers, researchers, teachers, all looking for solutions to our carbon crisis. We leaned forward in the barn as the final speaker, author Bill McKibben told tales of climate activism including adventures with Greta. Hot stinging tears filled my eyes as he addressed the problem of depression among our youth caused by climate change events. We have failed to protect the planet for them. I left the barn feeling angry, excited, inspired, hopeful, and ready to carry the message of change to my students and the rest of the world.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
NA

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
It is always a challenge to be away from our students during the school year, however, I have a reliable substitute, I have never taken an extended leave from the classroom, and as of recently I am an empty nester, so my flexibility and availability is at an all-time high! I would be willing to stay from three to six weeks.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
My interests are broad but my background is in biology. I would be thrilled to participate in a biology-related project and that is where all of my field work and research has been centered. Topics that are most interesting to me include the effect of climate change on populations and communities of plants and animals, including but not limited to changing patterns of migration, adaptations, and impact on biodiversity. My own academic research was in the field of avian biology so it would be incredible to contrast my tropical research with a polar experience. However, since I also teach environmental science classes, I feel like there are many related areas that pique my curiosity and would expand my learning (such as atmospheric, soil, or ice sheet research).

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this subject area

Engineering and Technology I do not want to be considered for an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest
Microbiology

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have grown up camping and hiking and I am certified in First Aid/CPR. I grew up with a BB gun and have participated in a firearms training workshop for women. I have some experience with kayaking and canoeing. I began running seven years ago and I am now an avid trail runner, running three to six days per week, depending on my training cycle. I have run multiple marathons and several ultramarathons, up to the fifty mile distance, on rocky, rooty rolling trails. I plan to train for a 100K trail race next year.

b. Provide a basic statement of your general health and physical condition.
I am an avid runner with no physical limitations or health conditions. I am seldom sick, and fully vaccinated. I have excellent dental health and have never even had a cavity.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I use both a Mac and PC interchangeably for my job. I have more experience with a PC but I am also comfortable with a Mac and I am a fast learner. I use computers every day all day and I am always interested in learning more skills.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use a laptop computer, Smart TV, and Apple TV every day and often use my Aver projector as well for live demonstrations such as sketch notes or lab demos. I have experience with digital cameras and video flipcams. I use a wide variety of software and apps including a variety of internet browsers, Word, Excel, PowerPoint, and all of the Google equivalents, Google Docs, Slides, and Sheets. I am a Google Certified Level 1 and 2 educator. In my post grad-school years, before returning to secondary education, I worked in environmental consulting as a GIS technician using ArcGIS products.

e. List any additional skills or information that you wish to be considered.
I have some conversational Spanish skills and I have international travel experience, including experience leading five student trips to Costa Rica. I have field experience including bird banding, blood sampling from birds, radio telemetry with birds, mistnetting, aging/sexing birds, bird identification by sight or sound, bird surveys, insect collecting, insect identification, insect rearing, and macroinvertebrate stream

surveys, and vegetation transects. I taught an undergraduate level microbiology lab for three years while I was in school so I have had a wide range of skills with handling microbes.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. Yes

Program Information Earthwatch Teach Live From the Field Team , 2009 (Caterpillars and Climate Change, Louisiana and Earthwatch Teach Earth Teacher Facilitator, 2017 (Caterpillars and Climate Change, New Mexico)

If yes, did you complete all program requirements? Yes

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
PolarTREC would allow me the opportunity to continue to build my experience as a teacher researcher. I took so much away from the Earthwatch experiences in terms of field skills and teamwork, but I also built a great social and professional network with researchers and collaborating peers. I am still in contact with quite a few of my colleagues from those expeditions. I have absolutely no polar experience so many of the science elements of the PolarTREC research would be vast learning opportunities for me.

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain NA

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL
PolarTREC website

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Mark Preut

Title and affiliation VIce-principal at Lawrence High School

Email Address mpreut@usd497.org

Phone Number 7858325050

Reference 2

Name Victor Beckerman

Title and affiliation Science Teacher at Lawrence High School

Email Address vbeckerm@usd497.org

Phone Number 7858325050

Reference 3

Name Penny Kramer

Title and affiliation Former Science Teacher Colleague, currently at Excelsior Springs High School

Email Address pkramer@ga.essd40.com

Phone Number (785) 979-7213

Matthew Balsinger

1. Contact Information

Name: Matthew Balsinger

Email: mtb31@zips.uakron.edu

Home Address:
971 BAYBERRY DR
Medina, OH 44303 US

Home Phone: 3302412985

Cell Phone : 3302412985

Institution Name: Wooster High School

Institution Address:
515 Oldman Road
Wooster, OH 44303 US

Institution Phone: 330-988-1111

Classroom/Office Extension: 3123

Institution Fax:

Institution Website: http://www.woostercityschools.org/hs/wooster-high-school

Other relevant websites:

Supervisor's Name: Tyler Keener

Supervisor's Email Address: wstr_tkeener@woostercityschools.org

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Wooster City Schools is a rural/suburban school district that serves as the county seat for Wayne County in Ohio. WCS serves approximately 27,000 people, 91% White, 4% Black, 2% Asian, 3% other/mixed race. Wooster High School is approximately 43% free-and-reduced lunch, making our district/school high need in terms of social economic status supports.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 1,200 within the whole school, roughly 120 students yearly individually.

f. School Ethnicity:
% - American Indian or Alaska Native
3 % - Asian
4 % - Black or African American
1 % - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
91 % - White
1 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 43

h. Average class or audience size 20

i. Total number of students/audiences you teach in a year 5-6

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

School Year Start Date: August 19th (generally third week in August). Thanksgiving Break: Wednesday-Friday of the third week of November. Winter-Break: Two weeks end of December/Beginning of January. Spring-Break: Varies year-to-year; Generally first full week of April. School Year End Date: May 27th (generally last week of May).

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Education, Science

Bachelor's Degree (Minor): Geology

Masters Degree (Discipline):

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 7 years

c. How many years have you been working at your current institution?: 6 years

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Project Lead the Way (PLTW) STEM Certified Biomedical Teacher, National Science Teacher's Association member, Geological Society of America member, Local Delegate Representative in Ohio Education Association, National Ocean Science Bowl Judge.

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Chemistry, Secondary Earth Science

Other Subjects Astronomy, Biomedical

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I have always believed that the most important part of science is the mentor-mentee relationship. It is a somewhat sacred experience the sharing of information and knowledge between teacher and student. As a classroom teacher I have the unique experience of engaging young people with science that my not have otherwise had the opportunity to do so, which opens doors for these student's future. Opening doors is the primary motivation both professionally and personally. Our world is inherently unequal, but opening pathways for kids who might not otherwise have access; either by experience, or financially, or the circumstance of birth; is the best chance we have to leveling that inequality. I personally hope to gain from this experience the opportunity to open these doorways to other people. As a Junior in high school I was 1/6 kids selected from a national pool of over 1,600 applicants to participate in science research in Redwood National Park in California. The impact that had on me was immeasurable, and it is an experience I hope to find a way to give to any student who walks into my classroom.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Our High School has one of the most expansive science departments in total number of class options, than almost any high school I have encountered in my career. Far beyond the courses I individually teach, there is a pathway for which this experience can directly be used in our Geology, Botany, Zoology courses. Our department is very adaptable to new experiences that we can incorporate into how we run our classes. I envision that whatever experience I have with PolarTREC would eventually be incorporated into Labs that we perform at every level, scaled for both understanding and audience, for virtually any of the classes that we teach at Wooster High School. Professionally I have benefitted from the hard work of teachers long before me that established an interconnected pathway of activities within the classroom and resources/avenues within the community. I believe it to be my turn to give back to our school in continuing to build connections with a much larger world to give our students the best possible exposure to science as possible.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

Being a smaller rural/suburban community there is a lot of care taken to report on the many things the schools are involved with. The local newspaper painstakingly follows what is taking place within the community schools. This is the first avenue that I would, on the local level, push to share the experience with. A second avenue on the local level that I would pursue is engagement with my peers thorough our department Teacher-Based-Teams, Department-Based-Team and the larger district as a whole through our various professional development throughout the year. Lastly I could potentially see myself seeking to share my experiences as a presenter at either the Ohio based Science Education Conference of Ohio (SECO), or the National Science Teacher's Association regional conference. Both opportunities would offer the opportunity to open doors for other professionals as well.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

In all of my classes I am on constant lookout for new/relevant items to include in whatever it is that I am teaching. I often do this by perusing whatever is being published by the news media (things that they may have heard of) as well as peruse science periodicals for relevant new items. I attempt to do this on a weekly basis as part of what I call "Friday Factoids" where I attempt to do things that are relevant, recent, and through provoking. As a teacher I firmly believe our most important duty is to teach kids how to think, not what to think; which is of course the foundational principal of science. If the item I find, and the subsequent though provoking interests the students I usually plan to further expand on the topic with a future activity.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

Communication. I firmly believe that my writing and communication skills would be of considerable benefit to any organization that I am a part of. I spent several years writing and editing for a newspaper/periodical in college and can bring that experience to any organization that will have me. In addition to my writing ability I firmly believe that verbal communication and teaching experience is of great benefit to any organization. I come from a long line of teacher; myself being a 5th generation teacher. I have considerable experience in the daily lives of teachers and their needs within a science classroom. Because of my experience I have been consulted several times by private individuals and companies for advice on how to engage better with teachers, and I believe that this experience is crucial in any endeavor involving expansion into science classrooms wherever they may be. To be frank, the vast majority of the people(unless you've been a school teacher) has any

actual idea what a teacher actually does in their daily operation of the classroom. This experience, and communication of it, is crucial.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

The primary focus of anything that I am involved with is being part of a team. Though I am apt at working individually, but individual work is always part of a larger picture. Professionally the science department that I am a part of works on a Teacher-Based-Team (TBT) and Department-Based-Team (DBT) model, where every teacher in a discipline meets weekly to discuss student needs, laboratory prep schedules as well as evaluation of what we are doing and how best to proceed with the resources that we have. My personal contributions to the department at-large is that I always take on the clerical portions of our meetings, as well as the organizational scheme of our department. I've also been instrumental in obtaining additional equipment for our department such as thermocyclers, vertical gel electrophoresis apparatuses and other advanced equipment so that we can run more advanced labs as a department.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

When working in the lab sometimes you win and sometimes you lose. Today was a day of the latter as we accidentally killed all of our bacteria. The primary focus of working with bacteria is because they are quite malleable and with easy manipulability when conducting genetic experiments and they are relatively easy grow and multiply. Our goal was to shock a stock of E. Coli bacteria into absorbing a genetically engineered plasmid that would allow the bacteria to glow in the dark. In biology this process is called transformation, where the bacteria become so desperate to survive stress that they begin absorbing their surroundings into themselves in attempt to find something that might help them survive. To shock the bacteria we slowly warm them in a water bath heats over time. Hot enough to cause stress, but not hot enough to kill them. At least that's the idea. Unfortunately for our research endeavors, we killed our bacteria. It is still unknown why they died, but it is certain that they did because we did not get growth after 24 hours. Not to worry though, we have isolated DNA to use for the second part of the experiment, though it would have been cool to see our glow in the dark bacteria.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
Though I do have a preference, the Antarctic as the southern hemisphere is the most alien to me and my students; I chose Either because I view this opportunity as a chance to expand my classroom with direct experience. The Arctic and Antarctic both can help in furthering that goal. If there is a perfect match for me in the Arctic while not being a perfect match in the Antarctic I would hate to not best utilize this opportunity for the benefit of my students and my classroom.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
As long as is possible.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
First and foremost, anything relating to chemistry. I teach advanced chemistry courses and anything with a major chemistry component would be paramount to me as it is directly something I can use extensively in advance coursework with my current chemistry students. I am purposefully rather nebulous on this particular topic about my scientific interests because the advanced course that I teach requires students to do an independent-study style investigation where they must conduct their own designed lab. Any relevant and current science research is directly pertinent to my students. Experience outweighs familiarity, and I hope that PolarTREC would be an opportunity to use direct experience in helping them find research projects of their own. Secondary scientific interest is Space/Physics Science, as I have been studying this topic independently for nearly my whole life. I am one of very few Astronomy teachers that still exist in the public High School setting. I am always looking for ways to make my class more relevant and to include current research and technology.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
Camping, backpacking and hiking experience. As a Senior in high school I participated in field research in Redwood National Park through the Student Conservation Association for a month of backpacking, camping and hiking while conducting the research. I have traveled twice to China on two separate geology field-trips with a mentor at Youngstown State University, where we regularly hiked mountains in Tibet, Huangshan, and Emeishan. My sister also once lived in a Rural "Bush" Alaskan town called Atmuatluak where extensive bush travel was required to reach. Needless to say, I am a very experience traveler. In my personal life, I go hiking on nearly an every-day basis when the season allows, including winter. Camping and backpacking is on a yearly-to-biyearly basis, only summer however. I also participate in CrossFit classes on a thrice-a-weekly basis.

b. Provide a basic statement of your general health and physical condition.
I am in good general health and good physical condition.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am familiar with both Mac and PC operating systems. I have advanced skill level in both operating systems and the programs associated with each operating system.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
Powerpoint, Adobe Premier Pro, Excel, LoggerPro, Digital Camera, Microscopes, Thermocycler, and other chemistry and biology lab equipment.

e. List any additional skills or information that you wish to be considered.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
Google search for NSF teacher opportunities.

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Shelly Silvaggi

Title and affiliation Chemistry and Environmental Science Teacher, Wooster City Schools

Email Address wstr_ssilvaggi@woostercityschools.org

Phone Number 3303474190

Reference 2

Name Brittany Musser

Title and affiliation Biology and Science Teacher, Columbia Local Schools

Email Address musserb@columbia.k12.oh.us

Phone Number 4403085688

Reference 3

Name Charles Cerniglia

Title and affiliation Physics Teacher and Union Secretary; Wooster City Schools and Wooster Education Association

Email Address wstr_ccerniglia@woostercityschools.org

Phone Number 3302314991

Jill Bartolotta

1. Contact Information

Name: Ms. Jill Bartolotta

Email: jfbartolotta@gmail.com

Home Address:
854 Shadowrow Avenue
Willoughby, OH 44094 US

Home Phone: N/A

Cell Phone : 440-479-4831

Institution Name: Ohio Sea Grant

Institution Address:
1314 Kinnear Road, Research Area 100
Columbus, OH 43212 US

Institution Phone: 614-292-8949

Classroom/Office Extension: Lake County Extension Office, 440-350-2267

Institution Fax: 614-292-4364

Institution Website: ohioseagrant.osu.edu

Other relevant websites: Work Website: https://ohioseagrant.osu.edu/about/people/jill-bartolotta NOAA Teacher at Sea Website: https://teacheratsea.noaa.gov/#/2019/Jill*Bartolotta/blogs

Supervisor's Name: Tory Gabriel

Supervisor's Email Address: gabriel.78@osu.edu

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): The audience with which I work is a mixture of White, Black or African American, and Hispanic or Latino audiences living in rural, suburban, or urban coastal areas of Ohio. My primary audience focus is students (K-12) and coastal residents.

d. Type of School (or students you work with): Other (describe below)

Other Type of School I work with both private and public schools.

e. What is the population of your annual audience or school (estimates are fine) 2 million

f. School Ethnicity:
0 % - American Indian or Alaska Native
1 % - Asian
14 % - Black or African American
5 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
75 % - White
5 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 50

h. Average class or audience size 25

i. Total number of students/audiences you teach in a year 3000-6000

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
I teach year round.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Dual Major: Wildlife Ecology and Management and Kinesiology: Outdoor Education

Bachelor's Degree (Minor): Marine Biology

Masters Degree (Discipline): Coastal Environmental Policy and Management

PhD Degree (Discipline): N/A

Other Degree: N/A

b. How many years of education experience do you have?: 15

c. How many years have you been working at your current institution?: 4.5

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Basic SCUBA: NAUI Leave No Trace Trainer: Leave No Trace Center for Outdoor Ethics Ohio Boating Education Course: Ohio Department of Natural Resources-Division of Watercraft Adult and Pediatric First Aid and CPR Member: National Marine Educators Association, Great Lakes Educators of Aquatic and Marine Sciences Chapter

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Informal Education (Science or Nature Center, Museum, etc.)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science, Secondary Biology, Secondary General Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

The opportunity to participate in an experience that will expand my knowledge on polar regions and expand my research experiences motivates me to apply to PolarTREC. I hope to gain knowledge about our polar regions and how they are being affected by human actions. By learning about these areas, I will be able to expand my knowledge on the issue of human impacts to our natural environments and expand my ability to teach my audiences about other geographic regions. I mostly focus on a Great Lakes regional level and then expand the information to the coastal oceans and other freshwater areas of the United States. This experience will allow me to expand my geographic scope to the ends of the world. A PolarTREC experience will also introduce to me to a variety of career paths. The students I work with are beginning to think about career paths and being able to teach them about careers in science all over the world is very important to expanding their career goals.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I will share this experience in a variety of ways. First, I want to expand the geographic region of my programs to a global scale. Right now I have connections or educational experiences in many parts of the world, but am lacking connection with or experience in the polar regions. I will use my experience in PolarTREC to compare what is happening locally in the Great Lakes to other parts of the world. Second, I will reach out to the adventure and nature clubs in my area and offer to give presentations about my experience. Many people will most likely never visit the Arctic or Antarctic, but being able to share my pictures and stories with them will help them better understand our polar regions. Lastly, I will use this experience to learn more about the careers associated with polar education and research. I recently participated in the NOAA Teacher at Sea program so I want to continue to learn more about science careers. More information about polar careers will improve the lesson plan and outreach display I am already making for Teacher at Sea.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

My PolarTREC experience will be shared in a variety of ways with a variety of

audiences. First, I will improve a career outreach activity and lesson plan I am creating on ocean careers to include polar careers. The more careers I can include in this activity the more options available to the students I teach. For this activity, I am also creating a short picture book on careers and life at sea. I will create one on life and careers in the Arctic or Antarctic as well. I will also expand the geographic scope of my student programming to include both a local and global scale. Second, I will share my experience through presentations at meetings, conferences (specifically the National Marine Educators Association conference), and to my colleagues at The Ohio State University through our annual meeting. I will also encourage and guide them through the application process. Any tools developed from this experience will be shared with the National Sea Grant Network. Lastly, I will write a book about travelling to all the continents (Antarctica is my last continent) learning about human impacts to the natural environment. This book will focus on my travel experiences and delve into the natural resource issues facing our society and planet.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I prefer to engage my audiences with as many visuals and hands-on activities as possible. For example, I have taken the fairly complex topics of watersheds, harmful algal blooms, marine debris, and aquatic invasive species and created interactive and inquiry based activities. Instead of giving the facts, I use a series of hands-on and team based activities to guide their knowledge discovery about these issues. If able, I encourage my audiences to travel outside and to a water body so they can be in the environment where we see many of our coastal problems. I think place-based education is key, but I understand it is not always available. If I cannot take my audience outside, I bring it to them through visuals, maps, watershed models, microscopes, and live and preserved aquatic organisms. When teaching about coastal issues I also make the human connection about why we should care. Open discussion, storytelling, and stewardship activities have proven to be the best methods to connect my audience to Lake Erie (my focus area). At the end of each program, I always collect evaluation information to make sure my programs are enjoyable and informative, yet effective, at spurring pro-environmental behavior change.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

As an Extension Educator for Ohio Sea Grant, I have the privilege to be actively engaged in outreach, education, and curriculum development while conducting

research. Therefore, I have great strength in understanding complex research methods and translating the science into educational or outreach programs and tools useful to a variety of user groups. As both a natural and social science researcher, I have skills in developing and following research protocols, collecting data (in the field and a lab), data analysis, and communicating results to both an academic and lay audience. As all of my work is collaboration based, I work well as a member of a team, but can work independently if needed. I often work remotely so I have excellent skills in organization and multi-tasking. I also have extensive travel experience to remote locations and experience in the backcountry so I am comfortable working in a variety of environmental conditions and I adapt well to changing situations. Not only will I bring my skills of conducting research and communicating science to the team, I will bring a sense of humor, positive attitude, and passion for science with me as well.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I enjoy working as part of a team and it is something I do very well. A few months ago I served as the Teacher at Sea aboard NOAA Ship Okeanos Explorer. My official team role was to translate the science of our mapping mission and learn about the careers aboard. My unofficial role, that just sort of happened, was to boost morale. I made sure the requirements were met for my official role on the ship, but then made time to speak with everyone on the ship to hopefully brighten their day and learn more about them. Most importantly, I befriended the young scientists on board who were out of their comfort zones and having difficulty adjusting. It was the most rewarding and educational team process I have experienced. Some of my contributions included a positive attitude even when issues arose and tempers flared, attention to detail so that the crew approving my blogs had few edits to make to my writing as their time was limited, and someone who was willing to get to know everyone involved in the mission so that everyone’s story was heard and appreciated.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Pulling into the field I see the humidity in the air. Good thing I will be heading to the creek with seventh graders learning how to monitor water quality in streams. I gather my group and hike to our sampling site. The students learn how to use chemical analysis and macroinvertebrate (organisms without a backbone such as insects and crayfish) sampling to determine water quality. After lots of splashing, shouting, and scooping, we manage to collect a crayfish and juvenile insects. Using the organisms we catch and our chemical tests, we determine the water quality to be good. We gather our collection equipment, take a dip in the deep pools to cool off, and make the sweaty trek back to the bus. I say my goodbyes and take my car for a routine oil change so it can make the 700 mile drive to New Hampshire for a wedding. I go home, scoop up my boyfriend, and head to the movies to see the much anticipated Downtown Abbey. After two glorious hours spent with the royals of 1920s England, we make our way home, in a thunderstorm, ready to snuggle with our puppy as we drift off to sleep.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
My preference is for expeditions to the Antarctic mainly because of the timing. I am not available for an expedition until late 2020 or early 2021 because of other work travel happening in summer and fall of 2020.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I prefer any length of expedition. I am not able to participate in expeditions from April 2020-November 2020. However, my timing in November can be flexible if needed.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
My main topics of scientific interest are plastic pollution, climate change, and the organisms and humans who live in the polar regions. In regards to plastic pollution, I have little experience in the field of microplastics as most of my research is focused on human use of single-use plastics and barriers to using reusable alternatives. I would like to gain experience in the collection and identification of microplastics so I can improve my curriculum around this issue. I am also very interested in this topic because of its importance to me and its importance to most of the young people I teach. My second area of interest is climate change. Regionally we are seeing the effects of climate change and having more knowledge on how climate is affecting the different regions of the world, what is happening at the poles, and the most effective steps humans can take to reduce our impact is helpful to my work. Lastly, I am also very interested in the organisms living in the intense climates of the polar regions. My main topics of interest are adaptation techniques and population status, as well as any social or cultural importance for these areas.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this subject area

Engineering and Technology I do not want to be considered for an expedition in this subject area

Other (please specify) I would really enjoy an expedition in this subject area

Other Areas of Scientific Interest
Marine Debris and Microplastics

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
N/A

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have extensive experience teaching and guiding in the backcountry environment from both professional and personal experiences. My most proficient areas of expertise are paddling and backpacking. I am well versed in cooking, water purification, shelter creation, knots, and safety in both backcountry terrestrial and water environments. For my degree in Outdoor Education, I had to receive Emergency Medical Technician and Wilderness First Aid certifications so I have extensive experience learning how to handle emergency situations in remote locations. For my degree in Wildlife Ecology, I received training in firearms and tranquilizer guns. A refresher in these areas would be needed as it has been many years since this training.

b. Provide a basic statement of your general health and physical condition.
I am in good physical and mental health. I eat a healthy diet and participate in high intensity strength training 4-5 days a week and then supplement this training with swimming, paddling, skiing, hiking, and biking. This type of training has made me very strong and has improved my endurance and energy levels. I am well-travelled and have placed my body in a variety of strenuous and challenging environmental conditions. I am well aware of how to handle myself and my health in remote locations with little medical access.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
For personal use I work with a Mac system and for work I operate on a PC system so I am comfortable with both systems. My skill level in both operating systems can be considered intermediate.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I frequently work in Outlook and the Microsoft programs (PowerPoint, Word, and Excel). I use these tools often for everyday communications, data analysis, and presentation and curriculum development. My experience level in these programs can be considered intermediate. I also am very active in photography so I am familiar with both film, digital, and video cameras. I use these tools fairly often to make movies for work and to take still images to enter in photography competitions or give as gifts.

e. List any additional skills or information that you wish to be considered.

I can speak Spanish and German at a beginner level. I am very proficient in survey and focus group development with my greatest skills being in Qualtrics software.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. Yes

Program Information 2019, NOAA Ship Okeanos Explorer (mapping mission off the eastern coast of Florida), NOAA Teacher at Sea

If yes, did you complete all program requirements? In progress

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
PolarTREC will continue to develop my professional skills by giving me the opportunity to participate in more quantitative data collection methods. As a social scientist and educator, experience with other types of data collections methods is important to enhancing my skills as a scientist and educator. This experience will also expand on my experience with the NOAA Teacher at Sea program by introducing me to even more career opportunities. As a middle and high school informal educator, I am constantly asked to share career paths with the students I teach. NOAA Teacher at Sea offered me experience with careers at sea. PolarTREC will introduce me to careers in remote regions on a variety of scientific topics.

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL
PolarTREC website, https://www.polartrec.com/

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
National Marine Educators Association

12. References

Reference 1

Name Lieutenant Rosemary P. Abbitt, NOAA Corps

Title and affiliation Operations Officer, NOAA Ship Okeanos Explorer

Email Address rosemary.abbitt@noaa.gov

Phone Number 434-249-5892 (cell), 541-867-8931

Reference 2

Name Sarah Orlando

Title and affiliation Ohio Clean Marinas Program Manager and Ohio Sea Grant Extension Educator

Email Address orlando.42@osu.edu

Phone Number 419-609-4120

Reference 3

Name Sarah Lowe

Title and affiliation Great Lakes Regional Coordinator, NOAA Marine Debris Program

Email Address sarah.lowe@noaa.gov

Phone Number 419-607-4049

Polly Bass

1. Contact Information

Name: Polly Bass

Email: glaciobotanist@gmail.com

Home Address:
P.O.Box 101645
Anchorage , AK 99510 US

Home Phone: 907-744-6209

Cell Phone : 907-744-6209

Institution Name: Northwest Arctic Borough School District

Institution Address:
General Delivery
Kivalina , AK 99750 US

Institution Phone: 907-645-2009

Classroom/Office Extension: 907-645-2009

Institution Fax: N/A

Institution Website: www.nwabsd.org

Other relevant websites: N/A

Supervisor's Name: Annmarie O'Brien

Supervisor's Email Address: aobrien@nwarctic.org

2. Demographic Information

a. Gender: Female

Race: Multiracial

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I work in rural Alaska off of the road system. I travel to the cities and Anchorage during the summer and for training. I work in a K-12 school and collaborate with many public, government, community and higher education organizations.

d. Type of School (or students you work with): Public

Other Type of School N/A

e. What is the population of your annual audience or school (estimates are fine) My annual audience would include over 400 students and community members.

f. School Ethnicity:
96 % - American Indian or Alaska Native
0 % - Asian
1 % - Black or African American
1 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
1 % - White
1 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe: Not Applicable

g. Percentage of students who receive free or reduced lunch: 100

h. Average class or audience size 35

i. Total number of students/audiences you teach in a year Six per day for 190 days per year, or approximately 1140 audiences.

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

In-service: August 6th, First day of School: August 14; Christmas break; Dec. 21-Jan 5; Spring Break; March 21-29; School Out; May 9th

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Geology and Biology Majors, B.S. 1997, Biology, Geology

Bachelor's Degree (Minor): German

Masters Degree (Discipline): M.Ed. 2000, Secondary Science Education with an Emphasis on Botany and Geology, Thesis on Soil Gymnamoebae

PhD Degree (Discipline): Physical Geography; Dissertation on Alpine Plants, Island Biogeography, Climate Change Impacts, 2007, Ph.D.

Other Degree: Not Applicable

b. How many years of education experience do you have?: I have been teaching in K-12 schools, junior colleges, and 4 year colleges since I was first a teaching assistant in 1998, or approximately 21 years.

c. How many years have you been working at your current institution?: Approximately 2 years

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
-Alaska Professional Teaching Certificate in Grades 6-12 General Science and Geography, renewed in 2018 -Alaska Emergency Medical Technician Certification, renewed in 2019 - UAA Dean’s Award for Community Service and Service Learning in the Classroom, 2015 -University of Georgia Outstanding Graduate Teaching Assistant, earned in 2003 - UAF Certificate of Ethnobotany, earned in Winter 2018 - Professional Coaching Certification for MS-HS Sports from NFHSA, 2017 -Quality Matters online course developments certification, 2015 -Online Learning Consortium, (SLOAN) distance teaching delivery certification, 2015 - University of Alaska Anchorage, 2013 Technology Fellow, Recognition for training and online course and resource development for blended and hybrid courses.

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8), Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science, Secondary Biology, Secondary Chemistry, Secondary Earth Science, Secondary General Science, Secondary Geography, Secondary Physical Science, Secondary Physics

Other Subjects Not Applicable

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I am motivated to apply to PolarTREC because of the critical state of the high latitudes (the Arctic and Antarctic) at present. The poles are experiencing the impacts of global climate change to a greater extent than other locations. Despite years of admonishment and research we, as a community of educators, have not successfully taught or explained climate change, its causal factors, side effects and global implications. I am hopeful and believe that our students are capable confronting these challenges. I want to better prepare them to do this.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I will share real time video and thought experiments with the students. Laboratory activities, which explain principles and concepts observed in the field, will be used to augment understanding of what is seen and heard in the videos with images and sounds from the polar landscapes and habitats. Every day, I will prompt students and followers with a probing and insightful question.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

Lessons developed in the field and as a result of first hand experiences will be shared with educators through a publicly available folder and link on the Alaska Science Teachers Association website. The experience will be shared with educators at professional development presentations. Lesson plans and class activity ideas for teaching students about habitats, geography, biomes, global weather and climate, and how these topics are impacted or relate to climate change will be discussed and provided for K-12 teachers.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

When a new topic is introduced, I start by scaffolding and relating the topic to previously discussed concepts which are familiar to the students. Then the key terms and concepts are explained in grade level friendly language. After this examples,

including hands on demonstrations or activities, that help the students see and further understand the topics, are given or carried out. Students write about their observations and how what they see and do relates to the larger topic at hand.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

Strengths that I would bring to the PolarTREC program include a positive attitude. I enjoy learning with and from people from all cultures and backgrounds. I enjoy sharing new and exciting things and experiences with people (in person, or via Skype, video, Facebook, twitter, etc.). When a person or people are struggling with something that I can help with, I let them know that they are not alone and do what is possible to make them comfortable and at ease. I have many outdoor skills, outdoor survival and safety knowledge and cooking ability.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

As a team member, my strength is seeing someone who is struggling and helping them out. If I see a task that needs to be done, I get busy and get it done. There is no small job and every team member is integral. Every job matters. For example, everyone likes a clean toilet, but not everyone is willing to clean it. Recently, during a field science outing, a colleague was petrified while descending a steep snow slope. I was able to assist the uncomfortable individual and shared some techniques for getting down the slope safely and in a controlled way.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Today, the Physical Science class learned about relative humidity or R.H. and about the use of a sling psychrometer to measure the wet bulb and dry bulb temperatures. First, we learned about the construction of the instrument and how it is used to determine the wet bulb and dry bulb temperatures that are needed to find the depression, dewpoint, and relative humidity. The instrument is made of two thermometers that are mounted on brackets back to back to each other. One of the thermometers is fitted with a small wick, or piece of fabric. The wick is moistened prior to taking measurements. Then the instrument is utilized in various locations decided upon by the class: inside, outside, and on the beach. The students made hypotheses prior to taking the actual measurements. They hypothesized that the indoor environment would be less humid or have lower R.H. than the outdoor environment and that due to the wind on the beach, that site would have less humidity than the outdoor location more distant from the beach. We took our indoor measurements. Then we went outside and took measurement outside the building. We then when to the beach and were nearly blown away! This was an example of having to be flexible and having to work within the bounds of safety in field science. The wind was strong enough to make the use of the sling psychrometers nearly impossible. We retreated to our classroom and reflected on the experience. As it turns out, despite our pre-laboratory safety briefing, we also managed to break one of the psychrometers. In the end we did come home with dry bulb and wet bulb measurements for two sites. We were able to utilize the values to find the depression, or the difference between the wet bulb and dry bulb measurements. The depression value and the dry bulb value were then used with psychrometric tables that allowed us to find the percent relative humidity and the dew point temperature for each site. The tables were created using calculus and allow us to efficiently find the R.H. and the dew point temperature without getting bogged down with the calculations. The students’ hypotheses were supported in that they expected the outdoor RH to be greater than the indoor RH. We reflected on the trials and tribulations of field science while we were comfortable back in the warm dry environment of our classroom.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
Antarctica is my first choice and the Arctic is my second choice.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I am available to participate during all of the time periods and am open to participating for six weeks or more.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
My scientific interest include plant geography, vascular plants, lichens, bryophytes, birds, invasive species, species range extensions and threatened species. In the arctic, I am interested in the use of dogs for transport and logistics and veterinary science. Other interests include reindeer herding and animal husbandry, muskox, ethnobotany, Inupiat and Inuit use of the land and wildlife and subsistence.

Atmospheric Systems

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences

Engineering and Technology

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

Not Applicable.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I am adept in the outdoor environment. Camping, hiking and skiing in wilderness areas is one of my favorite past times. I have completed several wilderness first aid classes and bear safety rifle training.

b. Provide a basic statement of your general health and physical condition.
I am very healthy and exercise regularly. I have no health concerns or problems.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am experienced and comfortable with both Macintosh and PC operating systems. Currently I utilize the Macintosh system but have utilized PCs in the past. They each have idiosyncrasies and there own advantages and disadvantages.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use laptop and desktop computers regularly. I am comfortable with digital cameras, various internet browsers, the Microsoft Office Suit, Photo and movie software, SAS, R, Google platform applications, various learning management systems, Adobe software suite, Macintosh photography and movie applications, among other tools.

e. List any additional skills or information that you wish to be considered.
I have experience working with groups of young people in wilderness environments, as well as reading and basic knowledge of German, I am adept at plant identification, soil analysis and bird identification, among other skills.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information Not applicable

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
Not applicable

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain Not applicable

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
I have applied for PolarTREC four or more times since 2006 and have not been accepted yet.

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Fausto O. Sarmiento

Title and affiliation Professor of Geography, University of Georgia, Athens, GA, USA

Email Address fsarmien@uga.edu

Phone Number 706-542-1753

Reference 2

Name Pavel Izbekov

Title and affiliation Professor of Volcanology, UAF Geophysical Institute, Fairbanks, AK, USA

Email Address peizbekov@alaska.edu

Phone Number 907-474-5269

Reference 3

Name Donald (Skip) Walker

Title and affiliation Professor of Geobotany, University of Alaska, Fairbanks, USA

Email Address dawalker@alaska.edu

Phone Number 907-474-2459

Bethami Bergen

1. Contact Information

Name: Ms. Bethami Bergen

Email: bbergen@anacreon.com

Home Address:
611 Lincoln Ave
Alameda, CA 94501 US

Home Phone: 5102275742

Cell Phone : 5105029274

Institution Name: Gale Ranch Middle School

Institution Address:
6400 Main Branch Parkway
San Ramon, CA 94582 US

Institution Phone: 9254791500

Classroom/Office Extension: 9254791555

Institution Fax: 9254791595

Institution Website: https://grms.schoolloop.com/

Other relevant websites:
https://grms.schoolloop.com/pf4/cms2/view_page?d=x&group_id=1219689605807&vdid=i20
(my entry in the staff directory) There are additional class sites, but you won't be able to access them unless you are a registered student or guardian of a student at the school.

Supervisor's Name: Sue Goldman (principal)

Supervisor's Email Address: sgoldman@srvusd.net

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I work in a public middle school. The area is near a high-tech center, and most of our students are first generation from North India, Pakistan, and China. Their parents are mostly college-educated and work in engineering. Families live in multi-generational apartments in the area. I get to work with many students in the same families over the years.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 1230 for the current 2019-2020 year.

f. School Ethnicity:
1 % - American Indian or Alaska Native
75 % - Asian
3 % - Black or African American
5 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
11 % - White
5 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 6

h. Average class or audience size 32

i. Total number of students/audiences you teach in a year 190

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
In session second week of August through end of May. One week off at Thanksgiving,

two weeks Christmas through New Year, and a week some time in the spring which varies.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Physics and Astrophysics

Bachelor's Degree (Minor):

Masters Degree (Discipline): Astrophysics

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 25, but 24 with my current school district

c. How many years have you been working at your current institution?: 12 years, since we opened the school in 2008.

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Teaching credentials in: physical science, earth science, chemistry, physics, astronomy Teaching credentials in: math level 1 (through algebra 1) and level 2 (through pre-calculus) GRMS Rotary Teacher of the Year 2010 PTSA Teacher of the Year 2018 MathCounts Club Adviser Gold Level Status 2008 through 2015 (every year that I was the adviser, we made it to that level) Currently certified in First Aid and CPR No longer currently certified as a First Responder, although many of the skills have remained relevant in my life

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Math, Middle School Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

My background is astrophysics, and I spent a lot of time in front of a computer generating and cleaning images to get good data sets. The idea of continuing research, and continuing to increase our general body of scientific knowledge is quite appealing. I love working with middle school students. Part of what I enjoy so much is their sense of wonder and sense of adventure. When I can build connections between students and their world, and how the math and science they're learning actually impact their world, then it becomes magical. I'm usually able to draw on my own experiences and convey a sense of relevance. I've been fortunate to participate in 2 summer teacher exchange programs – one in China and another in India. Both have enabled me to build connections between cultures that I work with in the school. I've gained a deeper sense of who I am and where I fit into the world. And how to emphasize our commonalities rather than our differences. It's cut down on racism and bullying on campus. Having the opportunity to build on a larger, worldwide community is quite appealing.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I can easily bring examples of the science we're doing into the classroom when we talk about everything from graphing data over time (discreet vs. continuous graphing, and when you would use each one), to looking at time scales (microseconds vs. minutes vs. years vs. millennea). Teaching students problem solving skills means so much more when the problems are realistic and not artificially manufactured. We do a lot of data analysis right now around earthquakes and detectors and triangulation in Geometry class. I can't generate enthusiasm for an artificially constructed situation the way real life situations do. There is a sense of urgency and social responsibility that are inherent in looking at actual data in nearly-real time. These are students who go on to develop clean water filters, and participate in the high school robotics club and Westinghouse competitions. Their sense of compassion is huge, and this is one way to develop a larger global consciousness.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

We have open community nights twice a year, where current and former students, and their extended families, come into our library to participate in workshops on different topics. This would be a great format for me to share my experiences and some of the science behind it. I'm in contact with many of my former students, and there are eight former students of mine who now teach math and science in our district. The sense of family and continuity is very strong on our campus. Many of our parents work in engineering, and the multi-generational families are huge supporters of STEM education. We have a very active competitive math team (MathCounts, MathLeague, the AMC8, AMC10, and AIMEE competitions), an active Science Bowl team, a chess club, robotics and tech classes, and an after school tech fundraiser. This would fit right into motivating families and kids to pursue further STEM education. I think you'd also get students wanting to connect with scientists currently working in the field. The sense of connection builds excitement and community too. This could move into the high school classes as they age and continue to look at the ongoing expeditions and projects.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

Kids love learning new things and hate being bored. So I typically start with something they're comfortable with in terms of content and logical next-step thinking, then I'll ask a question that makes them pause and think. Like, "What's the next term or two in this series? Can you draw it? Can you describe it algebraically? What would the 100th term look like? What would the -1 term look like?" Stuff that takes what they know in a new direction. And they get so into it. With the prevalence of online information, part of what I teach is how to look at different sites and figure out which are accurate and which are scientifically sound. That's challenging for kids who have little experience with sorting data and input. Giving lists of sources and video links is fabulous because then I can match kids up with accurate information, motivate them, and get out of the way. I love being a reliable resource but not the only one in the room with knowledge of a topic. I'm more of a guide and less of a sage, empowering students to be lifelong learners.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I'm a good person to have around, particularly in case of emergencies. I don't tend to panic, I'm a friendly introvert who's okay spending extended periods of time alone or in cramped quarters with others, and I'm fairly optimistic. My science background gives me a good starting point for most research projects and I'm comfortable asking

questions. I can follow directions and usually figure out ways to make things run more efficiently. I’m a big fan of documenting every step of a project for later analysis. You never know what’s going to be important until you evaluate data. Flexibility is key when in a group setting, or on a research project (especially around any weather-dependent data collection.) I’ve found that a positive attitude goes a long way when working with others. I assume that everyone is giving their best every day and I try to rise to that. I’m easy to get along with. I’m open to making connections with people and that’s set me up for some great collaborations with people around the world. (I worked on telescope data in college and I'm still connected to some of the scientists from that project.)

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

My first job out of graduate school was for a naval architecture firm that was refitting oil tankers to be double-hulled (after the Exxon Valdez leak.) There were 7 of us doing computer modeling for complicated tankers. (Loading holding tanks with liquid can be tricky since it’s not like boxes of cargo that stay in place after you set them down. Liquids, from oil to chemicals to molasses, settle to the bottom of the tanks.) We had to figure out how to model ship spaces on a computer, then figure out the loading and unloading and where to reinforce existing hulls before putting on a second hull. We all respected each other and listened to everyone’s ideas. Each of us took on one aspect of the modeling and then we met to put it all together into a whole picture. Hearing from everyone gave me a better sense of where my piece fit into the overall structure. Everyone had a different strength and there was no shame in having different abilities. Everyone contributed. Working with others, building to each of our strengths while building up my own skill set, and the art of constant communication and compromise have served me well as I continued into the world of education.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

5:30 am, Wednesday 9/18/19 Gia (a 14-year old terrier weighing 24 pounds) and I went on our early-morning walk. It was dark and peaceful, with small pools of light under the streetlights every few houses apart. We got to the corner and watched a row of small creatures creep up out of the storm drain across the street. The lead animal was smaller than the 30 pound raccoon Gia had treed last week. Smaller than the roving band of feral cats that sit on top of backyard fences but larger than the ground squirrels that live in the park down the block. We could see them once they got out of the drain and onto the street - a momma and 3 babies, looking dark with bushy tails. A family of skunks. Baby skunks are adorable black and white fluffballs with big bushy tails. They don’t walk in a straight line but waddle around, sniffing every blade of grass and getting distracted by each other. They were clearly interested in playing and exploring the car tire parked next to the storm drain, but momma skunk chittered to them and they followed her across the street and down the block. And their smell followed them. Baby skunks have very little control over their scent glands, and the entire block smelled like a skunk had sprayed a few hours ago. Noticeable and faint. Gia must have learned her lesson from the last time she chased a skunk and had 2 baths within 2 days. She hid behind me, stuck her head out from between my legs, and growled softly at the retreating skunks. (Note: If this were an actual blog, I would have photos of Gia, the storm drain, and links to skunk behavior and FAQs about dog-skunk interactions.)

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I am excited to participate in polar research. Which pole is less important to me than the experience. I have spent time driving around Fairbanks and I've hiked in Denali Park so I'm more familiar with the wildlife and ecological balance in the arctic region than in the antarctic. I'm certainly open to either location. Being part of the science is what's driving me to apply, and not the romantic pull of the Antarctic.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I'm open to being there 3-5 weeks, and longer if the project goes longer. I have the months of June and July completely free of students, and I'm open to spending the whole 8 weeks on a field expedition. I could take up to 2 weeks at the start or end of the school year too, which widens the time frame. The winter months may be more challenging, since I'm not sure I can get someone to take the High School level geometry classes I teach for more than a few weeks. But if it comes to that, then I'll figure something out. My principal and department teachers are all behind me and will work with me to provide the consistently high quality education students are expecting while I'm gone.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
When I saw Star Wars at 9 years old, I wanted to be Chewbacca and fix everything. (That tells you most of who I was as a child and my STEM motivations.) I went into Astrophysics and was captivated by spectroscopy (the idea that when electrons jump around in atoms they give off chunks of light.) Being able to identify how hot a star is burning, what it’s burning, how fast it’s spinning, and sometimes even planets that orbit – all from looking at the light that comes through a telescope and filter - is incredible to me. My Master’s thesis was looking at spectra of stars and looking for accompanying planets. I’d love to work with Astrophysics and see what the latest technology and data collection look like. The neutrino collectors alone have changed from the DUMAND days, and I’d love to be a part of that aspect. But the main thing I’m interested in is contributing to our body of knowledge in the world again. I’m

open to learning about other fields of science and gaining a new appreciation of, and passion for, whatever research is currently underway. Every project you currently have open in PolarTREC looks interesting.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest
Astronomy, chemistry, physics. But it's all good. Either I can expand my current knowledge or I can learn about things I don't yet know anything about.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I've been camping many times, although less in the last few years since we have a dog who is terrified of spending the night outdoors. I love to hike, especially where there's the soothing sound of running water. My husband and I are certified as Master Divers, and I love being underwater although I haven't been diving in nearly 2 years. I'd have to go through a refresher course if I was going to be the responsible lead on a dive trip. I am not certified in ice diving or cave diving, but I am comfortable in a drysuit. I was certified as a First Responder, although that certification has lapsed and I'm only certified in First Aid/CPR/AED at the moment. I remember many of the First Responder skills and I'm fairly level-headed in emergency situations.

b. Provide a basic statement of your general health and physical condition.
I'm an active 52 year old woman. I'm on a dance team and have fairly good coordination. My immune system is strong and I have no current medical concerns or restrictions. I'm not at the run-10-k-without-walking-part-of-it level of fitness, but I can certainly walk for hours and carry things. I'm on my feet all day in my classroom. I have an artificial ankle which has restricted my SCUBA diving to recreational limits.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
We're all Apple and Chrome Books at school. Our calendaring, assignments, grading programs, and communication with students and parents is almost all online. I'm comfortable using any of the Apple software and interfaces. I don't pretend to be an expert, but I'm good at looking up how to do different things with spreadsheets and documents. At home, we use a PC. I'm very comfortable with most programs and software on that platform too. And I know how to read through FAQs and go through tutorials if a program is unfamiliar.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
We use Chrome Books a lot in class. We use them for accessing different math sites like Desmos, graphing calculators, and Khan Academy videos. I use a desktop every day for attendance, emailing students and parents, sharing files and resources with others on my team, and keeping track of assignments and calendar. I use our textbook publishing company resources for online homework and skills checks. I use a document camera and LCD projector nearly every day in classes, and we use

schoolwide video streaming for weekly student news reporting and announcements.

e. List any additional skills or information that you wish to be considered.
We have a 1912 house that I've restored a lot of. I'm good with basic repair tools and can do things like install a ceiling fan but not rewire a new circuit. I'm good at knowing my own limits.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Rachel Macmann sent her brother, Kevin Goess, the information about PolarTREC. I am on a dance team with Kevin, and he thought of me and sent me your information.

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

District websites listing summer credit opportunities. (That's how I found Lawrence Berkeley Lab opportunities.) Listings through Lawrence Hall of Science, the Exploratorium, and Chabot Space and Science Center. (Teacher outreach programs.)

12. References

Reference 1

Name Sue Goldman

Title and affiliation Principal, Gale Ranch Middle School

Email Address sgoldman@sruvsd.net

Phone Number 9254791500

Reference 2

Name Jenn Wind

Title and affiliation Math Teacher, GRMS (We teach Algebra 1 together this year, and have taught different courses together over the years)

Email Address jwind@srvusd.net

Phone Number 9254791500

Reference 3

Name Tu Neuman

Title and affiliation Math teacher, GRMS (Next door teacher, and we have taught 7th and 8th grade math together over the last few years)

Email Address tneuman@sruvsd.net

Phone Number 9254791500

Megan Berkle

1. Contact Information

Name: Ms. Megan Berkle

Email: berklem@aol.com

Home Address:
578 Washington Blvd/ #927
Marina del Rey, CA 90292 US

Home Phone: 954-610-7282

Cell Phone : 954-610-7282

Institution Name: CHAMPS Charter High School of the Arts--Multimedia and Performing

Institution Address:
6842 Van Nuys Blvd.
Van Nuys, CA 91405 US

Institution Phone: 1-818-994-7614

Classroom/Office Extension: Campus South

Institution Fax: 1-818- 994-9381

Institution Website: https://www.champscharter.org/

Other relevant websites:

Supervisor's Name: Linda Pierce

Supervisor's Email Address: lpierce@champscharter.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Charter High School of Arts-Multimedia and Performing (CHAMPS) is an independent public charter high school (grades 9-12) offering small arts-infused academic classes, as well as comprehensive academies for liberal arts, dance, drama, film, music, digital arts and robotics. Students come from diverse backgrounds and a wide geographic area from within the San Fernando Valley and various parts of Los Angeles County. CHAMPS is unique in the greater Los Angeles community of private and public high schools because of its competitive college preparatory curriculum, wide selection of arts specialties and electives in concert with small academic classes. All classrooms on campus are equipped with LCD projectors, high speed Wi-fi access, and mac book computers.

d. Type of School (or students you work with): Other (describe below)

Other Type of School Public Charter School

e. What is the population of your annual audience or school (estimates are fine) 794

f. School Ethnicity:
0 % - American Indian or Alaska Native
3 % - Asian
9 % - Black or African American
38 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
40 % - White
10 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 34

h. Average class or audience size 28

i. Total number of students/audiences you teach in a year 147/ grades 9-12

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

School year start date: August 14 School year end date: June 11 Thanksgiving vacation: November 23- December 1 Christmas vacation: December 21- January 12 Spring break: April 4-12 Summer break: June 11-August 12

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): B.A. Biology

Bachelor's Degree (Minor):

Masters Degree (Discipline): MSc Marine Biology

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: fifteen

c. How many years have you been working at your current institution?: three

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Certifications: *Professional Teaching Certificate- State of Florida *Clear Single Subject Teaching Credential- State of California *Clear CLAD (Cross cultural, Language and Academic Development Certificate)- State of California *Certificate of Archaeology- UCLA Licenses: *PADI Open Water Diver Awards: *Carnegie Marine Lab Centennial participant- Key West, Florida *SELIS (Sun-Earth-Life-Interactive-Systems) workshop- Nagoya, Japan *Coral Reef Ecology course- St. George, Bermuda *Living Ocean Foundation CREW teacher at sea- Gambier Islands, French Polynesia

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology

Other Subjects Secondary Marine biology

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I have always been fascinated with the polar regions due to their remoteness, unique marine life, and extreme climatic conditions. I am an explorer and traveler who thrives on visiting places in the far reaches of planet Earth. I have challenged myself by visiting Mongolia and Iceland in the heart of winter. It is my goal to see Arctic marine life first hand and Arctic sea ice in the summer months. I look forward to learning the equipment scientists use to track marine mammals in the wild. Professionally, I am a high school Marine biology teacher. However; polar science is not a specific topic in my course curriculum. I feel PolarTREC will give me the engaging learning experience that I need to design a unit and NGSS activities on the Arctic. I would also like to create a number of lessons on Narwhals that can be used by me and teachers around the world. As a previous teacher at sea, I would like to develop an excellent form of communication from the north pole. My goal is to get clear reception so my students can see me in the field and have the opportunity to ask questions about expedition progress.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

My students benefit from my experiences both in and out of the classroom. They enjoy hearing my stories about my global ventures and ocean encounters. On a daily basis, I incorporate the real world into my curriculum. I make it a priority to integrate the latest advances in research. In my Marine Biology class, I have added a unit on climate change and human impacts on the ocean environment. My goal is to design an entire polar guide that can be used by educators in the U.S. and beyond. Most secondary schools have Biology, Environmental science, Earth science, Chemistry and Physics. In these courses, there is little to no mention of the Arctic or Antarctic. I want to show my students that with technology classes can be taught from a distance. I think live streaming to my school would change the student’s lives. They could envision me beyond the classroom and gain a better perspective of life as a field biologist. My students may never get the opportunity to see the polar regions. However, through education they can gain an appreciation for its value and learn why it is important to preserve it for future generations.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general

public. (200 words maximum)

I will begin by sharing my experience and knowledge with teachers online. There are a number of amazing blogs used by scientists and educators. The 'Bridge' is an active forum where marine educators exchange ideas and questions. It is a site sponsored by NOAA Sea Grant and the National Marine Educators Association. I hope to develop a series of virtual podcasts that my students and general public can listen to on their iPods. The podcasts will contain information about the expedition and the research being conducted. I will assign the podcasts to my students for homework over the summer so they can follow me throughout the expedition. Upon returning from the Arctic, I will post articles and pictures of the expedition on my school website. The media will be great publicity and promote the quality of education the school has to offer. In the future, I would like to create a universal website for ocean educators. The site would contain lesson plans, video clips, and teacher feedback on professional development opportunities. There are millions of websites but only a few that provide curriculum materials to teach polar science in the classroom.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I approach teaching complex topics with enthusiasm and determination. I feel the passion in an educator is infectious to the students. I bring science alive in my classroom through technology and tack. I use power-point presentations, video clips, virtual dissections and podcasts to enhance student understanding. I have integrated hundreds of hands-on activities into my curriculum to increase student engagement and academic achievement. I discovered that most students are visual learners so they need to see it to believe it. I take the students out of the classroom and into the field so they can experience science first hand. They need to understand how each and every topic is applicable to the real world. In the state of Florida, educators are not required to teach students about hurricanes and tropical storms. However; this is an important topic that often impacts the students and local community. I designed and integrated a unit into my curriculum on tropical storm formation and preparedness. The students and I ventured to the National Hurricane Center in Miami and the Hurricane house in Boca Raton. They had the opportunity to meet meteorologists and emergency response personnel. The lesson was fun, interactive and potentially life- saving.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I consider myself to be a person of many trades. I am a research scientist, educator,

diver, conservationist, archaeologist, photographer, and travel journalist. My experience and background gives me a unique set of strengths that I could bring to the program and research team. I have amazing ideas of how to educate teachers, general public and scientists about PolarTREC. The program has resources and opportunities that can be shared with many others through technology and public outreach. I have a talent for transforming data and research into lessons and useful curriculum materials. I would like to help PolarTREC by traveling around the U.S. and world giving workshops to educators on ways to incorporate polar science into their classrooms. I am a leader and that has a strong passion for the outdoors. I enjoy the challenge of living and working under extreme conditions. I have lived and traveled in parts of the world that are very hot and those that are below freezing. I have extensive training in first aid and wilderness medicine. I possess excellent navigation skills using technology and natural landmarks. I am a hard worker who is dedicated to accomplishing anything I put my mind to.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

In 2004, I taught Marine biology at a small school in Micronesia. I also was President of a small NGO called the Luta Marine Education center. The NGO had fifteen team members who were local fisherman, government workers, teachers and dive shop owners. My role as the leader was to hold bi-weekly meetings, authorize any financial decisions, plan island events, and clarify member responsibilities. The role required me to be organized, responsible and have excellent communication skills. The majority of the members did not have phones or internet access. Therefore; in order to communicate with them I had to go to their business or place of residence. My goals for the year were to be respected as a leader and accomplish all tasks that were proposed. The NGO had several projects such as planting trees to prevent upland erosion to near shore reefs, marine flat monitoring and buoy installation in the marine protected area. I conducted two island wide beach clean-ups in commemoration of Earth day and International coastal cleanup day. The events were very successful and required the collaboration of all team members. I was a positive motivated leader who encouraged member involvement in each activity.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

It was 5 am and I was standing on the side of the road waiting for friends to pick me up. It was dark out and the temperature was cool but crisp. I was so excited for the adventure we were about to embark on. They arrived and we packed all the rest of my gear into the jeep. There was all sorts of equipment including ropes, helmets, lights, and notepads. The journey took us about four hours along a windy highway. Upon arrival in the desert we parked the car, geared up and headed out on our hike from the trailhead. The terrain was sandy and had some canyons lined with massive boulders towering over twenty feet in height. There were all sorts of arid plants such as cacti and yucca. After about twenty minutes we came across the ruins of an old stone house. We explored this area where we observed some small artifacts including an old bed frame. Later in the afternoon, we reached our destination which was a gold mine that had been abandoned since the 1960's. It was gated off but we saw tailing piles and pieces of mine car track.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Arctic

Please explain your preference
In the Arctic, the summer sea ice is decreasing in extent and thickness. This is impacting marine mammals that rely on the ice for hunting, breeding, and resting. It is affecting their distribution, abundance, and physical health. The narwhal is susceptible to this issue because they are highly specialized and have difficulty altering their habitat. As this issue continues, it is imperative to increase our education and conservation measures. The youth of today need to learn about this species before it is near extinction. It is my role to outreach and develop resources for teachers to implement in their classrooms.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I am NOT able to participate in an expedition between April 4th and June 11th. I would prefer to participate in an expedition that is 2-3 weeks in duration.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)

I am interested in how marine organisms are adapting to climate change and human intervention. They are altering their behavior and physiology for their species survival. Reef corals are migrating to deeper water to adjust to the increase in water temperature. They are changing shape to capture more light in the darkness. A warm-blooded fish was recently discovered, a few species of sharks are walking, and some are cloning themselves. These examples show that evolution is happening and quicker than expected. My interest in this topic began fifteen years ago when I was in graduate school. I was assessing reef health off the coast of Florida. I noticed that increased ocean temperature was causing the corals to stress. Some species could handle the stress and grew tolerant while others had high levels of mortality. The corals spawn a specific time of year based on warm water and moon phase. However; for three years they did not spawn and have seemed to have lost their environmental rhythm. This was due to irregular fluctuations in surface temperature. The corals decided to invest their energy in growth instead of reproductive output. These changes are causing a drastic shift in the reef ecosystem of South Florida.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I do not want to be considered for an expedition in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I do not want to be considered for an expedition in this subject area

Ecology and Biotic Systems I do not want to be considered for an expedition in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify) I would really enjoy an expedition in this subject area

Other Areas of Scientific Interest
I am interested in Marine Mammal Ethology and looking at narwhal behavior as an evolutionary adaptive trait.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
Yes. I am applying to work with Dr. Martin Nweeia. He is a researcher and professor for Harvard and Case Western Reserve University. His contact email address is martin_nweeia@hsdm.harvard.edu. Dr. Martin Nweeia has spent several years focusing on the anatomy, evolutionary biology, and function of the Narwhal tusk. He has concluded that the tusk is primarily associated with males and is a sensory organ. The organ is believed to be capable of detecting variables of pressure, temperature and particle gradients in the surrounding seawater. The tusk can detect variations in salinity levels in order to demonstrate fitness to females. This ability may help them locate females in estrus or foods essential for newborns. I would like to join Dr. Nweeia this summer as he continues his research on tracing the path and behavior of this extraordinary mammal. In the field, I would assist researchers with collecting and analyzing genetic samples on site, conducting holographic scans of samples in the field, and drone recordings of narwhal behavior.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I spend all my spare time in the outdoors hiking, caving, camping, rafting, skiing, and mountain climbing. I have been an outdoor leader as well as an active part of a team. I have no fear of heights, darkness or small enclosed spaces. I am an emergency first responder instructor and have a certification in wilderness first aid. I carry an extensive first aid kit every time I step out in nature. I am an open water scuba instructor who has been diving for 31 years. I grew up on and around boats fishing and sailing. I have a Florida small boat license, Australian ship master's license and a Marine radio operators license. In graduate school, I had to drive a boat in order to conduct my reef research off the coast of Florida. I served as the boat captain and scientific project lead.

b. Provide a basic statement of your general health and physical condition.
I maintain exceptional cardiovascular fitness due to my active lifestyle. I am willing and able to lift heavy equipment up to 50 pounds. I do not hesitate to work long hours in extreme climatic conditions. I have excellent physical endurance which guarantees successful completion of all assigned tasks. I have an international vaccination card due to recent travel overseas.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am familiar with PC but presently own a Mac Book Pro. In 2014, I began using the Mac while teaching in an international school in Hong Kong. I have been using Mac for five years and it has been an intuitive but cumulative learning process. I am comfortable using my computer in international settings as I have taught class in Hong Kong, Tahiti, and the Bahamas. On a daily basis, I connect my computer to an LCD projector using both USB and HDMI connections. I am proficient with apple software including pages, keynote, and notes. I am also competent and experienced in google mail, drive, forms, and classroom.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
On a daily basis, I have my personal Mac Book computer to show power-point presentations, video clips taken from a variety of internet resources, and student interactive games. To enhance my lectures I download and edit photos in Adobe Photoshop, Windows Photo Gallery or Microsoft Office Picture Manager. I use Microsoft Word to create in class assignments, tests, and quizzes. I utilize Microsoft

Excel to create spreadsheets to organize large data sets. At work, I use Skype and Zoom for my students to participate in live stream sessions. We have interacted with a number of scientists and research ships around the world from our classroom. Personally, I have an old Samsung flip phone and an iPhone 7. I use the iPhone with an iOS operating system to take photos as it has excellent image quality. I communicate with friends and family around the world using Whats App. It is a very useful tool as it is fast and the call reception is clear. I make use of Facebook as a platform to keep updated on local events and science news. On adventures, I use my GoPro Hero 7 to take action and wide angle shots. It has spectacular video quality and has a chest and helmet mount.

e. List any additional skills or information that you wish to be considered.
I have been scuba diving for 31 years so am very comfortable in and around the water.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. Yes

Program Information In 2013, I was a CREW 'Teacher at Sea' for the Living Oceans Foundation on their expedition to the Gambier Islands, French Polynesia. The research was aboard the ship M/Y Golden Shadow and part of the Foundation's Global Reef Expedition. It was part of a comprehensive six-year journey to map and evaluate coral reef habitats around the world. I was at sea for 12 days and teaching in local classrooms in Papeete for 3 days.

If yes, did you complete all program requirements? Yes

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
On the M/Y Golden Shadow, one of my roles was to live stream using Skype to classrooms around the world. The Skype sessions were to give students an idea of ship life, resources, and current research. Using Skype required most of the ships WiFi bandwidth. My signal was strong at times and weak at others. I learned that technology can be challenging but an amazing resource from remote locations. It provides an opportunity for students to see their teachers outside the classroom, traveling, and partaking in hands-on science. I feel that PolarTREC will allow me to build on my previous knowledge. To make communication from the field faster, more effective, and beneficial for students during the expedition.

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Ted Davis

Title and affiliation President/ Hawespiper Foundation/ previous work colleague and mentor

Email Address oceanscienceguy@gmail.com

Phone Number 1-954-683-5196

Reference 2

Name Ashley Ault

Title and affiliation Middle School Coordinator- The Harbour School of Hong Kong/ previous work colleague

Email Address Ault.ashley@gmail.com

Phone Number +852-9529-9895

Reference 3

Name MIchael Eliot Barth

Title and affiliation Managing Director GNH Partners - Investment and Development/ Fellow explorer and Director of the Hong Kong Explorers club of which I am an associate member

Email Address mebarth@me.com

Phone Number +852 9618 8850

Parag Bhuva

1. Contact Information

Name: Mr. Parag Bhuva

Email: parag.bhuva@gmail.com

Home Address:
8250 Georgia Ave #915
Silver Spring, MD 20910 US

Home Phone:

Cell Phone : 8606900881

Institution Name: Washington Latin Public Charter School

Institution Address:
5200 2nd St NW
Washington, DC 20011 US

Institution Phone: 2022231111

Classroom/Office Extension:

Institution Fax:

Institution Website: latinpcs.org

Other relevant websites:

Supervisor's Name: Kara Brady

Supervisor's Email Address: kbrady@latinpcs.org

2. Demographic Information

a. Gender: Male

Race: Asian

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): My school is an urban public 5-12 school whose demographics reflect that of Washington DC. The students come from all seven wards of DC, and so have a mix of income levels. My students do not have 1-1 laptop access - we use shared laptop carts whenever required.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 700

f. School Ethnicity:
0 % - American Indian or Alaska Native
3 % - Asian
50 % - Black or African American
9 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
35 % - White
3 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 26

h. Average class or audience size 17

i. Total number of students/audiences you teach in a year 115

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
2019-20 Dates: First Day: 08/22 Thanksgiving Break: 11/27-12/1 Winter Break: 12/21-

1/5 Spring Break: 3/21-3/29 Last Day: 6/17

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Psychology (BS), Anthropology (BA)

Bachelor's Degree (Minor): History

Masters Degree (Discipline): Curriculum and Instruction, Secondary Social Studies (MA)

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 7

c. How many years have you been working at your current institution?: 3

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
State of Connecticut Teaching Certification #026 International Baccalaureate Middle Years Program Training Certification 2018 National Geographic Grosvenor Teacher Fellowship 2018 Insight Meditation Society Training Certification Philips Exeter Academy Harkness Training Certification

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Primary (Grades 1-5), Secondary (Grades 9-12), Pre-Service Teacher Training

Other Primary Assignment

b. What subjects do you teach? Check all Secondary World and U.S. History, Secondary Math, Secondary Physics, Secondary Social Studies

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

My mission as an educator is to make student-driven learning a commonplace in schools. I believe that in every classroom, students must be challenged to lead. This means they are the ones making connections with previous knowledge, applying their learning, and most importantly uncovering new knowledge with the help of their peers. In science classes, this means that students will emulate scientists by actually uncovering the laws that govern our world on their own. This deepens their understanding as they will produce, rather than memorize content. In such a classroom, the onus of their learning is on the students. The teacher in these lessons plays the role of a coach to guide children's pursuit of knowledge rather than one who simply gives them the answers. It is only this type of student that will develop a love for learning, a collaborative spirit, and have the courage to apply their knowledge to create bold solutions for our world. I want to partake in Polar Trec because it will provide me with the relevant scenarios and experiments needed for such lessons plans. I will be immersed in the field with knowledgeable experts who model this dedication to uncovering new knowledge everyday.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Within my classroom I desire to connect not only the science described above but also to contextualize the changes occurring through a historical and economical lens. This is where the immersion in cultures of the region will provide me the stories to better understand the effects of climate change. I am deeply interested in the political ramifications of a changing climate as more resources become available for extraction. These political questions will drive much of the challenges that my students will face and make decisions on as they get older. I will share this information through the same model described above, but for a history classroom. So I will provide students with the necessary background information to access the new material, and then give them the primary sources, the perspectives, and the hard data to create their own understanding of the ramifications of our changing climate.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I currently create lesson plans for National Geographic through my Grosvenor Teacher Fellowship. With the numerous lessons I will be able to create through Polar Trec, I intend to post them for the general public to use through National Geographic's Education website. I hope to help them build their site to become synonymous with easily accessible, relevant, and free student-driven lesson plans. I addition I also plan to post all of the information and lesson plans I create within the professional learning communities that I am a part of, such as National Geographic Educators, AP World History teachers, and twitter teacher communities such as #edchat.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

When I create lessons, I first consider the audience – namely what their age, background knowledge, and skills are. In order to accurately understand this, I create a pre-assessment to gauge where their understanding and skills are. After I create this, I break down the topic into the core components necessary to understand. From there, I create activities that target each of the necessary understandings and then create lesson plans from them that will allow the activities to build on each other to scaffold up to the complex topic. For the content itself, my biggest priority is to make it relevant. I anchor my lessons in current issues by connecting themes, essential questions, or applications of the material to the present world. For example, when I taught waves in physics class, used the story of how the SOFAR channel was used in WWII for the allies to triangulate any of their downed pilots in the entire Pacific Ocean long before GPS was invented. In this activity, I had them role play as Japanese who had captured an American pilot. Armed with only the principles of how waves work, they had to figure out how a SOFAR bomb worked.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

When others are dependent on my work, I ensure that I follow through on my responsibilities. In doing so, I encourage punctuality and we as a team will be more efficient. I also am very adept at data analysis, especially using programs such as Excel. I regularly run data analysis using Excel for my students' test scores and am able to analyze and interpret data to generate conclusions. In addition, I am adept at reading and writing research papers, which I did well during my Master's program and whenever I write proposals for school programs. Finally, I happily partake in any physical activity needed, from shoveling snow to going on long hikes to collect data. I recognize that I'll be there to learn and help out in any way that I can without

getting in the researchers’ way.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I am very good at helping to build productive communities. In every school that I have taught at, I spend the first year adjusting to the culture, then look for what gaps I can fill to make the whole school better. Many times this means learning a completely new skill to make others’ lives easier. In my current school, during my first year, I quickly noticed that our 403(b) options were poor, so I asked questions to our financial director, spent at least 40 hours researching and contacting numerous other providers, and together with the finance director helped to make a much more informed choice in our offerings. This was done without much additional work for the finance director, without stepping on her toes, and with hours of reading to learn about a side of education that I previously knew nothing about. By doing such things, I prioritize the wellbeing of others. During our expedition, the researchers and I will be spending long hours together, likely in cramped quarters where the possibilities of tension can run high. In such a situation especially, it’s vital that I consistently ask myself how I can make the others’ lives easier.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Atop my apartment on the 9th floor, I have a perfect view of it. Before I hear the commotion of the street below, before I can even smell the bakery next door, I can see it. And how can I not put everything down for a moment and just watch? The beautiful reds, oranges, and purples light up the sky like messengers announcing the arrival of the king. So I sit. My favorite day was Monday, when warm rays of the sun enveloped me like my mother when I was young. The beauty of the sunrise is that it is available to all, rich and poor, sick and healthy, old and young. It reminds me simultaneously that I have a brand new 24 hours and 24 hours less. I do not need an expensive plane ticket to see it, nor a special camera or an admission fee. I simply need to sit, take a moment, and wait with an open heart to greet my oldest friend. Happiness stems from gratitude, and gratitude from appreciation. I find that the more often I pause, the more appreciative I am of how lucky I am to experience just a sliver of this world.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Arctic

Please explain your preference
Through my experience with the Grosvenor Teacher Fellowship, I traveled the fjords of Norway and Arctic Svalbard. I was fascinated by the cultures I encountered, the raw beauty, and a strong desire to work to save it. I wish to return in order to deepen my understanding of the land.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I would prefer to participate for around three weeks. I will definitely be unavailable between: -May 26 – June 12, 2019 -August 15- September 30, 2020

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I'm especially interested in human cultures, atmospheric measurements, space, and engineering. I'm fascinated by Physics and space sciences because they represent an vast area of human understanding that we don't yet have. The more I learn about how our universe works, the more in awe and inspired I am of how beautiful life is. I weave Physics continuously into my history lessons, as it is the language of the universe and so humbling when learnt. This is certainly the area that I would most be interested in learning as a person in love with Physics. Human cultures I'm especially interested as a history teacher and an anthropology major, I would love to learn about how climate change is changing cultures and lifestyles in the Arctic. As mentioned before I'm also very interested in the geopolitical ramifications of climate change on the countries nearest the North pole. I would also be interested in studying engineering and technology. I constantly try to contextualize for my students the wonders of technology in aiding us to understand the world. I began my college career as an engineering major, and my background from those first years has aided me tremendously when connecting content from my lessons to the present day.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
Most of my vacations center around hiking and camping outdoors. I have hiked through Banff and Jasper, in Iceland, and have trekked to Machu Picchu. I am very comfortable living and staying outdoors. I also kayak and canoe often and am a strong swimmer.

b. Provide a basic statement of your general health and physical condition.
I am fortunate to be in very great health. I have no bodily injuries, physical handicaps, or allergies. I exercise regularly, running at least 3 miles three times per week. I also bike to and from work daily (6 miles) and do yoga daily.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am fluent in both Mac and PC. I currently have a Mac, but grew up solely using PCs until 7 years ago when I switched to a Mac.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I regularly use my laptop, my Sony DSLR camera, Google Chrome, Powerpoint, Word, and have extensive experience with Excel. I also occasionally use iMovie to edit films, and have brief experience in SPSS, R, and GIS. I pick up new software quickly.

e. List any additional skills or information that you wish to be considered.
I have a lot of stamina in physical activity, am proficient in carpentry, and building materials. I also speak Gujarati and Hindi, and have basic fluency in Spanish.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Kara Brady

Title and affiliation Director of Upper School

Email Address kbrady@latinpcs.org

Phone Number 2022231111

Reference 2

Name James Kelly

Title and affiliation Director of Middle School

Email Address jkelly@latinpcs.org

Phone Number 2022231111

Reference 3

Name efoley@latinpcs.org

Title and affiliation Instructional Coach

Email Address efoley@latinpcs.org

Phone Number 2022231111

2020-2021 PolarTREC Educator Application

Lauren Boop

1. Contact Information

Name: Ms. Lauren Boop

Email: laurenboop25@gmail.com

Home Address:
2411 University Dr, Unit B
Durham, NC 27707 US

Home Phone: 9198801629

Cell Phone : 9198801629

Institution Name: Alston Ridge Middle School - Wake County Public Schools

Institution Address:
7833 Fussell Ave
Cary, NC 27519 US

Institution Phone: 919-694-8044

Classroom/Office Extension:

Institution Fax:

Institution Website: https://www.wcpss.net/alstonridgems

Other relevant websites: Wake County Public Schools: https://www.wcpss.net/

Supervisor's Name: Mr. Rick Williams

Supervisor's Email Address: lboop@wcpss.net

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): My school is a middle school (grades 6-8) in a suburban population just outside of Research Triangle Park in North Carolina. Overall, my school has a middle class population with great access to technology. I have 20 laptops in my classroom.

d. Type of School (or students you work with): Public

Other Type of School N/A

e. What is the population of your annual audience or school (estimates are fine) 950

f. School Ethnicity:
0 % - American Indian or Alaska Native
40 % - Asian
13 % - Black or African American
15 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
29 % - White
3 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe: N/A

g. Percentage of students who receive free or reduced lunch: 18.2%

h. Average class or audience size 27

i. Total number of students/audiences you teach in a year Approximately 110 students in a year

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
My school runs on a year-round schedule. My big breaks are in September,

December, March and June. I get approximately 3 weeks off during each of these dates. School starts mid-July and goes until the first week of June on my calendar.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Middle Grades Education - Certified in Science, Social Studies and English Language Arts

Bachelor's Degree (Minor):

Masters Degree (Discipline): Middle Grades and Secondary Social Studies Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 8

c. How many years have you been working at your current institution?: 1 - It is a brand new school that has opened up.

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
1. National Science Foundation RET Fellow - Summer 2018 •Received a Research Experience for Teachers Fellowship through the National Science Foundation that allowed me to work in the Movement Biomechanics Lab at North Carolina State University, improve and advance STEM education in North Carolina and create curricula for Teach Engineering: K-12 STEM Curriculum 2. North Carolina Kenan Fellows Teacher Leadership Externship - April 2013-May 2015 •Worked in microbiology and immunology labs at NC State and UNC-Chapel Hill and then partnered with the 4-H Organization to create innovative curricula that was piloted and published in North Carolina; published by the National 4-H Organization in September of 2017. See the published work here: https://nc4h.ces.ncsu.edu/wp-content/uploads/2018/09/MS-microbio-beginning.pdf?fwd=no 3. TEACH Fellowship - November 2016 •Received a prestigious national fellowship through the Bilateral US-Arab Chamber of Commerce to discuss STEM-based best practices and educational policy with educational and business professionals in Bahrain, UAE and Qatar •Presented a professional development on the best ways to employ STEAM project-based learning to educational officials of the United Arab Emirates' Ministry of Education 4. Global Teachers to South Africa - June 2016 •Received an educational

award to travel to South Africa through Go Global NC to explore the disparities in access to wealth, resources and education in South Africa through school tours and immersive cultural experiences 5. National Humanities Center – Teacher Advisory Council - August 2018-July 2019 •Served as a teacher leader in Humanities Education for the United States on the Teacher Advisory Council for the National Humanities Center with a focus on curriculum design, teacher agency and innovative technology in the classroom 6. North Carolina Museum of Art – Teacher Advisory Council - August 2018-July 2019 •Served on the Council as an advocate and community partner to provide the NCMA insight for their online course on Art and Global Awareness 7. Project-Based Learning Fellow - May 2016-June 2017 •Received a Fellowship from the North Carolina Museum of Natural Sciences to become a Project-Based learning ambassador and curricula developer in North Carolina 8. STEAM PBL in the Social Studies Classroom - February 2016 •Presented at the North Carolina Council for Social Studies conference on how to infuse STEAM Project-Based learning into a Social Studies classroom 9. African Diaspora Fellows Program - Summer 2015-April 2017 •Participated, developed historical inquiry lessons and created resources for the program that is sponsored through the Duke-UNC Consortium for Latin American and Caribbean Studies, the Department of African, African American and Diaspora Studies at UNC and NCDPI 10. Wake County Public Schools Curriculum Writer - August 2018-Current •Serve as a social studies curriculum writer for one of the biggest districts in the nation at over 160,000 students

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8)

Other Primary Assignment Co-Department Chair for the Social Studies Department, Digital Portfolios Team, Wake County Public Schools Curriculum Writer & Presenter

b. What subjects do you teach? Check all Middle School Social Studies

Other Subjects I currently teach 7th grade world history, but have also taught 7th grade science.

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

As a passionate teacher leader and change catalyst, I have dedicated my career to improving educational systems and engaging students through inquiry-based learning. I am one of the unique teachers that has a passion for both science and the humanities. I regularly participate in fellowships and leadership opportunities that will allow me to access real world issues and bring them back to my classroom. After attending the national Citizen Science conference in Raleigh, NC on a scholarship, I was inspired to travel to the Polar Regions and learn more about the impacts that the state of our world is having on the regions. I am particularly interested in doing research with a scientist and then evaluating how legislation across the world impacts the research and the environment. I would be able to marry my passion for science and world history to directly impact student agency. I hope to gain a greater understanding of how to create globally aware citizens that understand the interconnectedness of the world and how to promote environmental stewardship in my local and global communities. I also hope to be inspired and to use my experience in my curriculum writing for Wake County Public Schools.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Throughout the program, I would also share my journey on Twitter and my teacher Instagram so that my students could follow along in a format that reaches them. In my classroom, we have critical conversations about the world more broadly and about equality, equity, race, religion, etc. We discuss making progress, bridging the gap in access to resources and the creation of a greater society. There is a deep understanding about how diverse our world is from tiny microbes to huge landscapes, and the cultural practices of different peoples. As I went throughout my journey, I would pose questions, prompts and challenges related to these topics to my students so that they could be an active part of the action research. I would want to engage them throughout my journey so it can help me inform the team what questions young adolescents have about science research. I would also use these questions to design curricula that will encourage them to advocate for systemic changes in environmental policies throughout the world.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general

public. (200 words maximum)

My teaching and educational coaching strives to encourage an understanding of the restorative justice, structural challenges, engineering design and sense of community that other societies in the world display, and how to teach these concepts to young adolescents. I will always be an advocate of the role of education being to create ethical and humanistic learners of tomorrow, and I take every opportunity to make sure that this vision can be created and shared. As a social studies curriculum writer for one of the biggest districts in the nation, I would use my experience to design curricula on legislation and environmental policies in the current era to directly impact the understanding of over 160,000 students. I would also want to partner with classrooms in different hemispheres about the problems our societies are facing, and have students work together as global citizens to address policies on the particular scientific field in which I would be doing research. There would be discussion on the balance of urbanization with conservation of resources, and our human-environment interaction footprints. If I am chosen for this opportunity, I will continue to provide learning opportunities for my students based on my experience, share out with my teachers in my county and state, and present at conferences.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

It is imperative that students understand the why when they are learning a new or complex topic. Students also have to understand the relevance of the topic and how it connects to their lives. When I am introducing a new topic, I always make sure to explain these things through an engaging activity. Many times this includes bringing in a community expert. Participating in this experience would give me access to some of the best and brightest community experts in our world. These community experts and student-centered inquiry would allow my students to become empowered to make complex choices and to understand the interconnectedness of the world. After explaining the why, I present real-world challenges to my students in collaborative teams and teach them the processes to creatively analyze, innovate and solve issues. By consistently incorporating different points of view, I encourage my students to think bigger than just our classroom and our school. I want my students to have the skill-sets and decision-making processes they need to impact their own communities, prepare for careers in the 21st century and help advocate to improve our world.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

Professionally, I have many strengths that align with the core mission of the PolarTREC program and field research teams, but one of my greatest strengths would be marrying science with the humanities to participate in research and design curricula with a diverse perspective. I have also participated in research before in the Movement Biomechanics Lab, and microbiology and immunology labs at NC State. I traveled to the Middle East and South Africa on educational fellowships. I understand the expectations of action research field experiences and designing curricula for large audiences. Personally, I am hardworking and driven, but very flexible. I also know how to add humor to all situations. I have traveled to almost 30 countries on a very low budget because my desire to see the world and bring it back to my students is so great. All of these characteristics would make me an asset to a research team.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

As a former competitive soccer player to a current educator, I firmly believe in the power of collaboration, communication and being a team player. I am always looking for ways to partner with others to make impacts in the educational field. For my Kenan Fellowship, myself and two other middle school educators had to take our individual lab experiences and write a curriculum together to be sent the NC 4-H and National 4-H programs. I provided background knowledge on the history of microbes throughout our world and used my experience in the microbiology lab studying salmonella in poultry to help design our six lessons. Through many rewrites and pilots, that curriculum was successful and has now been published by the National 4-H. I have always been a member of a team (both personal and professional) in all aspects of my life, and I will continue to push these important skills on to the next generation.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Friday, October 4 "WOW," was the only thing I could mutter as I glanced around my classroom. For a few weeks, my students have been working incredibly hard to contextualize colonization. Through their research, they worked collaboratively in groups to design a series of three podcasts. Today was our long-awaited Podcast Listening Day. Around the room, students attentively listened to their classmates' podcasts with their headphones on. Student agency, learning and engagement were evident throughout the room. I never thought I would ever have a room so quiet, but so engaged at the same time. It felt like a coffee shop; my students were individually immersed in a learning experience in a 21st century format. Many students said they would not like podcasts and only wanted to watch TV, but their minds quickly changed when they started to create theirs. Many even told me that they started to listen to different series during their lunch time! Talk about a positive outcome! Students, what other real-world projects would you like to create? Teachers, have you ever used the NPR curriculum on podcasts? Let me know your thoughts! -Lauren Boop

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
I have always been fascinated with Antarctica and the Antarctic Treaty System. I would love to have my students study my science research and the impacts on legislation in relation to the Antarctic Treaty System. I teach at a year-round school, so my time off correlates more with the Antarctic expeditions which would help lessen my time away from my students. I would prefer to have an expedition in September or December to early January because of my time off with kids (3 weeks at a time). However, I would be flexible with January and February as well.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I would prefer 3-4 weeks to minimize time away from the classroom. I would not be able to do an expedition in April, May, July or August for Arctic expeditions. I could only do June. For Antarctic expeditions, September or December are highly preferred, but I would be flexible as would my school.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
As someone that loves science and history, I would love to do research in technology and engineering, human and social systems, and ecology and biotic systems. Getting to combine both my passions, I would use my research to have my students also study legislation in the 20th and 21st centuries on any of these areas of science. I am also very interested in geo-literacy and how it impacts civic engagement and communities.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify) I am somewhat interested in this subject area

Other Areas of Scientific Interest
Geography and politics related to Antarctica and the Antarctic Treaty system

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
I am willing to work with any researcher.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I went to college in the mountains of North Carolina. I regularly camped and hiked. I am very comfortable outside and prefer to be outside. I live by REI's motto of #optoutside.

b. Provide a basic statement of your general health and physical condition.
I am in great general health and have no physical limitations. I am currently training for my fourth half marathon and regularly hike. I just hiked Huayna Picchu in Peru in June 2019.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I personally have a MAC and have a PC at school. I am skilled at operating both.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
As a teacher that does not use tests in her classroom but utilizes performance tasks, I am regularly using all types of technology and help my students incorporate them into their learning products. For example, I have used CoSpaces to incorporate VR and Scratch to incorporate coding into my science and social studies classrooms.

e. List any additional skills or information that you wish to be considered.
I am particularly skilled at connecting with people and building connections across topics. I am curious and full of energy. These characteristics allow me to be an excellent member of a research team.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information N/A

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
N/A

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain N/A

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title
Citizen Science Conference in Raleigh, NC

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
Getting in touch with big public school districts in the United States and having their science departments advertise them

12. References

Reference 1

Name Dr. Katherine Saul

Title and affiliation Associate Professor, Department of Mechanical and Aerospace Engineering at NC State University

Email Address ksaul@ncsu.edu

Phone Number 919-515-1273

Reference 2

Name Dr. Laura J. Bottomley

Title and affiliation Director, The Engineering Place and Women in Engineering at NC State University

Email Address laurab@ncsu.edu

Phone Number 919-515-3263

Reference 3

Name Mr. Rick Williams

Title and affiliation Principal of Alston Ridge Middle School

Email Address rwilliams5@wcpss.net

Phone Number 919-694-8044

Whitney Bush

1. Contact Information

Name: Ms. Whitney Bush

Email: vela.wsb@gmail.com

Home Address:
65 Ocean Ave 2C
Brooklyn, NY 11225 US

Home Phone:

Cell Phone : 6085768181

Institution Name: Middle School 839

Institution Address:
713 Caton Ave
Brooklyn, NY 11218 US

Institution Phone: (718) 686-2730

Classroom/Office Extension:

Institution Fax: (718) 686-2735

Institution Website: https://ms839.org/

Other relevant websites:

Supervisor's Name: Lauren Shookhoff

Supervisor's Email Address: lauren.shookhoff@ms839.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I work in a very diverse school in Brooklyn. We have students coming in from all of our district (15) ranging from students living in shelters to students who have country houses upstate. We were part of the districts initiative to make all middle schools lottery based entry and remove screened middle schools in an effort to diversify all schools both racially and economically. We are a 6-8 public middle school. We are located in the Kensington neighborhood which is itself known for being diverse.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 368

f. School Ethnicity:
8 % - American Indian or Alaska Native
14 % - Asian
15 % - Black or African American
26 % - Hispanic or Latino
1 % - Native Hawaiian or Other Pacific Islander
36 % - White
% - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 45

h. Average class or audience size 32

i. Total number of students/audiences you teach in a year 128

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

School begins the Thursday after labor day and ends the 26th of June. There are weeks off around Christmas, Presidents Day, and Easter.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Wildlife and Wildlands Conservation

Bachelor's Degree (Minor): Creative Writing

Masters Degree (Discipline): Special Education (7-12 focus)

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 5

c. How many years have you been working at your current institution?: 3

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
NYC Department of Education Tenure

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Thanks to both my parents, I find myself excited about the PolarTREC program. From my father, I developed a passion for being outside, learning about plants, animals, and insects we encountered. I inherited his desire for protecting and defending those wild places. From my mother, I inherited the strange love for teaching thirteen year old children, an age many teachers avoid. They're a tricky age for sure, but they're intensely curious. I have a passion for teaching science. I love watching students hone their curiosity, asking questions and forming their own hypotheses with guidance from my own experiences. These discoveries become even more meaningful as we move outside of the classroom and they forge their own connections with their natural world, even if their world is an urban city park. Middle school children are right on the cusp of becoming jaded, and when a teacher can pull them out of that budding cynicism, it's because those students see a person who is passionate about what they teach. PolarTREC provides an amazing opportunity to gain new experiences to provide context and real-life examples in my classrooms.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Using data collected, this provides a great opportunity to create a new case study for the class. We could also go over the methods of how investigations are developed and allow students to practice generating questions and developing models or investigations to answer those questions.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

Our school is always looking for new ways to connect with families. This provides a chance to plan an evening where parents and community members could learn about the research and experience and then find ways connect to research projects or investigations being done in class.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I have found the multiple methods of exposure is the best way to engage all students when introducing a subject. For example, last week I introduced the concepts of food chains and food webs in class. Over the course of two days we watched a short film, took a few notes, students deconstructed images of food webs to find food chains, we acted out food chains and the flow of energy and we read a current events article about food chains involving sharks off the east coast. This gave students with multiple learning styles a chance to best connect with the topic and then further their knowledge as they completed other activities.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

Several years ago I took the Clifton Strengths test. My top five strengths were Empathy, Learner, Relator, Input, and Arranger. Learner and Input strengths reinforced my belief that I am highly motivated to learn and absorb new information. The Relator strength describes the way that I can create and foster small groups, specifically forming at deepening relationships and because of that my arranger strength talks specifically about my ability to recognize the strengths in others and help people work together. In the classroom it helps me group students in a way that everyone can feel and be valuable, in the field in can help me connect with people and compliment their abilities. I also know how to and enjoy working hard.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

As mentioned above, I work well with groups. In college I worked in a soil analysis lab, played on the rugby team and worked as the facilitator for my study abroad program. In all these instances I was working with teams of people with varying personalities and strengths. In these instances I learned the value in reading situations and seeing when to step up and step back, when my ideas should be shared and when there is value in making a decision and moving a group forward. Both as the head of the science department and as a member of the 7th grade I try to makes sure to support good ideas but also question logistics and details so we can all have the necessary knowledge before moving forward, especially while keeping in mind equity of voice.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Thursday we finally had the kind of fall weather that you dream of in the middle of August when the city smells like hot garbage. I walked to work through the park and still had time to make copies for all four classes before school started. In class we introduced food webs and food chains. Leonard drew the cutest tundra food chain I've ever seen and Sade got to be the sun when we acted out our marine food chain. After school I headed straight to the spin studio where Eddy (the instructor) let me ride as his guest. Even though there was a massive guy on my team I still managed to win three of our teams' races. After a quick shower I got to catch up with Phil for dinner and we ate delicious Peruvian food. He always knows what’s best to order so we got the platter with a little bit of all their specialties. Highlights include mashed and fried plantains and the freshest avocado I've had in months. On the train ride home I finished reading We Have Always Lived in the Castle. That book does a masterful job of being disturbing without being overtly explicit about anything. Slept like a baby.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I put down either because I would love to be apart of this experience. In all honestly I would prefer an Antarctic expedition because it would be a very new experience and I have the support of my collaborative teacher and administrators to participate despite missed school time.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I have no time constraints or limits.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I have always loved Ecology. One of my favorite courses I ever took was called Wildlife Behavioral Ecology. I like studying how animals interact with themselves and their broader community but after working in a soil analysis lab I also understand the value of looking at how abiotic factors influence an ecosystem just as much as biotic. I like studying how native species respond to invasive species and how wildlands can be restored after being disturbed or disrupted by human interference. I also like looking at how ecosystems respond to natural disaster and how they normalize over time. Or how they react to slow but lasting changes to their environment.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I do not want to be considered for an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I love the outdoors. My family owns a paddlesport shop in Wisconsin, so I spent my summers as a teenager teaching kids how to kayak and canoe. As an inner city teacher, I strategically plan my summers to be two months of being outside as much as possible. Every summer I spend time sea kayaking in the great lakes, canoeing (and portaging) in Northern Wisconsin and Minnesota and planning hiking treks both locally and ,when I can, internationally. My kayaking experience ranges from being a support kayak in the Ironman races to taking a trip in the southwest passage of Alaska.

b. Provide a basic statement of your general health and physical condition.
I am extremely active. During the school year I lift weights, run and spin. Two years ago I ran the NYC Marathon, and last year ran a half marathon in 80-degree heat with high humidity. Last summer, I organized and planned a week-long canoe trip for a group of four. We paddled up to ten miles a day, carrying our canoes and all our gear over numerous portages up to a quarter mile in length. I have no appendix and no wisdom teeth.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I use a Mac daily and have an average skill level.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
My school has moved to doing everything on google so I use the drive daily be it slides, docs, sheets, photos or classroom. I previously used all the equivalent Microsoft programs. I also have experience using many types of cameras, film or digital. My default browser is chrome.

e. List any additional skills or information that you wish to be considered.
I speak Italian and know an inordinate amount about cheese. I can also knit everyone warm sweaters before we go.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
An old coworker applied several years ago, Pete Schoen

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Michael Perlberg

Title and affiliation Principal

Email Address michael.perlberg@ms839.org

Phone Number (718) 686-2730

Reference 2

Name Lauren Shookhoff

Title and affiliation Assistant Principal and Administrator over Math and Science

Email Address lauren.shookhoff@ms839.org

Phone Number (718) 686-2730

Reference 3

Name Mark Chesterton

Title and affiliation Science Teacher, current coworker

Email Address mark.chesterton@ms839.org

Phone Number (718) 686-2730

Bradley Butcher

1. Contact Information

Name: Dr. Bradley Butcher

Email: bbutch67@aol.com

Home Address:
6071 Riverbank Circle
Stockton , CA 95219 US

Home Phone: 209 662-1622

Cell Phone : 209 662-1622

Institution Name: Health Careers Academy

Institution Address:
931 East Magnolia
Stockton, CA 95202 US

Institution Phone: 209 933-7360

Classroom/Office Extension: 12

Institution Fax:

Institution Website: https://www.stocktonusd.net/HCA

Other relevant websites: https://www.stocktonusd.net/

Supervisor's Name: Aaron Mata

Supervisor's Email Address: amata@stocktonusd.net

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I am a high school science teacher at a district charter school in Stockton California. Stockton is a city in the central valley of California of about 300,000 people. We are an urban setting surrounded by historical agriculture. We also have the most inland port with access to the San Francisco Bay. My school is in the center of the city. Our city struggles with high poverty, homelessness, low literacy and low college degree holders. We have been twice voted “most miserable city in America” according to Forbes magazine and were hit very hard by the economic downturn of the last decade. Before Detroit, we were the largest city in America to go bankrupt. In good news, Stockton is very diverse and has tremendous upside, most of which I feel can and is being fueled by educating our youth.

d. Type of School (or students you work with): Public

Other Type of School We are a district-run charter school. Technically public, but not a comprehensive high school

e. What is the population of your annual audience or school (estimates are fine) 500 students at my school. I also work closely with the Science Curriculum Specialist (Marcus Sherman) Our district has about 40,000 students. In addition, I work/collaborate with the STEM Director of San Joaquin County Office of Education, Kirk Brown

f. School Ethnicity:
2 % - American Indian or Alaska Native
18 % - Asian
8 % - Black or African American
64 % - Hispanic or Latino
2 % - Native Hawaiian or Other Pacific Islander
6 % - White
% - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 76

h. Average class or audience size 25-30

i. Total number of students/audiences you teach in a year 160-180

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
Generally: August 1 – October 7 (Fall break: one week), October – Mid December (Dec 20th), Thanksgiving week. Winter break Dec. 20 - Jan 4. Summer Break June - August.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Biology (Santa Clara University)

Bachelor's Degree (Minor): One class away from Chem minor, took that class in grad school (Biochem)

Masters Degree (Discipline): M.Education (UCLA) ; M.S.: Biological Sciences (University of the Pacific)

PhD Degree (Discipline): Ed.D. Educational Administration (University of the Pacific)

Other Degree:

b. How many years of education experience do you have?: 18

c. How many years have you been working at your current institution?: 8

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Single Subject Teaching Credentials in Chemistry, Biology, Physics; AP/IB certification in Chemistry, Biology, Physics; Professional Ski Instructor (Level 1), AIARE Level 1 Avalanche safety; Teacher PASSION Award (4 years it was offered, voted by students).

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology, Secondary Chemistry, Secondary Physics

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I became a teacher to affect change in my community. I love kids and I love science. As a teacher, I have continually taken advantage of opportunities to improve my science background so that I can better serve my students (including taking a two-year hiatus from teaching to earn a master's degree in biology). This experience with PolarTREC would directly add value to my purpose for becoming a teacher. I would receive real life experiences in both science and the world that would be fully embedded in the concept of bringing the science to as many students as possible. PolarTREC would facilitate educating my students about the changes occurring in our world and the possibilities that they have in affecting positive changes in their own lives and in our world. This all motivates me to apply. I hope to gain an even deeper appreciation for our world and the science helping us to understand it. Mostly, I I am confident that this experience would allow me to bring to life the possibilities for experience and hope for change in the lives of my students (i.e. the belief that they can achieve and can affect change in this world).

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I envision sharing this experience in a multiple of manners in both my classroom and beyond. Most directly, I will use this experience to build lessons and instructional segments around very real life phenomena. Students will use data and evidence to support claims around the world. This experience will provide me with more tools and direct evidence to guide them in their discoveries about the world. Maybe more importantly, I envision using this experience to build the concepts of growth mindset and grit in my students. One of the greatest barriers to education (especially science education) is the ingrained self-belief that one is either "good" or "not good" at something. Showing my students that I can continue to learn and stretch myself to do something I never thought I would do provides an exemplary model of grit and a growth mindset. I would take these lessons to help build similar lessons into the curriculum of our district and with the teachers whom I teach and mentor.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I teach high school students. I am also involved and work closely with the district science curriculum specialist and with the county STEM director. In addition to those roles, I am also a mentor to new science teachers, and teach a master's level course in education research and method strategies to educators. I envision using this experience to help build science curriculum instruction segments and to help guide teachers to build a growth mindset and grit in their students. This could happen through our district's monthly professional development meetings for all staff, and for our district's monthly pullouts specifically targeted at science teachers. I have and would apply to build this experience into conference presentations for organizations such as NSTA, CSTA, AAAS, and PLTW, among others. I anticipate gaining more networks through this experience to spread these lessons to as many people as possible.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

Following the innovative approach to science education found in the Next Generation Science Standards, I love to introduce a concept with an engaging phenomenon. I ask my students what they observe and what they wonder. We build upon those wonderings as I assess what level they understand the concepts and skills embedded in the phenomenon. Then we explore their questions and look to solve problems through experiments, data, hands-on, and interactive activities. I love to challenge my students' thinking by asking them to demonstrate their thinking through conceptual modeling, which we revisit and refine as we gather more evidence. If necessary, I teach directly in either small groups or whole class discussions. When students have a chance to engage in the data and evidence that supports or challenges their current construct of how the world works, I feel they are more receptive. Experience and connections with my former students demonstrate this approach makes a more lasting impact.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

Three core strengths I bring to the team are: physical and educational experience, scientific curiosity, and the knowledge that I have much to learn. I have experience in extreme environments and have taught in many capacities, in and out of the classroom. The majority of my adult life has been teaching high school science, I have also taught middle school, college, and adult graduate students. Throughout my life I have been curious about how the world works. After earning a biology degree and a master's degree in education, I taught six years before longing for a

deeper appreciation for science (for myself, and the benefit of my students). I ended up facilitating a program at UC Merced before going back to school full time at the University of the Pacific in Stockton. There I intentionally sought a research project that allowed me to exercise skills in the field and in the molecular lab. My project, “Identification and Isolation of Microsatellite Loci from the Trematode Echinostoma trivolvis for Use in Interspecific and Intraspecific Variation Studies,” afforded me skills that could serve many research teams. Still, I have much to learn and am willing to be taught and to study intensely.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I see my role as a member of a team in three capacities: 1) encourager, 2) idea processor, and 3) workhorse. Throughout my youth I loved team sports and was twice voted most inspirational player of my high school football team. At my current high school we live by the motto of PASSION (professional, academic, strong, service-oriented, integrity, optimistic, and nurturing). For four years, our students voted for a PASSION teacher of the year, and I was honored four times. I have played a part in the opening of several new schools. In that capacity I have helped to establish norms and culture, and as department head, to help guide my teachers (many of whom have been new). I’ve helped bring new programs, design curriculum, and determine bell schedules, among other things. Mostly, I see my strengths to a team as someone willing to put my head down and do the work necessary to achieve the goals of the team.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Good day everyone! This is Brad checking in again from @polarTREC. Wanted to let you in on an amazing learning experience I had earlier this week. As you know, we are deep into semester one. My AP Biology students are grinding hard and my NGSS bio students are deep diving into the sources of sea level rise (Special shout out to UC Berkeley's Museum of Paleontology and Dr. Jessica Bean for the curriculum on this unit). But on Monday, the students earned a day off while us teachers re-assumed the role of learners at the SJCOE (county office). We were exploring how to integrate the Earth Science Standards into our chemistry courses. We began simply by dropping dry ice into water and observing witht the eye of a student. We "observed" and we "wondered." What really is going on here? What questions do you have? We asked our questions and we determined which of our questions were testable and which were not. We added a few drops of cabbage juice and asked more questions. I am so excited that we are finally shifting science education back to embrace the wonder of science. That's all for today. Enjoy!

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
Though traveling to and studying in Antarctica would be a dream come true, I would be honored to learn from any of the researchers and am willing to help wherever I can.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I am willing to serve for any length of time and can match my schedule to whatever expedition I am fortunate enough to attend.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
When studying biology in college, I entered with the intent to study everything I could about health and disease. I loved my virology and pathogenic microbiology courses, but I also learned to realize that I had a deep love of chemistry (on one end of the spectrum) and ecology at the other end. I have always taught in multiple science disciplines and when I went back to school, I sought a multidisciplinary project. I was deeply passionate about the molecular work I did in the lab and equally loved being knee deep in pond water picking snails off reeds in hopes that some were infected with parasites. I have a deep love for our world on the macro level, and thrive on understanding the micro and chemical interactions that drive the whole system. That being said, I would be honored to assist in just about any project. I think I have skills that could be used and developed in many places.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I love the outdoors. I am an avid hiker and backpacker (as much as I can with two small children). I have been a skier for 39 years and am passionate about being in the backcountry. In order to do this, I became AIARIE Level 1 avalanche safety certified. I live on the San Joaquin-Sacramento River Delta and have been boating since I was seven years old. I was an athletic trainer in college, EMT trained, and work at a health careers academy.

b. Provide a basic statement of your general health and physical condition.
I love to run and exercise. I have run 6 marathons (3:23 fastest time at age 40). I try to eat well and keep myself active and in good health. I have no medical conditions that preclude me from any activities.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I have a Macbook at home and work with PCs at school. I am comfortable with either system.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
Yes, laptop computers, cameras, and I am confident and skilled in all word processing, spreadsheet, and presentation programs (including the Google suite).

e. List any additional skills or information that you wish to be considered.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

The Director of NatureBridge in Yosemite, Elizabeth Gerrits told me about the program while we were hiking with my students. She put me in contact with Amy Osborne and Kim Laizer. I communicated with both, mostly with Amy to gain my information about the program.

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

I attend many professional conferences, such as the National Science Teacher Association conference. I think it would be great to have presentations and a booth at those conferences. This would be a goal of mine if I were to be selected, to present my experiences at professional conferences.

12. References

Reference 1

Name Kirk Brown

Title and affiliation Division Director STEM programs, San Joaquin County Office of Education

Email Address kbrown@sjcoe.net

Phone Number (209) 468-4880

Reference 2

Name Elizabeth Gerrits

Title and affiliation Wilderness Program Manager, NatureBridge Yosemite

Email Address egerrits@naturebridge.org

Phone Number 209-372-0218

Reference 3

Name Marcus Sherman

Title and affiliation K-12 Science Curriculum Specialist, Stockton Unified School District

Email Address msherman@stocktonusd.net

Phone Number 209-933-7030 ext. 2444

Philip Caggiano

1. Contact Information

Name: Mr. Philip Caggiano

Email: adventureoutfitters@hotmail.com

Home Address:
5008 Beech Street
Bellaire, TX 77401 US

Home Phone: 713 667-4714

Cell Phone : 281 381-6899

Institution Name: Young Women's College Prep Academy

Institution Address:
1906 Cleburne Street
Houston, TX 77004

Institution Phone: 713 942-1441

Classroom/Office Extension:

Institution Fax: 713 942-1448

Institution Website: https://www.houstonisd.org/YWCPA

Other relevant websites:

Supervisor's Name: Mitch Hatter

Supervisor's Email Address: mhatter@houstonisd.org

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Urban inner city, STEM magnet, Pre AP/AP, all students have notebook computers

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 600

f. School Ethnicity:
% - American Indian or Alaska Native
1% % - Asian
48% % - Black or African American
47% % - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
3% % - White
1% % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 68%

h. Average class or audience size 30

i. Total number of students/audiences you teach in a year 180+

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
December 20 – January 5 Christmas break May 29 school ends

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Geology

Bachelor's Degree (Minor): Chemistry

Masters Degree (Discipline): MBA - Marketing; MEd

PhD Degree (Discipline):

Other Degree: Postgraduate geology classes

b. How many years of education experience do you have?: 15

c. How many years have you been working at your current institution?: 6

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Physical science 8-12 One of 6 teachers selected from two hundred HISD Middle Schools science teachers to be accepted to the Rice Model Science Lab Program for a one-year teaching resident program to develop stronger leadership and instructional skills through research-based teaching strategies.

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment Occasionally teach a class at Community College in Geology

b. What subjects do you teach? Check all Middle School Science

Other Subjects AP Environmental, Geology and 8th grade science

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

During several of my trainings over the years, I have had the opportunity to talk to previous participants in the PolarTREC experience and everyone tells me what an amazing opportunity it is to be part of the research team and take back new and relevant information. As a teacher of AP Environmental and Geology at the high school level and an 8th grade science teacher in a Houston ISD all-girls middle/high school (grades 6-12), the research that I will observe first-hand on a PolarTREC research team will add significantly to the information that I can incorporate into my lessons. My students are mostly inner city girls who have never been out of Houston and are only familiar with its hot and humid climate. I will be able to introduce them to a vastly different continent of ice and glaciers a half a world away. Hopefully, it will spark my students to aspire to be research scientists and travel to new and unfamiliar research locations.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I have always incorporated pictures / videos and stories of my continuing education trips into my presentations when they apply to the content material. I strongly believe that field experiences enrich students' understanding of earth science content and the importance of integrating inquiry into instruction as well as real world experiences. There is a unit on glaciers in the geology content, so this will have a direct correlation to the subject matter. In AP Environmental we discuss climate change and the impacts on the cryosphere and how it relates to many environmental changes, including sea level rising. In the 8th grade we discuss ecosystems and human impact, so there is a direct correlation to this content as well.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

My mentor at the Houston ISD Rice Science Model Lab, where I trained, is a secondary science teacher development specialist for the school district and can facilitate my presentation of lesson plans based upon my PolarTREC experience at an in-service presentation to all of the science teachers with Houston ISD, which can

reach thousands of middle and high school science teachers since it is the largest school district in Texas and the seventh largest school district in the country. I will also submit proposals to state and national conferences at which I've previously made presentations, including STAT (Science Teacher Association of Texas) and NSTA (National Science Teachers Association), to present the lesson plans and share the content that I learned from PolarTREC.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I use short video clips to break down complex material into smaller chunks of information, which increases students' engagement and interest. I use demonstrations for visual content and then have the students explain their observations, and lab activities which provide hands-on experiences and promote inquiry. I also like allowing students to teach it to each other in small groups or "share / pair" discussions and then present to the class at which time I can address student misconceptions before making formative assessments.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I'm a team player, hard worker and I pay attention to the details. My philosophy is that it's not done until it is done right. I consider myself to be a life-long learner, and I enjoy being in a research environment in the field. I especially enjoy cold weather environments and previously was selected as the only teacher from Texas to participate in NASA Goddard Space Center's "History of Winter" cryospheric science research program in Lake Placid, NY. Dr. Tony Gow, who is a highly regarded glaciologist and a veteran of ice core research, was our instructor as we learned about common field research techniques that are often used as ground validation for NASA satellite missions.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I continuously work collaboratively at my school, whether it is a cluster meeting of grade level teachers, teachers who teach the same subject planning scope, sequencing and pacing, or the entire science department coming together for various departmental matters such as agreeing on the grading policy. I also take my high school students on an annual multiday geology field trip to the Texas Hill Country, which involves collaboration with our industry sponsor, Schlumberger, as

well as the district and my school. I have also collaboratively presented content specific workshops and training for teachers throughout the district with my teacher team. While working in the oil and gas business, we worked in teams with geologists, geophysicists and engineers on many projects to meet deadlines and budgets. In conjunction with running my previous retail business, I worked with my staff as a team in scheduling, dealing with customers, and running clinics and product demos.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Friday, October 20, 2019 – I attended the 2-4 pm afternoon training session for AP Environmental teachers in the district, which was attended by 10 teachers from 10 different schools. Three were new to teaching this class while the rest of us have several years of experience in teaching this class. We reviewed the new resources provided online by the AP College Board and reviewed changes in the year-end AP test that will be incorporated this year. These changes include going from 100 multiple choice questions with 5 answer options to 80 multiple choice questions with only 4 answer options. Also, there had been 4 free response questions and now there will only be 3 free response questions. The total time for the test will remain the same, so we discussed how these would affect the degree of difficulty and analysis required for these questions and what we as teachers should consider to properly prepare our students to take this AP test. We decided to rely heavily on the AP College Board resources to guide us in what they expect to be covered in our instruction.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I don’t have a preference. I believe my school will support whatever trip I am selected to attend.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
My primary interest in going on this adventure is to gain knowledge of glaciers and how scientists are relating them and ice cores to climate change. I am especially interested in the ice core analysis. My first job in the oil and gas business was with Core Labs where I analyzed hard rock core samples from oil wells. I am very interested in how that compares to how the PolarTREC researchers study the ice cores. I am hoping that this experience will assist me with creating an interactive lesson on ice core analysis that I can use in the classroom. Since I teach geology and AP Environmental, I have an interest in relating ice core and glacial analysis to climate change. I would like to be able to apply how these ice studies of glaciers and ice cores can be related to climate change by using examples in the classroom. I also hope to gain insight and ideas as to how I can develop hands-on labs and activities for my students so they can relate these changes over time to the effects to the long-term changes taking place around them every day.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest
The drilling of ice cores - how they are drilled and analyzed.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
NA

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have been on numerous camping and backpacking trips, with my most recent trip this summer being a three-week camping field course to Wyoming to study the development of the Tetons with the University of Nebraska. For 6+ years I owned and operated an outdoor adventure store and have been to many national parks including Glacier, Yellowstone, Yosemite, Boundary Waters, Mt. Rainier, White Sands, Rocky Mountain, Zion, Grand Canyon, John Pennekamp Coral Reef State Park and others. I have backpacked for several days on some of these trips and canoed for a 5-day trip in the Boundary Waters. I have attempted to summit Mt. Rainier twice and have traversed crevasses using ropes, crampons, and ice axes. I can ski, snowshoe, and have tried ice climbing. I was awarded a Fund for Teachers Grant to go to Iceland to study plate tectonics, volcanism and glaciers. I am familiar with wilderness first aid, and I have taken the training to obtain my concealed handgun license.

b. Provide a basic statement of your general health and physical condition.
I am in good health

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I prefer Mac

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I have used all of the above mentioned and am an avid photographer.

e. List any additional skills or information that you wish to be considered.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Friend: Michele Rose

Former PolarTREC, TREC, or TEA teacher. Please provide their name
Friend: Michelle Rose

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
I first heard about it years ago at an NSTA meeting

12. References

Reference 1

Name Michele Rose

Title and affiliation Special Education Teacher

Email Address mcross@cppmail.com

Phone Number 607 769-9111

Reference 2

Name Katherine Bender

Title and affiliation Senior STEM Education Specialist, ASRC Federal InuTeq, LLC NASA GSFC Office of Education

Email Address Katherine.J.Bender@nasa.gov

Phone Number 301-286-2050

Reference 3

Name Nedera Bellam

Title and affiliation Science Specialist, Houston Independent School Distric

Email Address nbellamy@houstonisd.org

Phone Number 713 775-8185

Geoffrey Carlisle

1. Contact Information

Name: Mr. Geoffrey Carlisle

Email: geoff.carlisle@gmail.com

Home Address:
1812 Airole Way
Austin, TX 78704 US

Home Phone: 19714094588

Cell Phone :

Institution Name: KIPP Austin College Prep

Institution Address:
8004 Cameron Road
Austin, TX 78754 US

Institution Phone: (512) 501-4969

Classroom/Office Extension:

Institution Fax:

Institution Website: https://kippaustin.org/schools-and-programs/grades-5-8/kipp-austin-college-prep/

Other relevant websites: https://kippaustin.org/

Supervisor's Name: Juan Juarez

Supervisor's Email Address: jjuarez@kippaustin.org

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I work in an 8th Grade Science classroom at a public school in the urban setting of Austin, Texas. My school lies in a federally-recognized Food Desert according to the USDA, and my students are primarily of Latin-American and African-American heritage. 90% of my students receive free or reduced-prided lunch. We serve students with physical and developmental disabilities such as blindness, autism spectrum disorders, emotional disturbance, and many others. We have a series of chromebook carts that are shared amongst classrooms.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 430

f. School Ethnicity:
0 % - American Indian or Alaska Native
0 % - Asian
8 % - Black or African American
90 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
2 % - White
0 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 90

h. Average class or audience size 25

i. Total number of students/audiences you teach in a year 100

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

Teachers typically report around July 20th, and are dismissed by the end of May. We receive 1 full week for Thanksgiving, 2 full weeks for winter holidays, and our Spring Break typically is one of the first in the nation (close to March 10th). The 2020-2021 school year dates are not released yet.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Environmental Studies, music

Bachelor's Degree (Minor):

Masters Degree (Discipline):

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 10

c. How many years have you been working at your current institution?: 8

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
- Harriett Ball Excellence in Education Award (awarded to 10 teachers across the nation) - KIPP Amplify Master Teacher - Science Teachers Association of Texas - CBS Austin Teacher of the Year Finalist

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Middle School (Grades 6-8)

Other Primary Assignment

b. What subjects do you teach? Check all Middle School Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

My mantra as an educator is best summed up by the famed science communicator Carl Sagan: “It is suicidal to create a society that depends on science and technology in which no one knows anything about science and technology.” Students in my classroom have already endured the devastating early impacts of climate change in our community: repeated historic floods, prolonged droughts, and numerous high temperature records broken. It is essential that my students are scientifically literate, equipped with the knowledge of the factors that influence climate change and how scientists are working to understand this problem. Therefore, my primary motivation for applying to PolarTREC is to strengthen my understanding of how the climate is impacting our polar regions, and to gather evidence and stories of how scientists are investigating these changes, in order to create compelling classroom experiences for my students. I will synthesize the information I gather during PolarTREC to not only develop lessons for not only my classroom, but for classrooms across Texas as well. I will also use the experience to help educate the adult community in Texas by writing Opinion Editorials about the necessity of strong climate change education.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

In my own 8th grade science classroom, two standards in particular have the opportunity to be about climate change: one addresses how an organism’s traits change over time in response to environmental changes (TEKS 8.11B), and the other asks students to research how human activities are impacting the ocean (TEKS 8.11C). I plan to utilize my experience from PolarTREC to inform how I plan my lessons, and ground our learning in the research I assisted with, witnessing first-hand the changes seen in Arctic regions. In my experience in the classroom, I’ve developed an understanding of how important storytelling is to engaging students effectively. I know the power of sharing stories of science from the field personally because I was fortunate to have a professor in college brought his research from the ice sheets of Antarctica into our classroom, astounding us with his stories and images of how the region is rapidly changing. His course was a large part in my decision to major in Environmental Studies in college. Being able to share artifacts,

photos, videos, and research from my field experience will help to make my lessons come alive, and bring a personal connect to my students.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

For many Texas science educators, there are numerous barriers to teaching about climate science: the standards almost never explicitly address climate change, and science teachers lack the resources and training to feel confident teaching about climate change in their classrooms. I have built experience as a facilitator for teachers, having presented many sessions for my own district's science department, as well as statewide and national conferences, such as the Conference for the Advancement of Science Teaching. I envision utilizing my strengths as a teacher leader to help other Texas science teachers teach about climate change by leading trainings, as well as resources I've developed. My lesson plans and activities have already been downloaded thousands of times by other science teachers, and are rated highly by teachers who have used them. Additionally, I plan on writing about the necessity of strong climate change education in Op-Eds. My writing about teaching climate science has already been published by the Austin American Statesman and the Texas Tribune, and by grounding my writing in first-hand accounts of the changes I've witnessed and the impact this experience has on my classroom, I believe will help to increase the effectiveness and reach of my writing.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

When introducing new and complex ideas, I ground my learning activities in the inquiry-based lesson structure known as 5-E (Engage, Explore, Explain, Elaborate, Evaluate). Since adopting this method, my student mastery has increased to the highest level in our district, and my students often report that science is their favorite class. Students are introduced to the concept in the Engage phase by exposing them to phenomenae, such as the explosion of the Hindenburg, or the hypoxic zone in the Gulf of Mexico. Students are next asked to Explore the issue through engaging in an investigation, simulation, or some other inquiry activity. Through these activities, students identify patterns, analyze data, and begin to formulate explanations for the lesson's phenomena. Next, in the Explain phase, we synthesize what we learned from our investigation and develop the set of scientific principles key to understanding and explaining the phenomena. In the Elaborate section, students are asked to apply their knowledge to new scenarios, where they

use the established scientific principles to explain these new scenarios. To conclude, the Evaluate section allows for students to demonstrate their understanding by writing a scientific explanation that answers the original question that grounded our lesson.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

To the PolarTREC program, I have the ability to translate science into compelling classroom activities, and can use my expertise as an educator to advocate for change through writing. I have created many classroom activities that make abstract concepts digestible and ignite curiosity, like models that visualize gravity wells created by stars, and investigations that reproduce how greenhouse gases like CO2 contribute to rising temperatures. As a writer, my Op-Eds have been published by major news organizations, and I co-authored a research brief that contributed to actual policies adopted by the Texas Legislature. To a field research team, I bring experience being a part of a research team, and understanding of wilderness safety. I assisted with the SEAMAP Summer Groundfish Survey aboard the NOAA Ship Oregon II, assessing the vitality of Gulf shrimp, as well as measuring the strength and size of the hypoxic zone. Though an incoming hurricane cut my journey very short, in that short time I gained invaluable experience, learning how to execute complex protocols quickly and effectively, and how to conduct research in challenging conditions. I have also lead wilderness excursions for large groups summiting the Colorado Rockies, and have a basic understanding of wilderness safety.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

As a member of a team, I have a developed understanding of how to serve the needs of the team and its individuals by seeking out opportunities to lead when problems arise. When our science department head left our district abruptly, the department was no longer being developed in science pedagogy. Recognizing that most of our science teachers were either new to teaching or did not have backgrounds in science, I submitted a proposal to our district leaders that enlisted some of our veteran science teachers as facilitators. We each took turns leading sessions that met the needs of our team, and continued to provide essential development opportunities and mentorship to developing science teachers. Members of a team also often have many diverse needs that if not accounted for can affect group morale. My current grade level team consists of individuals who are new to teaching

as well as veteran teachers, a teacher who is pregnant, teachers who are from vastly different cultural backgrounds, and have different communication styles. We naturally have different perceptions about

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Race Day: Kerrville Triathlon. The morning of Race Day is always filled with anticipation, somewhere in between worry and excitement. On any normal day, when my alarm clock goes off, I tend to fall into a sort of negotiation with my alarm clock, pleading for 10 more minutes under the blankets. Race day is different through -- often I'm up even before my alarm, spuriously laying out all the equipment I need for today's race. Today's race was an olympic-distance event: 1000 meter swim, followed by a 29 mile bike, completed by a 10 kilometer run. It's not a distance I typically feel comfortable with (I'm more of a short-course person), but today felt extra special: my parents flew all the way from Oregon to Texas to see me race for the first time! So many of the triathlons I've competed in have been just for myself: improving my times, pushing my limits, and falling in love with a sport only a few years ago I didn't think I had the guts for. Having my parents here for the race made it feel like I had something more than just myself to race for, and I enjoyed that. Triathlons are typically started in waves by age group, so I raced with the men 39 and younger. It's typically a group of eager, fast, and sometimes unruly men who always seem to head out into the water a bit too fast for what the distance requires. Coming out of the water and onto the bike, it was all about the transition. Triathlons are won and lost by who can put their gear on and get onto the next leg fastest. The Kerville bike course was gorgeous, taking us through the quaint downtown into the rolling hills of the countryside. While the locals may not always appreciate having their roads shut down for a race like this, it felt so liberating to finally zoom through a red light with a police escort!

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Arctic

Please explain your preference
I am the only 8th grade science teacher at my school, and have a number of responsibilities both at school and in the district. Taking time to be a part of this expedition would be an incredible honor for both me and my school, but would only be possible if I were able to travel during the summer months.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I would prefer to be on an expedition that lasts 3 - 4 weeks, but am of course flexible for such an amazing opportunity! I would not be able to attend until the 1st of June as I am responsible for proctoring state tests as well as leading our end of year 8th grade trip as a lead teacher. I would prefer to be back home before the end of July as the beginning of the school year starts for staff at the end of July at my school.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I am particularly interested in understanding how living organisms are adapting to, or are negatively impacted by, the rapidly changing climate. My early interest in science was fostered by a love of nature documentaries (particularly from David Attenborough). Seeing the impact of climate change on living organisms has a profound effect on people, and relates closely to the standards I teach in my classroom. Having first-hand knowledge, images, stories, and data showing the ways in which organisms are adapting to or are impacted by climate change would have the largest effect on my curriculum.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

No.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have experience leading large groups as a wilderness guide and camp counselor in the Rocky Mountains of Colorado. I was responsible for leading teams of adults and teenagers to the summit of a 13,000 ft. mountain on a weekly basis. I am an avid hiker, and have summited numerous mountains, including Mount St. Helens, as well as those in the North Cascades, Colorado, and West Texas. I have experience camping, I have previously been certified as a lifeguard and in first aid, and I have experience driving boats of various sizes.

b. Provide a basic statement of your general health and physical condition.
I am a competitive triathlete with zero health concerns.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I work daily with both Macs and PCs. My skill level is proficient in both, as well as

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I am proficient with all applications in the Microsoft Office Suite and Google Drive, of which I use both daily. In my classroom, I use Word and Powerpoint every day, and for my school I have designed excel spreadsheets to organize and calculate school-wide data. I am often called on by other staff members at my school to assist with technology needs and how to make excel formulas.

e. List any additional skills or information that you wish to be considered.
I am an amateur photographer.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. Yes

Program Information 2018 NOAA Teacher at Sea - SEAMAP Summer Groundfish Survey, NOAA Ship Oregon II, Gulf of Mexico

If yes, did you complete all program requirements? Yes

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
My time aboard the NOAA Ship Oregon II was an invaluable experience that shed light on how practicing scientists conduct research. Unfortunately, my journey as a NOAA Teacher at Sea was cut short because of an incoming hurricane. I was supposed to spend 11 days conducting research on the vitality of Gulf shrimp and measuring the strength and size of the hypoxic zone, but was only able to serve for 3 days. In that time I learned so much about how to be a part of a research team in the field, but unfortunately I feel that I did not truly understand the full experience. PolarTREC seems like the perfect opportunity for me to apply my initial learning from NOAA and be a truly effective participant, helping to shorten the learning curve and be a strong team member.

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
I read about it on a teacher blog, but I can't remember where I originally saw it!

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Katie Carpenter

Title and affiliation Principal

Email Address kcarpenter@kippaustin.org

Phone Number 5125396834

Reference 2

Name Juan Juarez

Title and affiliation Assistant Principal

Email Address jjuarez@kippaustin.org

Phone Number 2105420863

Reference 3

Name Ashley Dobravolsky

Title and affiliation Lead Math Achievement Specialist

Email Address ashley.dobravolsky@kipptexas.org

Phone Number 5129255885

Ryan Cilsick

1. Contact Information

Name: Mr. Ryan Cilsick

Email: cilsick.ryan@brevardschools.org

Home Address:
4287 Ventana Blvd
Rockledge, FL 32955 US

Home Phone: 3214463400

Cell Phone : 3214463400

Institution Name: Edgwood JRSR HS

Institution Address:
180 E Merritt Ave
Merritt Island, FL 32953 US

Institution Phone: 321-454-1030

Classroom/Office Extension: 5028

Institution Fax:

Institution Website: https://www.brevardschools.org/EdgewoodJRSR

Other relevant websites: salty.cilsick.com

Supervisor's Name: Jackie Ingratta

Supervisor's Email Address: Ingratta.Jackie@brevardschools.org

2. Demographic Information

a. Gender: Male

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): 7-12 grades Edgewood Ranked #71 in the Nation and #9 in Florida: 2018 US News and World Report 2017 National Blue Ribbon School of Excellence (also awarded in 2008) Edgewood Named in the Top 100 of America's Most Challenging High Schools: Washington Post 2016 Florida Arts Model School for Music 2015 Florida Power Library School

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 960 students

f. School Ethnicity:
1 % - American Indian or Alaska Native
9 % - Asian
4 % - Black or African American
6 % - Hispanic or Latino
2 % - Native Hawaiian or Other Pacific Islander
71 % - White
6 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 15

h. Average class or audience size 25

i. Total number of students/audiences you teach in a year 119

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

START: first week in August ENDS: May 23rd Winter Break: Dec 21 – Jan 8

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Biology

Bachelor's Degree (Minor): Environmental Science

Masters Degree (Discipline): Biological Oceanography

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 24

c. How many years have you been working at your current institution?: 17

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
2005 – Exemplary Science Teacher Award: The Space Coast Science Education Alliance (SCSEA) initiated by the Florida Solar Energy Center is an affiliation of organizations devoted to education, science and the environment. 2010 – Inducted into the Exemplary Science Teacher Hall of Fame: The Space Coast Science Education Alliance (SCSEA) initiated by the Florida Solar Energy Center is an affiliation of organizations devoted to education, science and the environment. 2010 – PRISM Award for High School Science Teacher: The PRISM Project – an organization comprised of Central Florida business, government, and school leaders working to promote improvement in science and math throughout the region 2010 – Award of Excellence: Keiser University 2010 – FAST’s Outstanding High School Science Teacher Award 2011 – Edgewood TOY (Teacher of the Year) 2012 - Keiser University Teacher of the Year “Going Beyond Expectations” Awards 2013- Florida Outstanding Biology Teacher: Selected by the National Association of Biology Teacher 2015 John Beakley Marine Educator of the Year from FMSEA NMEA (National Marine Educators Association) Outstanding Teacher for 2016

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Earth Science

Other Subjects Secondary Experimental Science Secondary marine science

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Several years ago, while attending the Northrop Grumman EcoClassoom program in Costa Rica, one of our group leaders had participated in PolarTrec and visited Antarctica. Even though I consider myself a warm weather person, I was inspired by her experience and very excited about the program and would love to have the experience to bring back to my students. As someone who has lived in the tropics, most of my experiences and stories that I relate to my students in my lessons revolve around the tropics. It would be incredible to have an in depth experience in Antarctica to share with my students. As a teacher, during the summer break I try to attend at least one professional development opportunity. In the past I have had the opportunity to participate in teacher workshops in the Zero G plane, the rain forest in Costa Rica, and aboard the R/V JOIDES Resolution, in all these I have been able to take back lessons and knowledge that I was able to share with my students in a format and with an enthusiasm that I could not not done from simply reading about the same topics.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I have my own educational YouTube Channel titled Getting Salty with Cilsick, where I film short videos on different topics(usually marine). While in Antarctica I would be filming episodes for my channel to with with students and teachers. In addition I would share my experiences through faculty meetings, presenting at district workshops and state level science teacher conferences.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

As mentioned in the above question I would be creating videos to share with my students, peers, school district and present this material at conferences.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

My philosophy includes getting my students excited about my class and wanting to

come into my room. My door is always open to my students, and during lunch there are usually 30-40 students hanging out, working on assignments or just helping me with what I have to get done. But my method of engagement does not stop with just school time. I plan field trips to local marine environments, where students seine and kayak. I take them to SeaWorld for behind the scenes tours, and even organize gatherings on weekends and evening, like celebrating the life in the ocean at sustainable seafood restaurants and meeting up to experience bio-luminescence. In addition I sponsor several clubs including marine science club, drone racing club, a STEM club, and the Science National Honor Society club

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I am often sought out by other educators in my school as well as our district for help with incorporating Google Docs and Google Classroom into their lessons, as well as digital microscopes (and digital adapters), iPads, Chromebooks, and probe ware to just name a few. I understand the importance to sharing with students such technology, as it will be playing a big role in their live and society as they grow. In addition to technology I have a lot of experience with photography as I am a nature photographer and GoPro enthusiast. These traits could greatly help in the documentation of this amazing experience, helping myself and the other educators to share and take home what they learned.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

As a science leader it has given the opportunity to work and interact with students, my peers, and the public. In addition I been a contributor and co leader and presenter for many district science in service for science teachers. I have also worked at the district level to create grade level curriculum for all students in the district. A third example would be that I have had served at Science and Engineering Fair Director for one of three regional fairs in our district. Working well with others and being part of a team are important qualities I believe I hold.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Last week started as any other. After arriving at school on Wednesday I was confronted with the same group of students I usually see at 7:00 in the morning. But that day was different. They were unusually excited to see me and see to be standing in front of something as if they were trying to hide something. I thought to myself "This should be interesting". After a little commentary I realized they had brought a trolling motor to my room. Why I asked and they told me they found it on the side of the road and thought I might like it... Well after some discussion I accepted this "gift" and got everyone thinking about what we should do with it. There was lots of discussion on hooking it up to our large solar panels add to a kayak, build a pontoon boat for using 30 gallon drums, turning it into a windmill to generate electricity, and even somehow hook it up to a skateboard with a backpack solar panel. So what was decided upon, that is the questions. We are still debating to this day but should have it figured out by my next blog entry.. I will keep you posted.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
It has always been a dream of mine to visit Antarctica. I love traveling to places, documenting my experiences, and bring them back to my classroom and co-workers.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
3-4 weeks is not a problem. Or longer would also be OK

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
Global Climate Change - Very important topic. I am very interested in all topics relating to the atmospheric and ocean sciences.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I would really enjoy an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
Kayaking, paddleboarding, hiking, biking, camping, boating, fishing, hunting, 50 Ton Captains lic, nature photography, Drone flying

b. Provide a basic statement of your general health and physical condition.
In excellent health. No medications, and very healthy

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
Most familiar with PCs, and consider myself very skilled with computers.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
Very proficient with Google Suites, basic website design, video editing, digital filming, etc. Drones programming, flying, and building. In my classroom all my lessons, activities and notes are done through Google Drive. I often refer to my classroom as a virtually paperless classroom. Most homework assignments, labs and other activities that need to be turned in, the students do through Google Docs and share the assignment with me to grade. I am also very familiar with the Microsoft Office Suite. I utilize iPads and feel uncomfortable if I do not have mine with me. Also in my classroom I have 2 3D printer, a 2 axis CNC maching, a desktop digitizer and am currently working on a grant for a laser cutter. . Many of my lab involve using probeware and I always carry a GoPro with me because I never know when I will come in contact with something worthy of filming an episode for my YouTube channel.

e. List any additional skills or information that you wish to be considered.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name
Peggy Lubchenco (Polartrec Alumni)

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Peggy Lubchenco

Title and affiliation Professor at Grevirtz Graduate School of Education University of CA

Email Address peggy@education.ucsb.edu

Phone Number 805.680.4313

Reference 2

Name Mrs. Jackie Ingratta

Title and affiliation Prinicipal of Edgewood JRSR HS

Email Address Ingratta.Jackie@brevardschools.org

Phone Number 3214541030

Reference 3

Name Loren Kingsley

Title and affiliation Secondary Science Resource Teacher

Email Address kingsley.loren@brevardschools.or

Phone Number 321.633.1000 ext 314

Rosalyn Cohane-Mann

1. Contact Information

Name: Ms. Rosalyn Cohane-Mann

Email: rosalyn.cohane.mann@gmail.com

Home Address:
12 Highland Street
Natick, MA 01760 US

Home Phone: 4136634773

Cell Phone : 4136634773

Institution Name: The Walnut Hill School

Institution Address:
12 Highland Street
Natick, MA 01760 US

Institution Phone: (508) 653-4312

Classroom/Office Extension: N/A

Institution Fax: N/A

Institution Website: https://www.walnuthillarts.org/

Other relevant websites:

Supervisor's Name: Tom Keenan

Supervisor's Email Address: tkeenan@walnuthillarts.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Walnut Hill School for the Arts is an independent boarding and day high school in the greater Boston area offering a transformational educational experience purposefully designed for student artists in grades 9–12, with a postgraduate year also available. We offer unparalleled training in dance; music; theater; visual art; and writing, film & media arts, complemented by a robust and innovative academic curriculum. Walnut Hill was founded in 1893 and seeks to cultivate a spirit of inclusivity and multiculturalism by weaving diverse curriculum, programming, and practices into the academic, artistic, and social fabric of the school. We believe it is critical to educate members of our community to be responsible global citizens. In order to navigate the tensions and challenges of our world, it is imperative to understand where we each came from, where we are, and where we are going. Teaching science at an art schools means that my primary job is making the curriculum engaging and exciting. Our 280 students come from all over the world (we are 33% international) and are thoughtful, energized, engaged, woke, citizens, and we are a very open, progressive, and inclusive community. We have students who identify as transgender, students who are openly gay or lesbian, and students who come from over 30 different countries which means that they learn from and about each other in our community and support each other. Many are full-pay students, but about 30% are on financial aid.

d. Type of School (or students you work with): Private

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 280

f. School Ethnicity:
1 % - American Indian or Alaska Native
30 % - Asian
20 % - Black or African American
10 % - Hispanic or Latino
1 % - Native Hawaiian or Other Pacific Islander

37 % - White
3 % - Multiracial

If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: N/A

h. Average class or audience size 18

i. Total number of students/audiences you teach in a year ~ 90

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

Start September 5th 2019, Ends May 30th 2020 Holiday Break December 22 - January 2nd Spring Break March 8 - 22nd

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Agricultural Science

Bachelor's Degree (Minor): Natural Resources

Masters Degree (Discipline): Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 6

c. How many years have you been working at your current institution?: 4

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
EE Ford Faculty of the Year Award - 2018

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology, Secondary Chemistry, Secondary Earth Science, Secondary General Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

As a teacher of environmental science and biology, I intend to use this experience very directly to benefit my students by using what I learn to revitalize my curriculum with a fresh perspective and real-life data and research. As an undergrad I loved doing research projects and worked on a fisheries study, a soil study, a farm study, and a berry growing system study. Doing research on the Bowfin in upstate NY with Cornell's summer program opened up my eyes to research as a tool for learning, and the long term studies that help us see changes in systems over time. It is part of what led me to teaching and hoping to create excitement in students around science and research. I hope to learn from being in the field again and see first-hand the impacts of climate change in the polar regions. I want to help in research and data collections and be a part of a team of scientists engaged in a long-term study. I would love to share my experiences with my students and with peers, friends, and family. I hope to explore an incredible region of the world with a science perspective, and use my outdoor skills and scientific experiences to further my knowledge.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Designing experiences in which students get to be in control of their learning, collaborating, and seeing what we discuss in each unit come to life is my role as a teacher. I love seeing the students working together, following a procedure, discovering things on their own, and discussing questions. After this experience with PolarTREC I hope to engage my students in more hands on research and experiences in field work. I hope to have students focus on climate change during a three week project we do and share their results with their peers and learn from each other. I hope to upgrade my lesson plans with this new information and help instill a curiosity and love of science in my students that I have found throughout my life with this type of hands-on program that brings science to life and allows us to engage deeply in different topics. Specifically my curriculum on ecology, climate change, ocean systems, atmospheric systems, and teaching the scientific method will become more robust and I can't wait for more ideas. I would like to help them learn more about how we can bring our subjects to life and engage in real life research and travel that demonstrates our subject matter.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

My hope is to help my students, peers, and friends become even more interested in science and to inspire more of them to keep learning about it for the rest of their lives, even if they don't become scientists. They are full of questions, and crave connection between science and their world and experiences. I want them to be able to think critically and use the scientific method as it will serve them well as they navigate the rest of their lives. In order to help our planet and the future of living systems on Earth especially with the impacts of climate change becoming ever more apparent, we need more students to learn about and care about science. This is one of the biggest reasons I shifted from my interests in research and policy, into education. I decided to become a teacher so that I would be able to help others learn about and care about our planet and science. I hope to share my experiences with my school through my classroom, through our all school assemblies, our faculty professional development programs, and even within our dorm parent community. I hope to share my experiences with my friends, family, and outdoors community through video, instagram, facebook, and the blogging.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

In the classroom, I think of myself as a sort of coach or engineer of experiences for my students, and we all have to be a team on the same page with the same shared class norms and expectations for things to run smoothly. This works best with input from everyone involved, and relevant and interesting content. In my classes this year, we have focused on climate change as a theme. When teaching new topics, we always start with students prior knowledge, brainstorming and discussing what students already know - then making clear learning objectives for our unit. From there, I find hands on labs and experiences are the most helpful in engaging students. Asking them to make connections, find meaning, compare and contract, analyze, interpret, and present requires them to do more than just memorize. I love diagrams, drawing, videos, songs, dances, and more to help new concepts stick and I guide students through complex topics with these learning tools, in addition to organizing a lesson so that students read, write, discuss, see, experience, and reflect on the new idea. When learning becomes personal and connected to self, that is often what sticks with students the most, Bill Nye always helps too.

e. Describe the particular strengths you would bring to the PolarTREC

program and to a field research team. (200 words maximum)

I love helping students learn science and it is my life-long passion to engage this next generation in research and the scientific method. I tend to be action and leadership orientated, I love discussing ideas, planning, delegating, and helping a team accomplish a bigger task. I have also had a lot of experience on research teams from college, both big and small. My favorite was during my study abroad in New Zealand, I was on a research team with two adults and six other students studying a tiny frog only found in remote habitats in the mountains. Our work was hard, it was muddy, it rained a lot, but we carried our heavy equipment, and hiked around doing a transect study. For my whole life I have loved being active and being outdoors. I grew up in the Berkshire mountains of Western Massachusetts hiking every weekend and enjoying all four seasons. Playing team sports and staying fit became something that grounded me and taught me a lot. I love experiencing new adventures, and being outside, and have pursued outdoor education since 2008. My skills in research, education, leadership, communication, outdoors, and sports, make up some of my greatest strengths besides being very optimistic, energetic, and excited about life.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I have been involved in many different research projects, but one of my favorites was a summer research opportunity at Cornell's Field Station at Oneida Lake. There were eight of us students working with different professors on long term research projects. For that project, I knew that my work was leading to a longer scientific paper after ten years of work, and I loved learning the GIS computer programs to map our fish. We went out each day in a boat with a radio tracker and we would sail around for hours looking for fish that we had tagged. From there we mapped each fish and learned about their behavior and life habits in order to understand them. It felt great to be part of a bigger multi-year project, with clear protocols and goals, and the day to day work that was sometimes repetitive was fun because of the joy of working with others and engaging in the scientific process. I have always been a person to opt in and have a good attitude, with any task from washing dishes, to counting clams, to hiking to just the right spot to find a tiny frog, and found that it can help make any experience be more fulfilling and positive.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

When you bring your rain pants, rain coat, winter hat, and crampons on a hike, the best days are when they get to stay in your backpack. Yesterday was one of those days. We loaded up six Clif bars, a block of fudge, and three liters of water a piece into our packs. Our goal was to hike a complete northern Presidential Traverse in the White Mountains of New Hampshire. The forecast called for temperatures in the thirties and clear sunny skies, but with the very real risk of life-threatening weather at any time during our fifteen mile hike. The map was packed in the outermost pocket of my worn out purple Osprey backpack, ready for referencing, our breakfast was sitting in our bellies, sunscreen was slathered on our noses, and we hopped onto the hiker shuttle heading for the Appalachia Trail Head, legs jiggling with excitement. At 8:01am we started our hike. The fall leaves had changed into their brilliant shades of red, orange and yellow, welcoming us into the forest with waves as they fell at our feet with the wind as it breezed through the dense forest. The only other sounds were that of the breath in our lungs, the click clack of our poles on rocks, and the crackle of ice as it began to melt and slide off of the plants and trail signs that turned away from the sun.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I would be thrilled for the opportunity to go to either place.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I am available anytime after May 30th and up until August 20th.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I am most interested in climate science, ecology, marine, and biotic systems because I primarily teach Biology and Environmental Science. Physics and Engineering are topics I am more generally interested in, but do not teach.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

N/A

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.

I have been a person who enjoys the outdoors my whole life, I love experiencing new adventures, and being outside in any weather. I grew up hiking weekly with my family, and played soccer, lacrosse, and did cross country skiing through high school and found that team sports and staying fit became something that grounded me and taught me a lot. In addition to sports, in high school I did a week long backpacking trip each year. In college, I taught hiking and climbing classes at Cornell, and led orientation backpacking trips, in addition to playing club sports. Since becoming a teacher, I have spent many summers traveling and leading trips for students and through this work have become trained as a Wilderness First Responder, and twice taken the Wilderness First Aid course. I have studied abroad in New Zealand and Australia and lived after college in Costa Rica for a year working for an educational company both of which taught me to be adaptable, resourceful, and a savvy traveler. I have used my summers to lead outdoor travel adventures for teens. In 2017 I led a 30 day expedition in Alaska including backpacking, sea kayaking, and ice- climbing. This past summer in 2018 I led a 25 day trip to Ecuador and the Galapagos for students. In 2019 I led a 30 day camping trip in Colorado that included hiking, climbing, and volunteering at a Wolf Conservation center. Suffice it to say, I am comfortable with being uncomfortable, sleeping under the stars, dealing with bears, not showering for days, and finding the joy in the being outdoors with others. I am always happy to help others and do what needs to be done on a team, and know how to work hard and be kind to others. Physically, and personally I would be thrilled to apply my experiences on a trip like this, and I would be excited to learn and grow even more. I feel that I am highly adaptable, and fit enough to tackle any challenges on an expedition.

b. Provide a basic statement of your general health and physical condition.

I am in great health, with no dietary restrictions, great cardiovascular health, and no injuries. I stay fit by running twice a week, climbing and doing yoga a few times a week, as well as dabbling in fun new activities like aerial circus classes and the occasional cross fit class. I am able to hike with a pack easily up to 15 miles, and can easily run up to 10 miles in rugged terrain. I am 5’9 and 140 lbs.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I use a Macbook Air laptop, chrome as my browser, and google for most of my documents and am very comfortable with the operating system and its functions.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I am very comfortable with Microsoft Office, Google Suite, ArcGIS, various learning management systems, blogging, social media, and web development. I use google for most of my documents, lesson plans, labs, spreadsheets and graphing. I used ArcGIS for a summer research project and for a soil science internship. Our school uses a learning management system called Finalsite where I post course syllabi, assignments, resources, and more. I have used blogging and social media in past internships and with trips and adventures in life to document and share them.

e. List any additional skills or information that you wish to be considered.
N/A

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information N/A

If yes, did you complete all program requirements? In progress

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
N/A

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain N/A

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
Google searching for summer science opportunities for teachers.

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Tom Keenan

Title and affiliation Science Department Head

Email Address tkeenan@walnuthillarts.org

Phone Number 917 658-1167

Reference 2

Name Emily Jones

Title and affiliation Head of School - The Putney School

Email Address ejones@putneyschool.org

Phone Number (802) 387 - 6259

Reference 3

Name Jim Stein

Title and affiliation Director - The Road Less Traveled

Email Address Jim@theroadlesstraveled.com

Phone Number (773) 320- 9143

Sarah Compton

1. Contact Information

Name: Ms. Sarah Compton

Email: sarahcmptn@gmail.com

Home Address:
904 Oakton Street, Apt. 1
Chicago, IL 60202 US

Home Phone:

Cell Phone : (708)275-7438

Institution Name: Tilden Career Community Academy

Institution Address:
4747 S. Union Avenue
Chicago, IL 60609 US

Institution Phone: (773)535-1625

Classroom/Office Extension:

Institution Fax: (773)535-4651

Institution Website: http://tilden.cps.edu/

Other relevant websites:

Supervisor's Name: Dawn Ramos

Supervisor's Email Address: dramos1@cps.edu

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Tilden is a urban high school that serves a diverse population in grades 9-12 on the south east side of Chicago. Tilden is part of the Chicago Public School System and is considered a neighborhood high school that any student can attend. The student population at Tilden is fairly diverse and many students are bilingual. The technology at Tilden is average with access to computers and laptops, but many students do not have smartphones or access to the internet outside of school.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 200

f. School Ethnicity:
0 % - American Indian or Alaska Native
2 % - Asian
53 % - Black or African American
35 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
9 % - White
1 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 95

h. Average class or audience size 22

i. Total number of students/audiences you teach in a year 65

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

School Ends: June 18, 2020 Summer Program: July 1 -14, 2020 Summer Break July 15- September 1, 2020 School Starts: September 8, 2020 Winter Break: December 21, 2020 - January 3, 2021

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Biology

Bachelor's Degree (Minor): Chemistry, Philosophy

Masters Degree (Discipline): Secondary Education, Biology

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 13

c. How many years have you been working at your current institution?: 1

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
IL Professional Educator License (PEL)- Secondary Biology 2018 Grosvenor Teacher Fellow with National Geographic and Lindblad Expeditions 2018 National Geographic Educator Explorer Program Participant 2019 Grosvenor Teacher Fellow Mentor with National Geographic and Lindblad Expeditions 2019 National Geographic Educator Explorer Advisor Committee Member Camping Leadership Immersion Course (CLIC) Certified with Forest Preserves of Cook County ChicagGO Explorers Certified with Chicago Park District Published in Green Teacher Magazine National Geographic Certified Educator Google Certification- Level 1

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology, Secondary General Science

Other Subjects Environmental Science, Forensic Science

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I am applying to PolarTREC because it would be an incredible learning experience that would enhance my teaching and curriculum and grow my professional network. I have never completed field research and being able to do so would increase my content knowledge, improve my research skills, and give me a unique experience that I would be able to bring back to my classroom to help hook my students and inspire them to engage in science research. Being able to speak directly to a topic or experience allows me to bring my students on a journey unlike simply reading a passage. Participating in the program would also connect me with like-minded educators and scientists who would be a source of inspiration and knowledge. Finding like-minded educators has been key to helping me grow professionally and PolarTREC would introduce me to new educators as well as scientists committed to helping educators share their science with the world.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I have been actively seeking out professional development opportunities to improve my content knowledge in areas where I feel I am lacking, specifically opportunities to bring student led research into the classroom. Being able to participate in polar field research would give me first hand experience to improve my content knowledge and research skills. This would in turn enable me to design curriculum and provide opportunities for my students to conduct field science and have a full experience. Along with increasing field science opportunities in the classroom, I would present my work to my colleagues during our professional learning community meetings and at my district science meetings. I would also share this experience with the pre-service teachers I have been working with to share ways to incorporate more authentic science in class as well as the importance of seeking out new personal and professional learning opportunities. If possible, I would write a piece for publication or present at a conference about my experience and how it connects to the classroom.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I envision sharing this information with my professional circle both online and in person. Through other programs I have created a large online network of educators, both formal and informal. I would share as much as possible with them via social media. I would also do in person presentations with my school colleagues and other schools within the district at professional learning community meetings. I would present to pre-service teachers about the experience and why it is important to seek out opportunities to grow both personally and professionally. Another opportunity I would see out would be to share the experience with other non-educators through local connections. I attend alumni meetings where we share our personal projects and this would be a great place to engage a large non-educator community. I would also investigate the possibility of hosting a session at the local library. It would be great to share the experience with both adults and children. My niece and nephews are homeschooled and participate in many homeschooling activities with a large homeschool group. I have shared other science experiences with their group and a session on Arctic or Antarctic research would be a fun experience.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I work with students who have been born and raised in an urban environment and many have little if any connection to nature. Because of this many environmental science topics are challenging for them. To help manage this and other complex topics, I find it best to break it down so they understand as well as making explicit connections to what they already know. Making topics and information relevant to them is essential. Guiding them through a difficult topic and mapping out how it relates directly back to them, where they live, and what they already know makes a huge impact in how much they engage with the material. We have been working with models a lot recently to help them show their thinking and identify where they need to go to have a full understanding of a concept or process. Whenever possible, I bring them on trips outside of the classroom. Experiences are powerful learning tools that engage students differently than the classroom.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

My experience as an educator and personal habits provide me with many strengths that I would bring to the research team. I am extremely organized. I juggle teaching high school full time, a family life, and other professional obligations, which require me to keep my schedule, tasks, and information highly organized. I think this would benefit a research team that is trying to collect and manage data in a challenging

environment. Although I like planning and organization, working with young people requires me flexibility. Things don’t always go as planned and whatever the cause you need to roll with it, find a solution and move on. I imagine working in the field is very similar to the classroom. While you think you may have the best plan, sometimes things outside of your control happen and you need to find a way to manage and move on. Along with organization and flexibility I am extremely reliable. If I say I am going to do something than I will do it. If a team member needs help, I will do what I can for the benefit of the entire team.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

My school gives students an assessment about their ability to create an evidence based argument. The assessment requires students to read and annotate multiple sources of information and write a persuasive piece utilizing the text in their argument. The teacher in charge of the assessment asked for topic suggestions during an unrelated meeting. I gave her a list of five engaging science topics immediately. After the students were surveyed, I volunteered to help her to find sources. I located five reliable sources, texts and infographics, with varying reading levels. Upon completion of the assessment, I volunteered to grade extra assessments once my required ones were completed. The assessment team was created before I arrived at the school, but I was able to offer assistance so I did. I developed research skills throughout my years of schooling and utilized them for assessment materials. During the grading portion, I had prep for my classes and had time so I offered to grade extra assessments to help the team get them completed to get timely feedback to the students. Grading was the only part I was required to do, but I had skills that would benefit the entire team and utilized them.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

From of yelling and cheering, one would assume we were watching a sporting event. While there was an intense competition underway, it was between a juvenile marine iguana and a racer snake. We were watching a clip where marine iguanas emerge from the sand and have to run to the safety of the ocean before being eaten by snakes. While the marine iguanas were being introduced, students were dutifully writing questions they had about the iguanas and the island of Fernandina. The moment the eyes pop out of the sand, students are glued to the screen. As the music feeds the anticipation of whether the newly hatched iguana will make it to safety, students completely abandoned their task. Some move to the front of the room to be closer while others clench their hands together as if saying a silent prayer for the reptiles. After the final iguana makes it to safety, they cheer and immediately start firing off questions. I remind them to write them down before they forget. We spend the remaining class time discussing. Engagement is high, questions are flowing, and I can’t wait to share my Fernandina experience with them tomorrow!

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I think that expeditions to either location would be a once in a lifetime experience and while different both offer the opportunity to learn in a unique environment.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
For an Arctic expedition, I would be fine with any time frame since I would be off from school and have a great deal of flexibility. For an Antarctic expedition, I would prefer 3-4 weeks since I would have to take time off school. I would request permission for an extended Antarctic expedition if I was being considered. I am unable to start an expedition before July 14, 2020 due to already scheduled obligations.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
Climate change is a topic that has been part of the general conversation and something my students have grown increasingly interested in. Topics related to climate change that I would be interested investigating further are melting permafrost and the impact it will have on the world as well as melting ice and the impact that has on the oceans as well as weather patterns. I recently completed a climate change course and permafrost was touched on and I was completely fascinated. Not only will melting permafrost have an impact on the landscape, it is going to have an impact on the climate as it releases more carbon. I would love to learn more about scientists study permafrost as well as the impacts it will have. Melting ice, both sea and land ice, is something else I have become increasingly interested in as I have learned more about it. I have always been very interested in organisms that are adapted to surviving in extreme environments. Evolution is fascinating and I would love to learn more about the evolution of polar species as well as their specific adaptations for survival. As the climate changes, I am interested in the impact it will have on these organisms and their ecosystems.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

No, I am not applying to work with a specific researcher.

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have spent my entire life camping and have camped for personal and educational reasons all over the world. For the past five years, I have been taking students hiking, camping, fishing, and kayaking as part of an outdoor education initiative I started. I have been certified in basic first aid and CPR. I have been on boats for recreation purposes, but do not have any experience piloting a vessel.

b. Provide a basic statement of your general health and physical condition.
I am in great physical health and considered to be at a healthy weight for my height. Aside from some environmental allergies, I do not have any persistent medical conditions. I had an issue with plantar fasciitis, but at home exercises and appropriate footwear have relieved all previous pain. I am an active person and engage in regular physical activity.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
At work, I am required to use a PC and am proficient using all Microsoft programs. I use a Mac at home and am proficient with operating iOS. I have completed Level 1 Google certification and am familiar all G Suite apps. I use G Suite on a daily basis.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use a laptop computer at work and at home. I use Microsoft Word, Power Point, Excel, and G Suite apps both personally and professionally. I have multiple digital cameras I use with my students and recently acquired a DSLR camera through a grant. I am actively working on how to use my DSLR camera more effectively. I have used creator programs such as PowToon, iMovie, and Adobe Spark before. I have a GoPro Hero 6 I use to record video on trips both personally and professionally.

e. List any additional skills or information that you wish to be considered.
I am a quick learner and I love to learn new things. I want to learn and I try new things when I have the opportunity.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. Yes

Program Information I was a 2018 National Geographic and Lindblad Expeditions Grosvenor Teacher Fellow.

If yes, did you complete all program requirements? Yes

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
The Grosvenor Teacher Fellowship introduced us to research others were doing and really focused on bringing the experience back to the classroom. This experience helped me identify effective ways to share experiences with my classroom and professional community. PolarTREC would take it further by giving me the opportunity to participate in research and bring even more back to my classroom and community. Being a Grosvenor Teacher Fellow would make me an even more effective PolarTREC participant because I have already successfully brought a unique science experience back to my classroom and other classrooms to engage young people and educators in science.

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Wendi Pillars and I have discussed what an amazing opportunity PolarTREC is and how she has used it since her return from Alaska.

Former PolarTREC, TREC, or TEA teacher. Please provide their name
Wendi Pillars, Monica Nunez, Kim Young, and Svea Anderson have all mentioned what an amazing opportunity PolarTREC has been.

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
NSTA, ISTA, National Geographic Education Online Community

12. References

Reference 1

Name Anne Gottlieb

Title and affiliation Academic Interventionist; Anne was my supervisor/principal for 11 years

Email Address agottlieb69@hotmail.com

Phone Number (708)334-5558

Reference 2

Name Gabby Salazar

Title and affiliation Photographer; National Geographic's Educator-Explorer Exchange partner

Email Address gabby.r.salazar@gmail.com

Phone Number (336)210-1144

Reference 3

Name Georgina Alejos

Title and affiliation Assistant Director of Specialized Services; former co-teacher

Email Address galejos@yccs.org

Phone Number (708)657-6969

Kristen Conklin

1. Contact Information

Name: Ms. Kristen Conklin

Email: Kconklin214@gmail.com

Home Address:
830 Shore Road Apartment 3F
Long Beach , NY 11561 US

Home Phone:

Cell Phone : 5166421783

Institution Name: Francis Lewis High School

Institution Address:
58-20 Utopia Blvd
Fresh Meadows, NY 11561 US

Institution Phone: 1718-281-8200

Classroom/Office Extension: 8296

Institution Fax:

Institution Website: www.francislewishs.org

Other relevant websites: My LinkedIN: https://www.linkedin.com/in/kristen-conklin-ms-ed-168b2816a/

Supervisor's Name: Nidhi Jaipershad

Supervisor's Email Address: Jaipershadn@gmail.com

2. Demographic Information

a. Gender: Female

Race: White, Multiracial

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I work at one of the largest schools in Queens, New York. We are a high performing title 1 urban high school with a variety of ethnic and cultural teachers and students. Each classroom is equipped with accessible technology including a Tv and a Computer. 84% of the student body is classified as a minority groups including Asian, black or African American, Hispanic, and American Indian. 61% of the students are part of a free lunch program. With my team of over 200 educators we work to bring all 4,361 students to graduation and proficiency in all subject areas.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) According to the USNews Education, Francis Lewis High School has 4,361 students.

f. School Ethnicity:
1% % - American Indian or Alaska Native
53% % - Asian
6% % - Black or African American
20% % - Hispanic or Latino
1% % - Native Hawaiian or Other Pacific Islander
18% % - White
1% % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe: n/a

g. Percentage of students who receive free or reduced lunch: 61

h. Average class or audience size 34

i. Total number of students/audiences you teach in a year 117

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation

periods. i.e. Christmas break, summer break, etc.

September 6th to Summer break on June 26th Winter Break: December 23-Jan 2 February Break (one week) April Break (one week)

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Education

Bachelor's Degree (Minor): Biology

Masters Degree (Discipline): Special Education

PhD Degree (Discipline):

Other Degree: : +30 credits beyond my masters in Environmental Studies

b. How many years of education experience do you have?: 9

c. How many years have you been working at your current institution?: 5

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Certifications: Elementary Education (1-6) High School Biology (7-12) High School Special Education (7-12) Generalist Recognition: 1. National Geographic Certified Educator 2. Volunteer with the Rescue and Respond Atlantic Marine Conservation Center of Long Island New York 3. I designed my own curriculum with my school called “Environmental Conservation” Awards/ Publication: 1. National Science Teacher Certification (NSTA) publication on deforestation curriculum written in Madagascar, Africa (see October issue 2019 of NSTA journal) 2. Conference Speaker at the Science Teacher Association of New York State (STANYS) 3. Recipient of Grant for African Studies through Boston University: Expedition to Madagascar Africa. 4. Long Island Herold Magazine article written about me under the “Local Spotlight” during my expedition to the Amazon, Brazil.

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12), Special Education, Other (Describe Below)

Other Primary Assignment Honors Biology

b. What subjects do you teach? Check all Secondary Biology

Other Subjects Honors Biology Ecology (for special education) Environmental Studies

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

As a lifelong learner, I am motivated to apply to the polarTREC program in order to be part of a bigger community of thinkers and problem solvers. My goal is to listen and learn from everyone around me and design STEM based lessons for teachers to implement in their classes. At times, the current state of our world can feel overwhelming. For the past few years, I find myself waking up with a constant urge to be part of something bigger, to participate in programs that are geared to awareness, education and designing solutions for the future. I have made great strides with my recent publications and ongoing volunteer programs that I take part in. My students look me as a guide towards their own personal education. I definitely do not want to let them down. A well-rounded education comes from more than just a textbook. Education and real science comes from experiences and connections with our world. I work diligently to be part of programs that will help spark my creativity in areas of curriculum development and education leadership opportunities to spread awareness on the importance of the various biological feedback systems and processes that we are all part of.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Now more than ever, the Polar Regions deserve a tremendous amount of attention. Primary recourses and first hand stories are essential to the learning process with children. I believe that the students will care more about issues that they themselves feel connected to. One of the most powerful methods for me to get these students feeling connected to our current polar regions is to get out there and collaborate with others, engage in real science myself and bring these experiences back into the classroom with creative lessons. Another way I would be contributing my experience with other audiences would be my yearly Professional Development program that I run for the teachers in the school to be part of. The professional development program would educate the teachers and community members on the importance of teaching about the Polar Regions

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I hope to first gain a better understanding of feedback systems in the Polar Regions. I plan to construct educational materials that can be shared in the form of publications in various educational journals (I.E EdWeek and The Science Teacher). I plan on speaking publically at educational conferences as a supporter and activist for the Polar Regions. The design goal would be to construct a hands-on problem based learning series of lessons for educators to use in their middle and high school classrooms to facilitate a better understanding of the current state of our polar region. I am an active member of the National Science Teacher Association (NSTA) and would like to take this experience to the National Conferences with the NSTA. I attend multiple educational conferences yearly such as the Science Teacher Association of New York (STANYS) and NSTA. Recently, I've had my lesson published in the October 2019 issue of The Science Teacher journal. The title of my curriculum is called, "The Trouble with Tavy" where I discussed personal experiences through travel in Africa and witnessed some of the most pristine forests being burned down for agriculture. I hope to create and share another publication upon an approved application status with PolarTREC in this educational journal.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

Finding a creative entry point when teaching about complex topics, concepts, or issues is vital in the learning process. A good method would be to use truly simple ideas and tie them to complex processes for example; having students visualize a seesaw in the child's park can be a good visual when explaining the importance of maintaining homeostasis. Educators can discuss simple ideas and then begin to replace words with science terms. This method has truly helped many of my students. Another method that I like to use when discussing complex issues is considering with a student "what is it not". As doctors sometimes do, in order for us to act like scientists and "understand what something is" we must make connections to what whatever we are talking about and identify what this "complex idea is not".

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I have been told that my positive energy lights up a room, therefore, I hope to be someone's shoulder during difficult treks, I hope to bring good laughs to the group during problematic moments and I strive to be a leader by building appropriate relationships with a solid team. On the research aspect, I hope to absorb as much knowledge as I can while collaborating with the team. I hope to assist with anything and everything that I can in regards to my contribution on a given project. Once

again, Just being part of something bigger is humbling enough and I hope to create some incredible material from the experience to share with the world.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

Every week I run “team teachers” at my school in which we (the science department) get together by specific areas of study (earth science, living environment, physics etc) to discuss what we are doing in the classroom and how we plan to teach specific goals and objectives. My job is to be the leader of the living environment group. A standard meeting moves as follows; I have the teachers bring one sample of a worksheet that they are planning to teach. The teacher discusses the worksheet and goals for the students. The other educators in the room obtain a copy of the worksheet and brainstorm how we can modify and/or make the lesson more STEM based. we collaborate respecfully and I volunteer to go first to break the 'ice'. Teachers only work in groups of four to increase productivity outcome. I keep track of what is discussed at each meeting and then store my notes in a binder. We have collected and modified over three years worth of units. At the end of every year, we take a headcount of who would like to come in during the summertime to create new STEM based material based on student scores and topics can be changed into hands on STEM based lessons.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)
Breakfast at 8! Yelled out on of the lead scientists as we debrief another day in this bizarre alien like universe. It’s been another windy cold day yet, these endemic species thrive in this polar habitat, I can’t help but watch in awe of their well-adapted configuration. I am beginning to lose that whole “resilient human” feeling. We as humans require so much equipment to stay alive and research here in this polar region. What a humbling human experience. As we debrief on todays findings, here is what our team and I have accomplished on December 27th 2020; 10:15: the researchers and teachers collected samples of ice. The samples indicated the presence of microplastics and even traces of various hazardous chemicals such as lead. How did this lead get here? The team and I wonder if this might have been an economic impact of wars and plagues over the past 1500 years. We all looked at one another until one of us pointed out, what effect this might have on the living marine life in this environment? 12:00 The lead researcher spot a pod of seals. We decided its time to suit up and go out to collect information on this pod. We begin by constructing a plan to tag the animal and obtain a blood sample to determine levels of chemicals that might be present in his/her blood. Various instruments were used in order to appropriately collect data, some of the instruments used include….
…..Due to my 200 word count this blog entree has an abrupt end

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I am truly intrigued over the current state of our polar regions and would like to better understand what exactly is occurring in these fragile regions. Working with scientists in either polar region will be beneficial to constructing meaningful STEM based material for students and staff as well as get others on board locally and globally to design appropriate solutions to solve some of our environmental concerns.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I would prefer to embark on a trek that is three to four weeks long in the months of July and August. I am available to attend treks in the months of December, April and February. I think that as long as I give my school notice on leave if the excursion has to be during the school year, I can try to out paperwork in ahead of time and/or try to pair up the dates with one of the holidays in February and/or April.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)

Firstly, I am always wondering and asking questions about all aspects of science and therefor it is difficult to choose just one topic of interest. If I had to choose, I believe I am most interested in the feedback systems, which involve living and nonliving factors. I find myself passionate about how arctic organisms have fluctuating populations that are drastically changing in these Polar Regions. I wonder about various factors that might lead to alterations in the populations. How much of a role do these habitat alterations contribute to the continuation of species? I am interested in how abiotic factors such as microplastics and pesticides play a role in our arctic regions. I am also very interested in microorganisms that have the ability to release methane into our atmosphere. I wonder what the future will bring for us as a species. Could we collect enough data during this fragile time to make connections and alert international law to slow/stop this climatic process? As a lifelong learner, I am interested in much of the life sciences and would be more than happy to learn new phenomenon in regards to researcher projects.

Atmospheric Systems I do not want to be considered for an expedition in this subject area

Cryospheric Systems I do not want to be considered for an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

N/A

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have experience in camping, hiking, working and collecting data in the wilderness. I have traveled alone and with groups of teachers to over 40 countries in which we worked with the local indigenous groups and/or gathered information on endemic species. Some of my work includes trekking through the Amazon rainforest, camping in the Sahara desert and spending weeks in huts on the Galapagos Islands. I live on the beaches of Long Beach Long Island and truly enjoy all outdoor activities involving nature and observing the world we live in.N

b. Provide a basic statement of your general health and physical condition.
I am in good overall health conditions. I do not take any medications and or struggle with any mental or physical illness. I am a vegetarian.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
Recently, I bought myself a Mac Computer. I am learning the language of Mac and do feel more comfortable with the operating system. I have spent most of my time in the past working with a PC and feel very comfortable with the PC system. I can operate Excel and other Microsoft equipment.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I am passionate about photography. I usually spend my summers photographing shore bird colonies near my home. I use the Canon Rebel to shoot. I have bought various zoom lens during my travels to Africa as many of the animals are far in distant and difficult to photograph from afar. I am proficient with a laptop computer and use PowerPoint regularly. I my classroom we use Google classroom. Recently, I was became a National Geographic certified Educator in which I was required to put together a video. I chose to put the spotlight on a special education environmental class that I taught last year in regards to plastics. Below is the video I created: https://drive.google.com/file/d/1KdfaJVAWNPvlLUGAlmj9WnJJPLBzbx19/view

e. List any additional skills or information that you wish to be considered.
I get along with other humans and they tend to enjoy my presence.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
After becoming a National Geographic certified educator and publishing my unit with the National Science Teacher Association (NSTA) I wanted to look for other opportunities to do more with science and education. This PolarTREC I stumbled upon during my summer digging of opportunities to be more involved in solutions for our future.

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Nidhi Jaipershad

Title and affiliation Assistant Principal Of Science

Email Address Jaipershadn@gmail.com

Phone Number 1.718-281-8293

Reference 2

Name Danielle Williams

Title and affiliation Assistant Principal of Special Education

Email Address Dwilliams30@schools.nyc.gov

Phone Number 1.718.281.8286

Reference 3

Name Tyler St.Clair

Title and affiliation Research Professor and one of my educational collaborations for a recent publication.

Email Address stclair.va@gmail.com

Phone Number 804.564.5454

Larrea Cottingham

1. Contact Information

Name: Larrea Cottingham

Email: larrea.cottingham@gmail.com

Home Address:
1839 Old Mail Trail Rd
Moab, UT 84532 US

Home Phone:

Cell Phone : 5755340888

Institution Name: Moab Charter School

Institution Address:
358 E 300 S
Moab, UT 84532

Institution Phone: (435) 259-2277

Classroom/Office Extension:

Institution Fax:

Institution Website: moabcharterschool.org

Other relevant websites:

Supervisor's Name: Carrie Ann Marinelli

Supervisor's Email Address: carrieann@moabcharterschool.org

2. Demographic Information

a. Gender: Female

Race: Multiracial

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Our school serves Moab, UT and the surrounding rural areas of Grand and San Juan Counties.

d. Type of School (or students you work with): Other (describe below)

Other Type of School Public Charter School

e. What is the population of your annual audience or school (estimates are fine) 80-100

f. School Ethnicity:
5 % - American Indian or Alaska Native
2 % - Asian
1 % - Black or African American
20 % - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
72 % - White
% - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 80% or more

h. Average class or audience size 15

i. Total number of students/audiences you teach in a year 20

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
Our school year typically begins early August and ends the Friday after Memorial Day. Our winter break is two weeks longs and is typically the last week of December and the first week of January.

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Biology

Bachelor's Degree (Minor): Chemistry

Masters Degree (Discipline): Masters of Arts in Science Teaching

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: I have been an informal education in outdoor education and climate/energy education and outreach for the past 4 years. Additionally, I taught college level biology labs for 1 years and have been teaching grade-school fro 1 year.

c. How many years have you been working at your current institution?: 1

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Level 1 Utah Educator's License, Secondary Education (6-12th grade), Biology Project Wet Teacher Workshop, Certificate fo Completion Native Seed Search Teacher Workshop, Certificate of Completion Wind for Schools Teacher Workshop, Certificate of Completion Wilderness First Responder CPR Certification

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Primary (Grades 1-5), Middle School (Grades 6-8)

Other Primary Assignment I teach all subjects for 5th and 6th grade (Science, Social Studies, Language Arts, and Math). Additionally, during the summer I am an Instructor for the Colorado Outward Bound School where I lead wilderness trips in Colorado and Alaska.

b. What subjects do you teach? Check all Elementary Education, Middle School English/Language Arts, Middle School Math, Middle School Science, Middle School Social Studies

Other Subjects I teach all subjects for 5th and 6th grade (Science, Social Studies, Language Arts, and Math). Additionally, during the summer I am an Instructor for the Colorado Outward Bound School where I lead wilderness trips in Colorado and Alaska.

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I always dreamed simultaneously about being a conservation scientist and a teacher. I have spent my entire career working in both fields because I have found that when I'm doing one, I am missing aspects fo the other. This is because I believe the solutions to climate change and the ecological crises it brings require both scientific research and effective education and outreach. I am motivated to participate in PolarTREC and embark on an expedition because I want to gain experiences that will help me more effectively incorporate authentic science and conservation to relevant and real issues in my classroom. I would ultimately like to structure my science curriculum to engage students in Citizen Science, Project Based Learning, and Service Learning Projects. I believe PolarTREC could be a significant step in brining real science to my classroom, and combined with our current use of the MOSAiC expedition, a perfect way to connect students to a current science expedition.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I already use "the expedition" as a foundational concept in my class. At the beginning of the year I draw on my previous expeditions to help students create their classroom rules, which we call our Expedition Expectations. This allows us to set up the year as an adventure, and is a great piece to come back to through our science curriculum as we delve into what science is and how science is conducted. Additionally, I teach using the Ambitious Science Teaching method which uses real-world phenomena and relevant driving questions to anchor student learning. If chosen for a PolarTREC expedition, I would use the expedition as an anchoring phenomena for a model-based inquiry unit to meet our standards and curriculum. I would create inquiry-based activities for students that relate to what was done on the expedition, so they could explore these scientific concepts and experience what it's like doing real science for themselves. Additionally, to fully-immerse my students in the expedition experience, while on my PolarTREC expedition, I would create day-in-the-life videos to bring back to the classroom so that during this unit, my students could truly be part of the expedition.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

As stated above, if chosen for a PolarTREC expedition, I would create a model-based inquiry unit to explore the scientific concepts of the expedition in my classroom. I would also use this as an opportunity to collaborate with the art teacher at my school (something we do regularly), so the students could relate the expedition to both science and art. Additionally, I would not only share my experience with my school and students', but also with the other schools in the area and the public. I would offer to be a guest speaker at the other schools so I could share the science and my experience as part of the expedition. Each year our Public Library runs a speaking seminar focused on expeditions and outdoor pursuits, and as I have already been approached to speak, I would be able to create a presentation for the public that shares the mission of PolarTREC, the research we participated in, and the impact this experience would be having on my school and students. I believe an opportunity like this would be so unique to our area (rural Utah), that I would also be able to share my experience on our local radio station's show, Science Moab.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I teach using the Ambitious Science Teaching method which uses real-world phenomena and relevant driving questions to anchor student learning. I begin by eliciting students' prior knowledge and ideas and use their existing understanding as a baseline. I typically begin the introduction of a new concept by asking students to answer a real-world question, and have them draw models for how their answer works. This not only helps me understand what students already know, but is a fun and exciting way for students to demonstrate their existing knowledge. As we progress through a unit, I use a variety of hands-on activities that help answer our driving question and give student the opportunity to explore complex scientific concepts in a variety of ways (i.e. through doing an inquiry-based activity, reading, researching, etc.). Throughout the unit, students develop their knowledge and understanding by representing it using a drawn model. Students have the opportunity to revise their thinking until they are satisfied with their final models. Finally, I guide students in writing an evidence-based explanation that uses what they learned throughout the unit to answer the original driving question. This strategy of teaching science is not only effective for building mastery of scientific concepts, but also builds students' language skills while encouraging creativity.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I believe my passion for science and expeditionary living, previous fieldwork, and

wilderness skills and experience would be an asset on any PolarTREC expedition. I have multiple years' experience working and traveling in a variety of backcountry settings, and I am accustomed to and enjoy the rigors of fieldwork. My experience includes four seasons as an instructor for the Colorado Outward Bound School (COBS), and two seasons of wildlife field work. I have previous experience collecting field data in a variety of habitats and in adverse weather conditions. While working for the Arizona Game and Fish Department I collected data on bald eagle breeding behavior, feeding, and habitat. As a Conservation Detection Dog Handler I conducted field surveys and collected scat and fawn remains in Oregon and Michigan as part of a larger predator-prey study. In addition to my technical experience, I understand the critical need for each team member to demonstrate excellent communication, self reliance, and positivity in the face of challenge.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

When working with a team, I work to maintain a united front between all team members and create a collaborative environment where all members feel valued and heard. I hold a strong well-planned vision while allowing room for flexibility as the realities of fieldwork and expedition life occur. Additionally, I also often find myself in the position of risk manager because my prior experience in challenging environments has provided me with heightened awareness to identifying subjective and objective risks. For example, as a Lead Instructor at COBS, I led 15 to 30-day backpacking courses in Utah, Colorado and Alaska. I was responsible for the physical and emotional safety of other staff and student groups, including during extensive off trail travel, through 4th class terrain, and while rock climbing and mountaineering. I managed myself, other staff, and students during adverse conditions including snow, heavy rain, electrical storms, throughout mosquito season and in grizzly bear country. Though in group settings I always take a leadership role if needed, I also enjoy being a respectful and active follower with my primary goal being the success of the expedition and the wellbeing of the people involved.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

I arrived home Monday night at 11:30 pm; and though I had spent fifteen hours at school that day, I still felt as though I had a pile of papers to grade, buckets of emails to respond to, and weeks of sleep to catch up on. It turns out things just never seem to go as planned in the world of teaching. My first mistake occurred Monday morning when I decided to ride my boyfriend's bike (mine had a flat) in an effort to get some exercise. I noticed the lack of lights on his bike and promised myself I'd be home well before dark. When I arrived at school, I did the usual- checked my email, wrote the agenda on the board, took three deep breaths, and went out to greet my students. The day was off to a great start, though it soon turned out to be a whirlwind of scheduling conflicts, meetings, projects, and curriculum dives. When I finally caught my breath, it was 10:30 pm. Walking into the dark parking lot with the wind howling, I remembered that the bike had no lights. After contemplating if I should just sleep on the couch in my classroom, I decided to walk the four miles home through the 30 mile-per-hour gusts. An hour later I arrived home windblown, exhausted, and hungry. A bowl of Grape-nuts never felt so deserved or tased so delicious.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
I am most interested to work on a project that related to marine or terrestrial ecology. I have guaranteed availability during the summer months when school is not in session. However, I am also interested in working with my administration to make an expedition to Antarctica work, as many of these projects seem align more with my interests.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
For an expedition during the summer months, I would be excited to participate for 3-6 weeks. For an expedition that occurs during the school year, I would have to spend less time (closer to 3 weeks) away from my class.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I am most interested in the relationship between climate change and ecology. I am particularly intrigued by how climate change is affecting the make up of ecosystems as a result of loss of biodiversity. I am passionate about scientific projects that not only seek-out answers to how and why climate change is affecting ecosystems, but also what what we can and should do about it.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this

subject area

Engineering and Technology I do not want to be considered for an expedition in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I have multiple years' experience working and traveling in a variety of backcountry settings, and I am accustomed to and enjoy the rigors of fieldwork. I have led 15 to 30-day wilderness backpacking and mountaineering courses, and have worked multiple seasons of wildlife fieldwork. Additionally, I have completed numerous personal backpacking, mountaineering, pack-rafting, canyoneering, and climbing trips. I am experienced in navigation using GPS and topographic maps, and have repeatedly taught these skills as an instructor for COBS. I have experience maneuvering 4-wheel drive vehicles through snow, ice, and rugged terrain, as well as towing trailers. I am also certified in CPR and a certified Wilderness First Responder, and have used this training to conduct successful medical evacuations.

b. Provide a basic statement of your general health and physical condition.
I am a physically fit individual. I bike 4 miles to-and-from work each day and do additional exercise regularly throughout the week. Without training I can easily run 5-8 miles, or hike over 20 miles in a day. I am able to hike with a 50+lb. pack on my back for 8+hours a day for weeks in a row.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am equally skilled in both Mac and PC operating systems as I use both in my personal and professional life. I am able to complete basic tasks (emailing, creating and editing documents, online research, editing photos, etc.) using these systems.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use the Microsoft Office Suite (Excel, Word, PPT) on a regular basis to create lesson plans and activities, and to analyze student data. I also use the Google Drive Suite regularly and teach my students how to use it as well. I am able to edit videos using iMovie or Final Cut Pro. I also often use basic recording equipment and GarageBand for my musical pursuits.

e. List any additional skills or information that you wish to be considered.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish
Chris Benson and Darrell Kaufman- Former PolarTREC Researchers

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers
NSTA Alumni list serves for university science teaching departments.

12. References

Reference 1

Name Carrie Ann Marinelli

Title and affiliation Executive Director of the Moab Charter School, Direct Supervisor

Email Address carrieann@moabcharterschool.org

Phone Number 435-259-2277

Reference 2

Name Matt Olsen

Title and affiliation Staffing Manager for Colorado Outward Bound School, Direct Supervisor

Email Address molsen@cobs.org

Phone Number 303.676.8241

Reference 3

Name Greg Davidson

Title and affiliation Owner of Find It Detection Dogs, former Direct Supervisor

Email Address greg@finditdetectiondogs.com

Phone Number

Jennifer Cotton

1. Contact Information

Name: Ms. Jennifer Cotton

Email: cotton.jennifer@brevardschools.org

Home Address:
658 Macon Dr
Titusville, FL 32780 US

Home Phone: 3215911146

Cell Phone : 3215911146

Institution Name: Titusville High School

Institution Address:
150 Terrier Trail
Titusville , FL 23780 US

Institution Phone: 321-264-3100

Classroom/Office Extension: 5116

Institution Fax: 321-264-3103

Institution Website: https://www.brevardschools.org/TitusvilleHS

Other relevant websites:

Supervisor's Name: Jennifer Gonzalez

Supervisor's Email Address: gonzalez.jennifer@brevardschools.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): k-12 public schools, private schools, elementary choice school, charter school

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 1400

f. School Ethnicity:
% - American Indian or Alaska Native
1.2 % - Asian
3.5 % - Black or African American
8 % - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
61.5 % - White
% - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 14%

h. Average class or audience size 25-30

i. Total number of students/audiences you teach in a year 210

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
https://www.brevardschools.org/cms/lib/FL02201431/Centricity/Domain/4/2019-2020%20District%20Calendar.pdf Please see this link for a full list of our school calendar

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Event Management

Bachelor's Degree (Minor):

Masters Degree (Discipline):

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 9

c. How many years have you been working at your current institution?: 2

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Biology 6-12

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all [webform_submission:values:subjects]

Other Subjects Marine Science Honors, AP Environmental Science, AP Research, Science Research

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

The course that I teach would greatly benefit from the knowledge I would gain from this experience. I teach climate change to both Marine Science and AP Environmental Science. I currently use real world data to teach this curriculum, however, having field experience and personal ties to the world that I discuss would allow for me to expand on this data. I believe this will allow for me to bring new insight to my science research course and assist in having students possibly do a research project on topics in the polar regions. I am applying so that I can first-hand see the state of the planet's polar areas. I would use this information to further build upon the Marine Science curriculum guide for our district as well.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Our school would facilitate a Professional Development Day where I could share this experience with the faculty at our school. We could branch this topic far beyond just my science courses. I would create and share curriculum within our school district as well. We host a Professional Development day at the beginning of the school year. This day hosts every secondary science teacher from the district. I would gladly share this information at that day as well.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

As stated above, I would host multiple Professional Development days and create curriculum to share within our district. My classes host a STEAM camp for a local Elementary School, Southlake Elementary, and we could share the information with the students, parents, and faculty at that school as well.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

I teach using project-based learning. My students are engaged by manipulating and analyzing real world data. This strategy allows for students to own the topics we are learning. They master each standard and topic, no matter the complexity, and are

then asked to share this information with their peers. By teaching in this manner, students act like scientists in the field. The application of open sourced data is my primary goal as an educator. This takes those complex and sometimes controversial topics and brings new life to them. Students own the information and are able to draw their own conclusions when working with complex topics, concepts, and issues.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

My strength in the realm of education is creating and facilitating curriculum. I developed curriculum for my school as a science coach, my school district when developing the marine science curriculum guide, and a publicly sourced website www.ocearch.org. While working for OCEARCH I was able to utilize the open sourced data that they have available to design curriculum for educators to use in their classroom. I share science information via social media and have an open Instagram that is strictly science based. I would be able to expand on this platform to share the experiences I have while on expedition with this program. I am also equipped to be on expedition for an extended period of time as I have done this with OCEARCH many times in the past while attending shark research expeditions.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I act as a Science Fair Director for my district and am a science coach at my school. My primary role in this position is to lead educators and assist them with data analysis and remediation strategies for their students. I tend to take the role of leader in groups, however, I am a team player that is up for any task that is thrown at me. I like to hit the ground running and organize tasks to make sure that they are completed at the level that they are required to be.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Wednesday, October 2nd, was an amazing experience. I was fortunate enough to speak on my favorite topic, shark research. A local high school invited me to speak at their gifted seminar. Each year, schools with a program designed specifically for gifted students are required to have a speaker come to their school to share information on their field. I was keynote speaker at our district science symposium, and the educator planning the gifted seminar was in attendance. The most rewarding part of helping other schools is seeing the faces of students that love the marine sciences. It sometimes feels like my students get used to the fact that they have opportunities to work with industry professionals, so to visit another school and see the spark of joy in their students is what keeps me enthusiastic about education.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Arctic

Please explain your preference
I would love to experience the arctic for a few reasons. This would apply directly to the topics that I teach. I go into detail on the decline of sea ice in the arctic with my students. I am very interested in seeing this first-hand. The timing is also much better for me due to my AP course and the testing schedule.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
If this happens to fall in the school year, prior to May 15 (after my AP testing), I would prefer 3 weeks. If it can work out to be summer, I can do up to the 6 weeks. Summer will be June 1-August 1.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I would love to see sea surface data and look into the currents in the Arctic. A friend of mine studied deep sea currents in Antarctica and she had some amazing data showing warm water currents. I think this would be a great way to look at the same type of data in the opposite pole to see if they mirror each other. I would also love to study the marine life in this area to bring more insight to their behaviors to my classroom.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this

subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
no

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I am used to being on boats and have done expeditions on a research vessel multiple times.

b. Provide a basic statement of your general health and physical condition.
I believe that I am physically qualified and have no on going health issues.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am comfortable with both platforms. I believe that I have an intermediate skill level. I type 60 words per minute.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
All of the Microsoft Suite. I am proficient in photoshop. I use these programs daily as an educator.

e. List any additional skills or information that you wish to be considered.
4 years of experience working with a non-traditional education platform. I have done many public speaking events for OCEARCH and have worked with many educators across the country.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Jennifer Gonzalez

Title and affiliation Principal Titusville High School

Email Address gonzalez.jennifer@brevardschools.org

Phone Number 321-264-3100

Reference 2

Name Loren Kingsley

Title and affiliation Secondary Science Resource Teacher

Email Address kingsley.loren@brevardschools.org

Phone Number 321-537-0167

Reference 3

Name Barbara Burgess

Title and affiliation Assistant Principal Titusville High School

Email Address burgess.barbara@brevardschools.org

Phone Number 321-264-3100

2020-2021 PolarTREC Educator Application

Caroline Darin

1. Contact Information

Name: Ms. Caroline Darin

Email: cdarin@brooklynprephs.org

Home Address:
471 Putnam Ave
Brooklyn, NY 11221 US

Home Phone: 2073449413

Cell Phone :

Institution Name: Brooklyn Preparatory High School

Institution Address:
257 N 6 Street
Brooklyn, NY 11211 US

Institution Phone: 2073449413

Classroom/Office Extension: 6028

Institution Fax:

Institution Website: http://www.brooklynprephs.org/

Other relevant websites:

Supervisor's Name: Noah Lansner

Supervisor's Email Address: nlansner@brooklynprephs.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I work at a high school (grades 9-12) that is a Title I school, meaning it is predominantly low income students, set in urban Brooklyn New York. Our school is an unscreened community school whose mission is to provide culturally responsive education while preparing students to attend a four year college.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 550

f. School Ethnicity:
% - American Indian or Alaska Native
1 % - Asian
43 % - Black or African American
53 % - Hispanic or Latino
% - Native Hawaiian or Other Pacific Islander
2 % - White
% - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 83

h. Average class or audience size 31

i. Total number of students/audiences you teach in a year 140

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
Start date: September 5 Christmas break: December 21-January 1 Winter break:

February 15 - 23 Spring break: April 9 -19 End date: June 29

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Physics (Astronomy), Mathematics

Bachelor's Degree (Minor):

Masters Degree (Discipline): M.A. in Adolescent Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 5

c. How many years have you been working at your current institution?: 5

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Science Genius Coordinator Advisory Committee AP Committee Restorative Justice Certified Sustainability Coordinator Culturally Responsive Education Certified Via NYU My tenure in the Department of Education was awarded at the end of last school year

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Physics

Other Subjects Secondary AP Environmental Science

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

As an undergraduate astronomy researcher, I fell in love with research and was able to put all the learning I was doing into context. I want to set an example of engagement in modern science for my students - to expand their experience of science beyond canonical theories, into what scientists are doing now and how all members of society can discover the world around them through scientific mindsets. Professionally, I want to create a stronger foundation for myself in environmental science. To be a good science teacher means being a master of all the standards, curriculum and canon of your content area. To be a great science teacher means actively engaging in modern science as it changes, continually learning alongside your students in the content area. Though I am licensed in Physics and studied astronomy in college, I now split my teaching program between physics and environmental science and I want to strengthen my applied knowledge of environmental science to bring into the classroom to inspire and engage my students. I also want to build my network of active scientists and science educators to keep me stay continually engaged in modern science research beyond the program.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Coming back with real-life science research experiences would create an empowering example for my students to think imaginatively about their futures. The majority of the students in my school come from low-income backgrounds and don’t have exposure to scientists or current scientific research outside of their science classes. As a result, most never envision themselves as scientists. I want to bring real-life science to them through this program by sharing my experience, as well as my scientific findings, to push them to see themselves as active and empowered participants not only in their own science education, but in the larger scientific field. I would create access points for students to see my experience through lessons and discussions. First, I would create explicit lessons and labs using data collected during my research experience. These labs would have an added legitimacy because my students would also have pictures and stories to refer to and to create a story of a lesson or lab that comes alive and creates urgency and accessibility in the content. I

would also reach out individually to students who are interested in science to share my experience and connect them with opportunities to pursue their own scientific interests.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

As a teacher in 2019, I am constantly working with students to practice critical thinking of scientific research. However, this is a skill that is also lacking even in highly educated adults. I hope to build a bridge between lay people and scientists, to give a face and story to the seemingly removed and remote climate research conducted in the Arctic and Antarctica. It can be confusing and overwhelming to consume scientific news for many people and I want to create a bridge from my communities to the remote world of Polar science. Additionally, Brooklyn Preparatory High School is a relatively small staff, with about 35 teachers and administrators and there is a lot of exchange of ideas among staff members and many staff led professional developments. If I took part in the program, I would plan a professional development around the importance of teachers being active learners alongside students, and how that might apply to different subject areas. I hope that I would bring fresh ideas around engagement to my school community. I envision other teachers feeling inspired to engage in their content continually, to avoid complacency in curriculums and to keep learning relevant and fresh.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

My goal in planning curriculum is to make my class authentically meaningful to my students. This necessarily means expanding curriculum beyond state science standards, into the rigorous, somewhat more amorphous world of modern science. I connect canonical standards to students real lives through authentic labs with real data, whole group discussions on science current events, analysis of scientific controversies through presentation of multiple viewpoints and real life speakers and experiences (I am currently planning a trip to the New York recycling plant and a sustainable food in communities of Color luncheon.) Teaching around current events and the way science actually functions in society, beyond the vacuum of traditional science curriculums facilitates significance and connection between students and their science education. Topics I have covered using these tools in my Physics and AP Environmental Science classes using these tools include continued NASA funding to find habitable exoplanets, developments of transportation technologies in

connection to climate change, alternative energy sources in schools, agricultural systems and low income communities, and water quality in Coney Island. I teach state standards to inform students and create access around these complex topics, so as to erase any ambiguity about why students must learn these topics.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

The primary strength that I would bring to PolarTREC is my ability to navigate and thrive in new, challenging experiences. In my work as an undergraduate astronomy researcher, as a physics teacher, as a solo bike tourist and most recently, as my school's sustainability coordinator and piloter of the AP Environmental Science program, I have found new, complex experiences and struggles to be exhilarating. I've learned quickly through self-reliance and courage in the face of challenges. My sense of adventure in this regard is a huge asset, as once I am thrust into something, I have committed fully to mastering it. Through these experiences I have gained a number of hard skills that would also be useful on a PolarTREC field research team. I am an experienced bike traveler and am well-versed in outdoor preparedness and survival, having been in a number of extreme climate and remote locations. I have also conducted lab science and am familiar with a lot of scientific equipment and data-taking measures. As a teacher, I have outstanding communication skills, working with people who think differently than me regularly and working to create understanding and a shared sense of purpose.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

The most recent team I was a part of at my school was as a part of the advisory curriculum team. We were given the task of creating an advisory calendar and planning lessons two advisory lessons a week that covered a number of topics. My first suggestion was to create a set of goals and directives for the entire curriculum that we could all adhere to when planning, to the slight chagrin of some team members who wanted to jump right in. I took charge somewhat of creating the structure, timeline and connective threads of the advisory lessons that we would then build out, while others started examining the content for lessons that would later be fine tuned to fit into the larger structure I had created for the entire curriculum. I was very cognisant of being respectful of other people's working styles and approaches as we collaborated instead offering my skills and ideas as a compliment to others', as opposed to being in conflict with them. This is typical of how I work in a group, I like to create tight connection between big ideas and details

to create clarity and vision in the final product.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Today we woke up and got tamales and green juice for breakfast. I ordered everything in Spanish and the woman understood everything I said and I was even able to answer her questions about everything I wanted in my juice. After breakfast, we headed to the Colonia del Carmen neighborhood for our reservations at the Frida Kahlo museum. The museum was stunning - the entire courtyard was painted a vibrant blue and surrounded by tropical plants that surrounded you in Earth tones as your explored the grounds. My favorite part was a special exhibit about Frida's wardrobe and the fascinating way that she used the functionality of fashion to support her crippled spine and right leg while simultaneously expressing her feminine strength through indigenous Mexican designs. It moved me nearly to tears and inspired me as I perused vintage shops for functional, beautiful pieces in the afternoon. We finished the day at a restaurant called 25DOS that serves traditional Mexican recipes fused with modern fine cuisine. The duck tinga that I ordered was delicious - infused with traditional flavors and inspiration, served in a fresh, inventive way. Very Frida.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Arctic

Please explain your preference
I would prefer to travel during my summer break in July and August so as to minimally disrupt my instructional time.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I would prefer to work participate in a longer expedition - closer to 4-6 weeks than 3. I would also only be able to participate in the field in starting June 27 through September 1.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
Space sciences are my primary interest in the world of science. I have experience working with telescope data and analyzing it to determine what the universe outside our solar system looks like. Studying Arctic auroras, astrobiology or cosmology in relation to climate change in the poles would be fascinating and would bridge an interesting gap between by two science curriculums (Physics and AP Environmental.) Additionally, I have been very interested since building my Environmental Science curriculum in the adaptations of life to different environments. I would also be interested in Arctic ecology and how it might be changing with climate change. I am also currently fascinated by extremophiles and I am excited about the connections between extreme environments on Earth and the potential applications of these adaptations to life in space, on the Moon, or on Mars. These findings could potentially have fascinating implications for humanity’s views on life itself and I would love to be a part of researching these life forms.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I am somewhat interested in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I would really enjoy an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
As previously stated, I have done three summer long bike tours in Japan, Europe and South America, often through remote mountain where I would not pass any towns for a few days at a time. Japan I also toured alone for 7 weeks, while I toured Europe and South America with my boyfriend. I have also done a number of backpacking trips in upstate New York, the high Sierras in California and in the Upper Peninsula of Michigan. I have also done a Canoe trip on the Delaware River and regularly go hiking just north of New York City.

b. Provide a basic statement of your general health and physical condition.
I have no health issues and am very physically active in my daily life.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I use a PC at work and a Mac at home. I am equally comfortable and highly skilled with both.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use laptops and desktops regularly for lesson planning and for some programming and collaborative work in my school. I use excel to analyze student data for my classes and also to create useful school-wide data spreadsheets during professional developments and to track students performance and credits. I also use excel to work with data in labs for my classes and teach a few lessons to students about how to work with data in excel. I generally use google chrome, but am comfortable with any internet browser. I use Powerpoint on a regular basis and take a lot of pride in my powerpoint slides in my classes. I work to make them creative and engaging with pictures, varied fonts and embedded videos, that students can use as resources and not just as text documents. I regularly use my GoPro when on outdoor excursions and do mild editing with iMovie on occasion. I also know some basic PhotoShop tools that I use for professional and personal purposes.

e. List any additional skills or information that you wish to be considered.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
I googled Arctic educator grants and found PolarTREC.

b. Please suggest other places we might advertise this opportunity for teachers
through the DOE sustainability listserv!

12. References

Reference 1

Name Noah Lansner

Title and affiliation Principal

Email Address nlansner@brooklynprephs.org

Phone Number (718) 486-2550

Reference 2

Name Aaron Geller

Title and affiliation Undergraduate Research Supervisor

Email Address a-geller@northwestern.edu

Phone Number (847) 467-6233

Reference 3

Name Tyler Drobbin

Title and affiliation Research Associate

Email Address tylerdrobbin@gmail.com

Phone Number 8473386753

Sarah Deuell

1. Contact Information

Name: Ms. Sarah Deuell

Email: sarah.a.deuell@gmail.com

Home Address:
17 ONeil Drive
Andover, NH 03216 US

Home Phone: 307-287-1641

Cell Phone : 307-287-1641

Institution Name: Belmont High School

Institution Address:
255 Seavey Road
Belmont, NH 03220 US

Institution Phone: 603-267-6525

Classroom/Office Extension: 1109

Institution Fax: 603-267-5962

Institution Website: https://bhs.sau80.org/

Other relevant websites: https://sites.google.com/site/deuellscience/

Supervisor's Name: Aaron Hayward

Supervisor's Email Address: ahayward@sau80.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I teach public high school grades 9-12 in a rural area. Economically we have gone from an upper and middle class community to middle and lower-middle income. We are lucky to have strong community support for the schools so each classroom has a smart-board and a few desktop computers. All students are one-to-one with Chromebooks and a state program that provides internet access at home for underprivileged students. We have an increasing number of students that are foster children or are living with a relative, not their parents.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 400

f. School Ethnicity:
0.1 % - American Indian or Alaska Native
1 % - Asian
1 % - Black or African American
1 % - Hispanic or Latino
0.2 % - Native Hawaiian or Other Pacific Islander
96.6 % - White
0.1 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 28

h. Average class or audience size 18

i. Total number of students/audiences you teach in a year 70 to 100 students (35 to 50 a semester)

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation

periods. i.e. Christmas break, summer break, etc.

Holiday Break: 12/21/19 - 1/1/20 Winter Break: 2/22/20 - 3/1/20 Spring Break: 4/25/20 - 5/3/20 Summer Break 6/22/20 - 8/22/20

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Bachelor of Science, Wildlife Biology and Fisheries Management

Bachelor's Degree (Minor): Creative Writing

Masters Degree (Discipline): Masters of Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 6

c. How many years have you been working at your current institution?: 6

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
AP Biology Certification

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I am more than slightly obsessed with the polar regions and want to not only visit those regions but do something impactful and learn as much as I can while there. I incorporate climate change into every class, even my anatomy class, because it is so important for students to know what is going on and its massive impacts on everything: culture, animals, genetics, weather, and overall sustainability of humans on earth. I want to meet and build relationships with people who collect data and study climate impacts in the polar regions. I want to come back with my brain so full of new ideas, experiences, and data collecting techniques that I can share with my students.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

I will use any data collected and the collection techniques and apply those in almost all of my courses and try to inspire the next generation of environmentally conscious scientists. I co-teach a course with an earth science/meteorology teacher which we designed to break barriers for secondary science education. The course is called Earth, Ecological and Environmental Stewardship. The course is project and data based and student directed. Students spend most of the winter collecting data on snowpack, comparing to past class data as well as Hubbard Brook data and developing projections about climate change impacts on snow in NH and the cascading effects on trees and animals. There is so much more we can do with those students and I want to build more experience on data collecting methods as well as data to use with students.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

I will give a talk and report on my experiences and data to the NH Science Teachers Association (maybe the National Science Association, funding dependent), give a school wide talk to my school as well as the other schools in my district. I will also contact local papers and community colleges to also talk about what I did and why and the importance of such research.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200

words maximum)

I will admit, I have it easy in science. Every new topic I incorporate a hands on application that is usually student designed, which helps them develop not only further understanding, but interest and hopefully excitement about what they are learning. I encourage students to ask difficult questions about difficult topics and encourage researching reliable sources or finding data that supports claims. When I introduce climate change, I do not even use that term. I give students raw data from NOAA, have them run statistical analysis in Excel, calculating R2 values, looking at trends between CO2 and several other variables (sea surface temperature, ice-in, ice-out, coral bleaching, ocean acidification etc.) and draw their own conclusion which leads us to climate change. With that approach I am often able to engage students who have been raised on the mantra of climate change being “fake”. On rare occasions I’ve been able to “convert” die-hard anti-climate change students with this method.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

Prior to teaching I was a small mammal biologist as well as a behavioral ecologist of golden eagles in Wyoming. I’m very prepared and comfortable working in terrible weather conditions for long monotonous windy hours. I am also comfortable with data entry, report writing, using field equipment such as radio location, GPS, maps, etc. I also understand the absolute importance of field safety especially when working in bitter cold windy conditions.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

Teaching is a team effort. Aligning curriculum, not agreeing on assessments but coming to a compromise, working with paras and aides to best support a student. The best thing I’ve learned as a teacher working with others is to always listen with an open mind and set aside personal grievances, which is so hard to do. Also working on a field team has its own similar yet different interactions. The key there is to not let the cold, wind, long hours, etc impact your mood to the point it creates negative interaction with coworkers. Humor is the best in those situations or a clear, “I need to vent” and then have a good vent session about the horrible weather, and then get back to work.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

How does one make evolution hands on? I always debate that with myself and colleagues. And then it hit me while on a hike with my dogs. Trees! How do we classify trees? What are physical characteristics that separate different trees species or deciduous from coniferous? So in a last minute change to my lesson plan, I taught my biology crew how to use a dichotomous key. The challenge: Identify two different coniferous trees and two deciduous trees, record observations about the physiology of those trees. We then looked up the classification of the individual species and they were able to see where in the evolutionary timeline where the coniferous split from the deciduous and where the two coniferous trees split from each other. The kids had fun, some made leaf crowns, they helped each other problem solve using the dichotomous key, and I got them a little closer to nature and evolution. We discussed our findings in the shade of the now identified trees and students shared stories of other places they traveled the the trees they remember seeing. All in all, what was a desperate last minute activity will now become a permanent activity in my biology curriculum.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
Honestly I would prefer Antarctic, because how many people can say they've not only been there, but got to participate in important scientific research? However, Greenland is also on my bucket list and maybe seeing polar bears in the wild, before it's too late, would be phenomenal. Basically I'm indecisive about the locations because both are so under threat and also both amazingly cool (pun intended…).

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
As long as I can. My administration are completely on board with the idea of one of their teachers being in this program. My husband is also used to me going on research adventures for several weeks and supports this wholeheartedly. So there are no date restrictions for me. I am taking students to Zion National Park for a week in April 2020 but can find a substitute chaperone if need be.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
Behavioral ecology or population ecology: organism behavioral responses, such as nesting, feeding, breeding, population distribution, density, etc to climate change (ice melt, temperature fluctuations, etc). I have always been interested in behavior and the environmental factors that drive animal behavior. Especially animal behavior in response to human activity. For example I collected data on prairie dog populations responding to gas development in Wyoming and found that the prairie dogs actually preferred the disturbed areas which lead to a behavioral study as to why. Or that resident golden eagles seemed to have altered their behavior in response to wind turbines whereas migratory golden eagles were more likely to be fatalities on wind farms.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I am somewhat interested in this subject area

Human and Social Systems I do not want to be considered for an expedition in

this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

Adaptations to Life in Extreme Cold and Prolonged Darkness Understanding Environmental Change in the Polar Regions

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
Extensive backpacking (11 day trips) experience, whitewater rafting and rescue, Nordic skiing, dog sledding, ice climbing/rock climbing, New Hampshire boating license, firearms training, ATV certification, basic CPR and First Aid (I can easily get my WFR certified beforehand).

b. Provide a basic statement of your general health and physical condition.
Pretty good. I've been better, but I also know how to train myself back into shape. I like to hike a mountain once a month, year round, I rock climb regularly and get out for short runs, or cross-country ski a few times a week. I try to do a multi-day backpacking trip every summer and know how to train myself into shape for that.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I work with both fluidly. We're PC at the school but my personal computer is a Mac.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
Laptops, GoPro and movie editing programs, HOBO data loggers and programs, DSLR cameras and Photoshop (or old fashioned film, I love photography). Excel is my favorite program to work in, and all Microsoft office platforms, as well as Google's versions, iPads and/or tablets used for data collecting, Garmin GPS, QGIS

e. List any additional skills or information that you wish to be considered.
The ability to spot wildlife or changes in wildlife behavior before anyone else

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. No

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

I was at a NH Science Teacher Association conference and met a former PolarTREC teacher. I can’t remember, she was at a science conference talking about her underwater robotics research she did.

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Adrien Deshaies

Title and affiliation Teacher, co-worker

Email Address adeshaies@sau80.org

Phone Number 207-604-0470

Reference 2

Name Terri Harvey

Title and affiliation wildlife biologist, former coworker

Email Address a4ft9piglet@gmail.com

Phone Number 307-760-5614

Reference 3

Name Katelyn Currie-Huggard

Title and affiliation Land Steward, supervisor

Email Address katelyn.currie-huggard@uvlt.org

Phone Number 603-643-6626

Robbin Dilley

1. Contact Information

Name: Robbin Dilley

Email: robbin@watershedschool.org

Home Address:
7632 Lefthand Canyon Dr
Jamestown, CO 80455 US

Home Phone: 303-449-5441

Cell Phone : 207-479-5212

Institution Name: Watershed School

Institution Address:
1661 Alpine Avenue
Boulder, CO 80304 US

Institution Phone: 303-440-7540

Classroom/Office Extension: n/a

Institution Fax: 303-440-7521

Institution Website: http://www.watershedschool.org/

Other relevant websites:

Supervisor's Name: Tim Breen

Supervisor's Email Address: tim.breen@watershedschool.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I teach at a 6-12 private school. Our student body is predominantly white, urban/suburban, and affluent. However, we also pull in students from small, rural mountain towns and we have a number of students on scholarships who have considerably less economic resources. Our school is focused on experiential education and most of our students are learners who were not successful in more traditional settings.

d. Type of School (or students you work with): Private

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 100

f. School Ethnicity:
0 % - American Indian or Alaska Native
8 % - Asian
3 % - Black or African American
2 % - Hispanic or Latino
0 % - Native Hawaiian or Other Pacific Islander
87 % - White
We don't have data on this category % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe: n/a

g. Percentage of students who receive free or reduced lunch: 0%

h. Average class or audience size 28

i. Total number of students/audiences you teach in a year 28-43

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

We start teacher PD in the 2nd week of August and students start the beginning of the 3rd week. We have 1 week off at Thanksgiving and 2 weeks off that cover Christmas and New Years. Our spring break is the 3rd or 4th week in March and students finish the year by Memorial Day (though teachers have a week of PD).

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Biology

Bachelor's Degree (Minor): n/a

Masters Degree (Discipline): Education

PhD Degree (Discipline): n/a

Other Degree: n/a

b. How many years of education experience do you have?: This is my 8th year

c. How many years have you been working at your current institution?: This is my 3rd year

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Ecology Project International Fellow, National Board Certified Teacher, Wilderness First Responder, Licensed Maine Guide, Massachusetts State Licensure: High School Biology, ESL, Special Education (Moderate Needs)

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology, Secondary Chemistry, Secondary Earth Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Currently, I am looking at how I can make the work students do in my class as authentic and connected to real-world issues as possible. I notice a huge difference in how my students respond to an experiment (even one they designed themselves) that they conduct and share with others in our school, compared to data they collect that they know is going to be used by a researcher or organization as part of an effort to make change. I teach in a school that encourages fieldwork and travel, yet it can be difficult to find outside partners who can accommodate a group of 28 high schoolers. PolarTREC excites me because it would allow me to gain more experience with field research techniques that I could then use with my students to conduct our own research. It would also allow me to work more closely with scientists and make connections that I could use to ground my courses in ongoing outside research.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

During the expedition, I would ideally like to be able to send samples of actual data or experimental design information to my students (or students in other classes, depending on relevance). For example, if I were doing work identifying the compounds present in a sample of snow or permafrost, my students could conduct parallel experiments to compare the snow or soil in Colorado with the Arctic. After the expedition, I would be interested in using the research techniques and data sets in my curriculum to create case studies that my class investigates. This could look like taking an evolution unit and adding a deep dive into how the bottleneck effect is impacting Arctic fox. Having actual data and intimate knowledge of the research methods would allow me to add these kinds of case studies into my class. Finally, my school runs a “May Term” where students spend one month taking a single course which includes a two-week international trip. I have been running an Icelandic field ecology course where we visit and partner with an Icelandic research station. I am looking for similar research connections that would allow us to travel somewhere new in future.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

My school is focused on experiential education and I have the opportunity to take my students out into the field regularly and often travel with them. We are always looking for ways to increase the relevance and impact of this fieldwork. The pairing of educators and researchers on PolarTREC expeditions and the type of work participants engage in is an extended version of the type of fieldwork we strive for with our students. I would be able to share an experience on a PolarTREC expedition in several venues. First, as I engage my students in this experience (outlined in 5b) their related work would be showcased in the open house that my school hosts at the end of every semester. It is a time where families and community members see the work each student produced and hear student reflections on their learning. Second, I would be able to put together PD for my colleagues on how to partner with experts in the field in ways that are relevant and action-oriented. Finally, I also present at the conference (Traverse) that my school hosts each spring where I would plan on sharing my experience and take-aways with educators from other schools.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

My first step in engaging my students is to know them well. I strike up conversations to learn about their interests. I use a variety of formative assessments to identify their prior knowledge, misconceptions, and concerns. Then, I use this information in choosing different lenses through which we examine a given topic. For example, some students might learn anatomy best through a medical case study while others would respond better to learning the history of how we came to understand the function of a particular organ. Either way, I work to ground what we learn in the big picture relevance or application of what we are studying. The more foreign or complex the topic, the more important it is that students feel the magnitude of things like life-saving applications, cultural factors, etc. Depending on the concept, I might use other approaches like having students leverage prior knowledge or parallel examples as in-roads. It may also be useful to have students preview the final goal and self-identify what background they need to get there. Sometimes a topic can only be understood through experience, so I will set up a similar experience that students can use to access the concept.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

One strength I would bring is that in my career I have worked in varied contexts that let me get to know students and families from very different racial, cultural and economic backgrounds. I am comfortable working with diverse populations and am

well-practiced when it comes to adjusting how I teach or communicate to fit the audience. Second, I spent significant time doing lab work during my undergraduate degree and a year doing field research after college. I feel comfortable with a wide variety of research techniques and feel this would allow me to pick up new skills rapidly. Third, in my current school and as an Outward Bound instructor I have spent considerable time traveling internationally or in wilderness settings. I feel comfortable in these conditions and know how to take care of my gear and mental/emotional needs even in times of challenge or stress. I am often doing this kind of travel in small groups where I get limited privacy or breaks from others. I do well in this kind of environment and feel skilled in building community and maintaining healthy communication.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

I regularly work in co-instructor relationships at my school. I co-teach my class and run wilderness backpacking and international trips with a co-instructor. Going into these situations, I make sure that I have checked in with my partner about their needs, goals and preferred ways of working. I make sure we are on the same page about what feedback should look like between us and what my partner expects from me. My current teaching partner is new to teaching so our collaboration looks like me choosing useful materials and systems to share while also giving her space to experiment and setting aside time for us to debrief. I also work with larger teams like our school’s science team, which I facilitate, and our high school teacher team. In these larger groups I feel comfortable stepping into the role the group needs me to fill. In the case of the science team, I am one of the more experienced teachers so I use input from the group to organize our priorities, collect outside resources, run meetings, and keep tabs on our progress towards our goals. In contrast, in the high school team a more-experienced colleague takes on this facilitator role.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

“That’s disgusting. No way I’m touching that!” were the first words out of Savannah’s (pseudonym) mouth as she walked into the lab where fetal pigs were laid out on tables for dissection. Today begins the culmination of our anatomy unit. Students will spend the next week dissecting fetal pigs to explore relationships between the body systems. Pigs are the perfect dissection subject because they are almost identical to humans in their metabolism and anatomy. Plus, these pigs were all naturally stillborn to sows in the pork industry and it feels good to know that we are learning from specimens that were not killed for this purpose and would have been discarded otherwise. However, none of this mattered to Savannah as she sat down with her partner. “Don’t worry, we’re starting with external anatomy,” I reminded Savannah as I circulated by her seat. She just made a face. By the time I circled back, Savannah had named her pig (“Hambert”) and was waving me over to ask, “Is that the umbilical cord?” She had correctly located the umbilical cord and we spent time finding the umbilical arteries and vein. While Savannah has yet to touch Hambert, I am optimistic about tomorrow!

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
The advantage of an Antarctic expedition is that the classes I teach will be in-session so I would have a larger audience and could engage my students in work based on what I am learning at the time. However, I marked “either” because I imagine most US teachers are in the same position and I believe I could do a summer expedition to the Arctic and still come away with data, methodology and connections that I could use effectively in my class that fall. In fact, the benefit of an Arctic expedition is that I would have time after returning to design my fall curriculum leveraging my work with PolarTREC.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
If the expedition is while school is in session, I would prefer one that is on the shorter end of the spectrum (perhaps 3-4 weeks). If the expedition occurs over vacations or in the summer, I would be excited about any length. The exact dates for next school year have not been set, but I cannot miss orientation and the beginning of school (this should be the last two weeks of August and the first week of September) and it would be very difficult for me to miss the last week of each semester (likely the second week of December and the last full week of May).

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
After college, I spent a year working as a field research intern first with Hawksbill sea turtles in Hawaii and second with cetaceans and seals in Gloucester, MA. This work is part of a lifelong interest in marine biology. Currently, I am most interested in research that helps us predict and prepare for the changes in marine populations due to habitat loss and climate change. For example, we know changes in sand temperature impact the sex ratio of sea turtle nests, which leads to interesting research about ways to adjust nest temperatures to help maintain a healthy turtle population. With my students, I enjoy using citizen science apps that track changes in a species range or migratory patterns and this kind of work interests me as well. I am also intrigued by research on relationships between species or impacts of

introduced species. For example, lupines were introduced to Iceland to raise soil nitrogen levels and I have worked with students to collect data on whether this is having the intended impact. Finally, I am interested in the ways chemical data found in soils, air, water, and ice help us get a clearer picture of the ways climate change is manifesting.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I would really enjoy an expedition in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
n/a

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I am comfortable with sea kayaking and spent a summer working as a sea kayaking guide. I worked 9 seasons as an Outward Bound Wilderness Instructor for Hurricane Island and am comfortable with backpacking, camping, and canoeing. While I feel comfortable with basic rock climbing, mountaineering and white water, I am not able to run these types of programs and would not do them personally without someone more experienced. I am a certified WFR. Recreationally, I enjoy cross country skiing, running, snowshoeing, rafting, and biking.

b. Provide a basic statement of your general health and physical condition.
I am physically active and have no serious injuries or medical conditions that impact my physical abilities. I do have allergies and asthma which are mainly triggered by pets and dust.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I have used both Macs and PCs and feel proficient with Windows and Mac OS X. Currently, I use an Apple MacBook with High Sierra 10.13.6.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I use my laptop daily and feel comfortable with many different internet browsers. I use Microsoft Office, Pages and Google Drive to create documents, charts/graphs, online surveys, and slide presentations for teaching. With students, I use microscopes, digital cameras, a variety of citizen science apps (including iNaturalist and Project BudBurst), thermocyclers, and gel electrophoresis set-ups for experiments and lab activities. I have some experience using small video recording devices and processing them in iMovie.

e. List any additional skills or information that you wish to be considered.
I am proficient in working with DNA (PCR, gel electrophoresis, bacterial transformation) and with culturing bacteria and yeast samples. As a marine research assistant, I developed an assortment of skills including taking survey data of cetacean locations and behaviors, tagging sea turtles and monitoring their nests, collecting and transporting injured seals, and trapping and euthanizing mongoose. At my school I manage our lab space and all our chemicals, so I also feel comfortable with chemical handling, storage, and SDS.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni.

Program Information n/a

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
n/a

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain n/a

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name
Cara Pekarcik

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)
My husband works for USAP on the research vessels and heard about PolarTREC through his job.

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Emily Graf

Title and affiliation High School Humanities Educator at Watershed School (Emily is my co-teacher)

Email Address emily.graf@watershedschool.org

Phone Number 312-806-8191

Reference 2

Name Jeff Osgood

Title and affiliation Arts Educator at Watershed School (Jeff is my faculty mentor)

Email Address jeff.osgood@watershedschool.org

Phone Number 720-341-5394

Reference 3

Name Tim Breen

Title and affiliation Watershed Head of School

Email Address tim.breen@watershedschool.org

Phone Number 303-440-7520

2020-2021 PolarTREC Educator Application

Herminia Din

1. Contact Information

Name: Dr. Herminia Din

Email: hdin@alaska.edu

Home Address:
6450 Village Parkway
Anchorage, AK 99504 US

Home Phone: 907-929-9903

Cell Phone : 317-294-5977

Institution Name: University of Alaska Anchoarge

Institution Address:
3211 Providence Drive
Anchorage, AK 99508 US

Institution Phone: 907-786-1785

Classroom/Office Extension:

Institution Fax: 907-786-1799

Institution Website: https://www.uaa.alaska.edu/academics/college-of-arts-and sciences/departments/art/

Other relevant websites: https://alaska.digication.com/herminiadin/

Supervisor's Name: Garry Mealor

Supervisor's Email Address: grmealor@alaska.edu

2. Demographic Information

a. Gender: Female

Race: Asian

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): My primary audiences are university students and K-12 students in Anchorage, Alaska and the surrounding area. Additionally, I have worked with native Alaskan populations in the village of Savoonga on St. Lawrence Island and on St. Paul Island. The economy is strong in Anchorage – less so in the rural native villages. Technology access is similar with excellent connectivity in the urban Anchorage area and more limited in rural areas, I have been able to accommodate using cellular data for computer access and using research and teaching materials files on my laptop.

d. Type of School (or students you work with): Public

Other Type of School University

e. What is the population of your annual audience or school (estimates are fine) 12000

f. School Ethnicity:
12 % - American Indian or Alaska Native
9 % - Asian
4 % - Black or African American
3 % - Hispanic or Latino
2 % - Native Hawaiian or Other Pacific Islander
70 % - White
% - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: N/A

h. Average class or audience size 25-70

i. Total number of students/audiences you teach in a year 300-350

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

Fall Semester: August – December Spring Semester: January - May

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Early Childhood Education

Bachelor's Degree (Minor):

Masters Degree (Discipline): Arts Administration/Museum Education

PhD Degree (Discipline): Art Education/Museum Technology

Other Degree:

b. How many years of education experience do you have?: 18

c. How many years have you been working at your current institution?: 17

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
• UAA Chancellor’s Awards for Excellence, Excellence in Sustainability, Our Plastic Ocean, Our Clean Ocean, Fall 2019. • Honorable Mention, Northern Sustainability Creative Contest at the 8th International Congress of Arctic Social Sciences (ICASS VIII) at the University of Northern British Columbia, Prince George, British Columbia, Canada, May 22-26, 2014. • Faculty Exemplar Awards, UAA University Honors College, Spring 2014. • UAA Chancellor’s Awards for Excellence, Excellence in Sustainability, Junk to Funk Community Project, Fall 2013. • Honeysett & Din Student Award, MUSE Awards, Media and Technology Committee, American Association of Museums, Spring 2010. • Faculty Mentor, Metal and Certificate of Recognition, Undergraduate Research and Scholarship, University Honors College, University of Alaska Anchorage, 2008. • Silver Raven Award, Certificate of Recognition, University of Alaska Museum of the North, 2007 • Outstanding Volunteer, Certificate of Recognition, Anchorage School District, 2006.

4. Professional Assignment

a. What is your primary education assignment? Check all that apply Informal Education (Science or Nature Center, Museum, etc.), Four-Year College or Institution

Other Primary Assignment Community-based Art Education Outreach

b. What subjects do you teach? Check all Secondary Art

Other Subjects Community-Based Art Education, Integrate Art and Science Curriculum Development, New Media, and Museum Education

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

Coming from Alaska, the perception is an environment of pristine waters and glaciers that have stood the test of time. Sadly, that is not the reality. The Arctic has been affected profoundly by mankind's abuses—plastic containers, cans, and garbage wash up on the shores even in remote locations such as St. Paul Island in the middle of Bering Sea. I saw this pollution firsthand when on site to lead a week-long art workshop focusing on plastic pollution. Experiencing Antarctica would give me an opportunity to tell the story of a vast continent and the impact of microplastics, similar to the work I have done in the Arctic. I would be privileged to work with scientists' side-by-side to further understand the impact of humans on the Antarctica environment. As a storyteller, I could then translate scientific concepts and data into a visually understandable narrative for audiences of all ages.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

Hicks & King (2007) observe "Art education is well situated to address environmental problems that emerge at the point of contact between nature and social life." From this experience, I would like to combine scientific data and creative activities, e.g. storytelling, place-based art to raise student awareness of a real-world problems and develop social responsibility and critical thinking skills. Both art and natural science education methods are integrated. This approach can educate students and teachers about a greater understanding of the topic, and it can also serve as a call to action to protect our environment. Also, I would create a series of educational materials to facilitate dialogue about climate change and plastic pollution, using art as a tool for change. Reference Hicks, L. E., & King, R. J. H. (2007). Confronting environmental collapse: Visual culture, art education, and environmental responsibility. Studies in Art Education, 48(4), pp. 332-335.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

Among the most important audiences to create awareness are young people, who will inherit the environment consequences of previous generations' actions. Through art education, they can contribute to small but significant changes that could well

have an impact on their environments. Art is a universal medium that can serve as a catalyst in understanding difficult issues. Most importantly, people can use their own creative art works in proposing solutions to what can be done to make the earth cleaner for current and future generations.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

When I was growing up in Taipei, the Tamsui river next to our home was black with pollution and the smell was not nice. It took over 20 years to clean up. Today the river is fringed by 40 parks covering the equivalent of four New York Central Parks. A lesson that is still with me. I have a passion for the environment and believe in a world where we can make a difference. Recently, I published a popup book titled Our Plastic Ocean, Our Clean Ocean. The book explains to viewers not only how our ocean pollution problem came to be, but why we must find solutions as quickly as possible. Most importantly, it shows them what they can do right now to be part of those solutions. The book has a limited narrative as I want the reader to view the images, ask questions, and make connections. The project took nearly three years from concept to completion. I read scientific reports and researched current events to better understand how pollution causes harm to human and animal life. The popup book is intended to help young and old understand this global crisis and take small steps to make a difference.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I am an artist and an art educator. As a storyteller, I use art to visualize and translate scientific data to communicate with all ages. I believe in opening a window of “wonderment” for young people through art. We stand at a true crossroads in human history. The environmental decisions we make today will shape the world our young people inherit tomorrow.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

My work focuses on community-based art education, sustainable art, and arts and design in the Arctic. “Hands-on Learning” and “Art as Experience” have informed my effort in all areas—teaching, research, and service. In 2013, I developed the UAA Winter Design Project, a “design intervention” to promote faculty and student engagement. A total of over 55 UAA staff and faculty, and over 550 UAA students

directly involved in the creation of the project. The project provided participants an opportunity to explore and create an outdoor winter space, and to look at “ice” and “snow” from a new perspective to inspire creative solutions using the sustainable medium. We also collaborated with Alaska Geographic in the 2015 People’s Tree Project to create one-of-a-kind ornaments using recycled, sustainable, and natural materials for the 2015 People’s Tree in front of the U.S. Capitol Building. Recently, I am working closely with professors from Public Health to promote UA Smoke and Tobacco-Free Policy. All my academic and professional works are a team-based approach. I am highly organized and able to manage multiple projects and tasks with ease. I am a good communicator and loves to work with people. I strive to create an atmosphere of positive learning.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

Our Plastic Ocean, Our Clean Ocean: A Popup Book ALONG WITH the air we breathe, the ocean is the most necessary element required to sustain life on our planet. Each day, scientists discover more of the many ways our vast and intricate ocean ecosystem affects global weather, natural resources, agriculture, commerce, politics and social interaction — even the health of our individual minds and bodies. Scientists are also warning us about the enormous amount of plastic garbage polluting our oceans and how this pollution causes dangerous harm to all human and animal life. Only science can accurately show us how to reduce pollution from plastics and other pollutants and help make our oceans clean and healthy again. Our Plastic Ocean, Our Clean Ocean explains to viewers not only How our ocean pollution problem came to be, but Why we must find solutions as quickly as possible. Most importantly, it shows them What they can do right now to be part of those solutions.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Antarctic

Please explain your preference
Experiencing Antarctica would give me an opportunity to tell the story of this vast continent and the impact of microplastics as I have done similar work in the Arctic. I am thrilled to have the opportunity to work with scientists side-by-side for onsite field experience. I hope that you will consider my application and the value I could add to the team in telling stories of the experience using art to present and future generations.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I am able to participate fully in an expedition.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
My recent work focuses on plastic pollution in the Arctic using community art as an action for change. The international community is becoming increasingly aware of the growing plastic pollution found in huge amounts on oceans and beaches. Global communities need to be resilient against this environmental threat, particularly in view of the public health, wellness, and economic priorities that affect quality of life. An informed and educated community is fundamental to establishing this resiliency. Among the most important audiences to create awareness are young people, who will inherit the environmental consequences of previous generations' actions. Through art education, they can contribute to small but significant changes that could well have an impact on their environments.

Atmospheric Systems

Cryospheric Systems

Human and Social Systems I would really enjoy an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems

Ecology and Biotic Systems

Physics or Space Sciences

Engineering and Technology

Other (please specify) I would really enjoy an expedition in this subject area

Other Areas of Scientific Interest
Understanding Environmental Change in the Polar Regions

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
My outdoor skills and/or experiences are moderate. I do pretty much all Alaskan outdoor camping, hiking, kayaking during the summer, and snowshoeing during the winter. I've lived in Alaska for 17 years and do well in snowy environments. However, I will need firearms training if required.

b. Provide a basic statement of your general health and physical condition.
General health and physical condition are excellent.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am a Mac computer user; however, I can use PC without a problem. I am skilled with Microsoft Office Suite and Adobe Creative Suite.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I am an excellent photographer. Many of my publications feature my photographic work.

e. List any additional skills or information that you wish to be considered.
In addition to English, I speak fluent Chinese and basic conversational Spanish.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni.

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Diane Hirshberg

Title and affiliation Professor of Education Policy & Advisor to the Chancellor on Arctic Research & Education, Institute of Social and Economic Research (ISER)

Email Address dbhirshberg@alaska.edu

Phone Number 907-786-5413

Reference 2

Name Douglas Causey

Title and affiliation Professor, Department of Biological Sciences

Email Address dcausey@alaska.edu

Phone Number 907-786-1310

Reference 3

Name Veronica Padula

Title and affiliation Academic Program Director, Bering Sea Campus and Research Center, Aleut Community of St. Paul Island

Email Address vmpadula@aleut.com

Phone Number 907-257-2643

Ewa Enrique

1. Contact Information

Name: Ms. Ewa Enrique

Email: ewae@hotmail.com

Home Address:
628 West 36th Street
Long Beach, CA 90806 US

Home Phone: 5625526860

Cell Phone : 5625526860

Institution Name: Fernando R. Ledesma High School

Institution Address:
12347 E Ramona Blvd.
El Monte, CA 91731 US

Institution Phone: 6264420481

Classroom/Office Extension: 0412

Institution Fax: 6262584850

Institution Website: www.emuhsd.org/flhs

Other relevant websites:

Supervisor's Name: Fred Arteaga

Supervisor's Email Address: freddy.arteaga@emuhsd.org

2. Demographic Information

a. Gender: Female

Race: White

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): Fernando R. Ledesma High School is located in a culturally diverse community, twelve miles Northeast of Los Angeles. FRLHS is the continuation High School of the El Monte Union High School District that serves 10th to 12th grade students that are from low to middle socioeconomic class families. FRLHS offers several alternative education programs on site at the eastern extremity of El Monte and at other satellite locations within the district. It serves students who have transferred from one of the five comprehensive high schools in the district. These students come from the cities of El Monte, South El Monte, Rosemead, and portions of San Gabriel, Arcadia and Temple City. The school continually enrolls students throughout the school year, maintaining an open-door policy. It is the school's mission to provide students with a personalized alternative education program in a safe, caring environment that focuses on state and district instructional standards, enabling students to develop into successful, productive citizens. The school realizes that many students need a second chance and that is what we are about. The school strives to create a nurturing environment where all students feel they are welcomed and supported in pursuing their educational and personal goals. The Opportunity Program is an alternative educational program for 13 - 15 year old students whose needs were not met at the comprehensive high school. The objectives of the program are: to assist students in developing and improving basic academic skills required to successfully complete high school graduation requirements, to provide an insight into the current job market, to provide a forum for enhancement of motivational skills and self-esteem, to improve attendance. The Opportunity Program's curriculum is based on the district's comprehensive high schools with an independent study structure. Courses are remedial based and developed to allow students to work at an individual pace. The instructional methodology is a tutorial approach. Students also engage in a computer curriculum program in English, Math, and other courses. It is the intent of this program to return most of the students to the regular high school program at the end of each year. Independent Study is an optional alternative program. Its primary goal is to provide a flexible educational program of an individualized nature. The student and their parent/guardian are asked to sign an agreement requiring the student to complete a minimum of 4 hours of course work per day and to meet with

their instructor at least twice a week. Students are welcome to attend as often as they wish to receive additional instruction, to discuss assignments as needed, and to keep up with course the outline. Credit will be earned as course work is completed. This allows students to work in their individual classes at their own pace. The work they will be doing is equal to and covers the same content as the district's comprehensive high schools. Multiple modes of instruction are provided for the students including individual instruction, cooperative learning. Study skills is offered by Resource Specialist. This program allows special education students access to the general education classroom and provides academic support for their general education classes. Skills required for academic success are taught and general education concepts, lessons, and assignments are reviewed and reinforced. Students must have an active I.E.P. to be enrolled in this class. Three to Seven Program, for students who can't function in the day classes, due to absenteeism or unacceptable behavior, provides opportunity to student to focus on their problems in the safe environment, regain confidence in their academic skills and return to regular schedule. Teachers in this program are the same as in day classes, with additional training necessary to meet needs of "difficult" pupils. The school provides tutoring program after school, staffed with volunteers from Rio Hondo College. For 2019-20 the school has a ratio of 1 to 1 in technology access.

d. Type of School (or students you work with): Public

Other Type of School Continuation school (CA Model School 2018), Continuation Model School 2019

e. What is the population of your annual audience or school (estimates are fine) One hundred percent of our students are designated "at risk" for one or more of the following reasons: teen parent, probation, suspension, gang affiliation, truancy, credit deficient, drug problems, transient home life and/or mental health issues.

f. School Ethnicity:
0 % - American Indian or Alaska Native
1 % - Asian
0 % - Black or African American
97 % - Hispanic or Latino
1 % - Native Hawaiian or Other Pacific Islander
1 % - White
0 % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

For most of our students, English is not their primary language at home. 73% speak primarily Spanish, only 26% speak English at home, and 1% speak other languages. The majority of the school's 359 students, are from Latino ethnicity. According to city statistics, the median income of $38,906, ranks El Monte much lower than the state average of $61,489 and the national average of $53,482. El Monte has an unemployment rate of 14.6%, compared to the national average of 8.7%. 100% of our students qualify for free lunch due to low family income. Recent CAASPP results show that 87% of tested students do not meet state academic standards in comparison to students in comprehensive high schools.

g. Percentage of students who receive free or reduced lunch: 100%

h. Average class or audience size 18-25

i. Total number of students/audiences you teach in a year approx. 150

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.
Start: August 14,2019, end: June 04, 2020. Christmas break Dec 21,2019 to Jan 6, 2020

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): BS. Travel & Tourism Management, Academy of Physical Education and Sport, Poznan, Poland

Bachelor's Degree (Minor):

Masters Degree (Discipline): MBA. International Marketing, CSULB, Long Beach, CA

PhD Degree (Discipline):

Other Degree: Teaching Credential Program, CSULB, Long Beach, CA

b. How many years of education experience do you have?: 12

c. How many years have you been working at your current institution?: 7

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
1. Single Subject Teaching Credential in Social Sciences 2. Single Subject Teaching Credential in Earth/Physical Sciences and Middle School General Science 3. English Learner Authorization in Science and Foreign Language 4. National Science Teacher Association 5. California Science Teachers Association

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12), Other (Describe Below)

Other Primary Assignment My teaching assignment includes tenth through twelve grade continuing education students that are deficient in credits and still want to finish high school.

b. What subjects do you teach? Check all Middle School Science, Middle School Social Studies, Secondary Earth Science, Secondary General Science, Secondary Geography, Secondary Physical Science

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I was motivated to apply the first time I heard a PolarTREC alumni talk about their experience during a STEM professional development session. My goal is to bring awareness, to my students and community, of what happens in the polar regions of Earth and that issues there directly and indirectly affect our community. I am hoping to gain a broader and deeper understanding of the role the polar regions play in global science and the economy. I want to learn about polar research and incorporate current polar science into my teaching. Field study, an integral part of learning, will allow me to choose relevant and up to date discoveries. I will enjoy collaborating with the researchers who are exploring polar regions, help them in their field work in gathering data and learning firsthand, how the research is done. I intend to use the PolarTREC research to become better educator and establish connections to relate parts of earth science, ecology and physical science to each other thus making complex content more engaging, comprehensible and memorable. To achieve this goal, I will design an inquiry-based local project, a mini version of my polar experience, for student’s field work in their local habitat.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

My students have language and learning difficulties, they favor visual, kinesthetic learning and hands-on activities. Immersing myself in the PolarTREC experience will give me a model for instructing my students. My students will work on projects directed toward understanding, stewardship and preservation of natural habitats. The opportunity lays just outside my school premises on the dry riverbed. Students will compare and contrast habitats of polar regions with desert or wetland. I will share this work with the other 60 science teachers from my District and invite their students to collaborate. Students will get into groups to identify topics for their in-depth research. They will identify and describe negative and positive interdependence of habitats. For example: “how does climate change affect polar regions vs. desert/wetland?” For my high-poverty, low-achieving students, my PolarTREC experience will provide personal adventure stories which is often their only motivation to participate in the class. Using my experiences as a hook, I hope to interest students in meaningful field activities, where they have an opportunity for

immerse themselves and have a chance for success. I will have polar scientist videoconferencing with my students. Sparking the interest in fieldwork helps students accept follow-up research, analysis and proper documentation.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

When teaching in a non-lab setting, creativity is imperative while constructing my curriculum and educating in relevant ways. Considering the varied abilities of my students, content must be delivered without expecting students to read. Unfortunately, most FRLHS students are below-grade-level readers. To engage students, science has to be taught as a living lab. My insight can be shared with colleagues teaching similar students, high school ESL, sheltered science, or special education teachers, by demonstration of my teaching methods in science to these challenging students. Near Ledesma are: the Whittier Narrows Nature Center, which protects the wetland sanctuary, The Friends of the Whittier Narrows Natural Area, which is dedicated to restoration and preservation of the historic wildlife sanctuary, The San Gabriel River Discovery Center, which restores the natural state of Whittier Narrows and is creating an interpretive center. I plan to share my curriculum and knowledge with these local organizations. Climate change is a controversial topic for teachers, students and the general public alike. I'm obliged to plan and share my curriculum, which will be based on the phenomena I encounter during my PolarTREC expedition. I will also share my adventure through community newspapers and CTA collaboration on NGSS.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

The wide variety of my students' learning abilities pose difficulties when teaching the traditional standard curriculum. I find inquiry-based instruction works best for my students. I use the 5E-model which allows students to construct new ideas (Explain, Evaluate) on the basis of prior knowledge or familiar phenomena (Engage, Explore). The 5th E, is tough for my students to grasp, therefore, Elaborating is more of a teacher-lead verbal discussion. I am utilizing an integrative STEAM style of teaching in my classroom. Science requires math calculations in engineering applications. I encourage my students to incorporate their artistic abilities through drawings and visual projects. We discuss recent technological advances which allow for a better understanding. I rely heavily on technology to allow accessibility to material not only in the classroom, but also at home, via Google Classroom. I am implementing CA

NGSS and teaching my students about phenomena. I show them a video or short clip representing a scientific problem and I ask my students to propose solutions. After students come to a solution, I provide them with more information and teach them related concepts and topics. Sometimes I have to 'chunk' the learning due to substantial disparities in my students' knowledge.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

I am very organized and have great time management skills. I like to be effective when working alone or as a team member, weather leading or facilitating. I enjoy sharing my unusual experiences and will be happy to share my PolarTREC adventure with my community and educators in the US, but internationally as well. As an educator, I possess the communication skills that help facilitate successful communication of the scientific vocabulary with common language. I communicate well with non-English speaking parents and students who are unable to understand textbook information at their own grade level. I have a large network of teachers and students that would love to hear about my endeavors. I use body gestures, humor and non verbal communication in order to be understood. I have a deeper understanding of communication challenges because I am still learning the technicalities of the English language. Particular skills, attributes and experiences of mine that benefit the field research team include: intense curiosity; effectively discussing and listening; ability to identify important problems; awareness of capitalizing on serendipitous moments; idea generation; interest in working at the interfaces of disciplines; project coordination and management skills; dedication to project completion; wild animal care experience.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

A successful group embodies comfort and respect while problem solving. I speak three languages, cherish diversity, am inclusive, multinational and have a global perspective. I am adaptable and am capable of dealing with difficult conditions. I have basic handyman skills and am very resourceful. I always hold myself accountable and participate in group activities to achieve common goals. I always offer help to others when they're in need. When leading, I effectively identify the strengths of my team, attaining success with our projects. Our school was recognized as a California 2018-19 Model Continuation School, thanks to the team of teachers and staff that I am proud to be included. When volunteering in Thailand and Cambodia this past summer, I helped the team of volunteers build a community

toilet, we walked and washed elephants and I taught English in elementary school. As a team leader I manage the coordination of six volunteers with the City, who feed and care for stray animals. I am also responsible for scheduling and fundraising to purchase food and veterinarian care. I train new volunteers and check if feeding stations are operational.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

I received a pleading call yesterday; “Please help me trap a mother and her kitten, the coyotes already snatched the other kitten”. These were the feral cats we planned on trapping for some time now. Momma and Kitten were pacing nearby waiting for their usual feeding. The oblivious Kitten, would be easy to catch. Momma was more cautious of humans. We set traps and waited. Clank! Kitten was trapped, Momma's next. In the bush ahead, I could see Momma staring me down. I reset the trap. Kitten was frantically crying for Momma. We covered the carrier with towels to calm Kitten and the trap was set. There was only one way for Momma to help Kitten now; she had to enter the trap. Momma was very observant and surely she knew the plan. I watched the tension twitches of her body. After waiting a few more minutes there was another loud clank. Momma took the bait and attempted to help Kitten. Kitten's cries subsided once Momma and baby were reunited. What an accomplishment! One less feline to multiply and one more kitten will receive a safe and loving forever home. We already had someone who planned to adopt Kitten.

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
If I am chosen, I can leave for three to six weeks during the school year. My school supports Professional Development and my participation in this scientific expedition will be cheered on by administration. I can also use my accrued time off. The benefits of participating are great and long term. I will share my work and adventure with all teachers in the District and beyond.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I am interested in the effects of climate change. I am mesmerized by the rapid melting of the ice on Greenland. I fly over Greenland quite often when I visit Europe. I have noticed the change in the ice cover, it used to be dirty white snow. In recent years, the snow is slowly disappearing and the glaciers are receding. There are lakes with an amazing blue color and rivers flowing through deep crevices. The passenger jets fly very high, but I can imagine the roar of that water and the cracking of the ice. When I visited the low laying islands and countries of South East Asia and Africa, I thought about geographical and population shifts due to climate change. Driving near drained marsh areas of my city, I can't help but wonder, how much longer will these nearby human habitats and expensive homes remain dry? I have experience in animal preservation. I worked on preserving the habitat of sea turtles in Costa Rica and Asian Elephants in Thailand and Cambodia. I am interested in the evolution and adaptations of species caused by the changing climate factors.

Atmospheric Systems I am somewhat interested in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I do not want to be considered for an expedition in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I would really enjoy an expedition in this subject area

Physics or Space Sciences I do not want to be considered for an expedition in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest
Life adaptations in extreme cold and prolonged darkness. Environmental changes in the Polar regions.

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)
No

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I am a recreational hiker and camper. I like and I am good at boating and sailing. I am trained for and practiced survival in the wilderness. I have years of experience in camping in Eastern Europe. I know wilderness first aid and have a current CPR training certification. I posses this experience, because my mother was a doctor and she had us (family kids) to practice skills while on camping trips and world travels. No firearms knowledge.

b. Provide a basic statement of your general health and physical condition.
I am in good general health. Recent vaccinations for Hepatitis B and yellow fever due to travels to Africa and S-E Asia. I exercise four-five times a week doing cardio and stretching exercises, sometimes I add weights to my training. I climb several flights of stairs daily and work in my garden weekly. I walk a lot doing my volunteer work at the animal shelter.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I am an intermediate user of Mac and PC. I am trained in Teacher Resource System, School loop and Go Guardian for everyday classroom management. I use Google Suite and Chrome Book management software at work. I use PC and Microsoft Office at home. Besides computers, I am using an audio management system, ELMO, a projector and the Smart Board in my classroom.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I have been using computers since they became the norm in our society. I use them at home and at work. I use laptop computers, digital cameras and photo software. Our school became a Google Suite user and I use most of its applications in my classroom. I constantly have students take out their phones and teach them to use various apps like maps, compass, heart monitor, etc. with the idea that they will learn how to effectively inform emergency professionals of their location and well being. I communicate via School Loop and work on assignments through Google Classroom. Most of the tests and quizzes are taken on line using Quizizz. I incorporate photos and short videos from my trips into my classroom presentations to add my personal story to teaching. This material was approved by my administrators and my IT specialists helped me with editing.

e. List any additional skills or information that you wish to be considered.

I am fluent in Polish and English, I can communicate comfortably in Russian and have some knowledge of Spanish and German. I am proficient with camping tools. I can use some tools around the house for chores and basic home repair.

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni. Yes

Program Information I participated in the Earthwatch Expedition 2011 to Costa Rica and worked with sea turtles. I completed the program and I still keep in touch with Earthwatch. I participated in the citizen's research project for NASA on Urban Forests. I included my students in data collection in 2015. Our samples of leaves and measuring data was then processed at UC Irvine. Earthwatch was coordinating our participation during NASA satellite fly over. I use the gathered data even until this day, to teach my new students calculations and show them how the real data collection sheets look like. My Costa Rica expedition sparked my interest in ecological issues. I traveled there while my students and I were participating in the Zedler Marsh Restoration Project in Long Beach.

If yes, did you complete all program requirements? Yes

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?
The PolarTREC opportunity will enrich my knowledge about habitats. It will allow me to develop interesting curriculum and lesson plans. Students from my school will be following my posts, and I am hoping for facetime and videoconferencing. Students will experience firsthand what it is to be a STEM researcher. My colleagues will be able to use my posts for co-curricular activities. Since I worked on research of sea creatures that inhabit a tropical climate, I will be able to compare and contrast life in polar regions. Although, I am familiar with data collecting, it would be beneficial to practice and compare the methods of data collection. I teach the scientific process and method, though I do not have practical experience how this data is processed and used beyond the field. I hope to learn about all these different methods.

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name
DJ Kast, Anne Marie Wotkyns; both former PolarTREC participants

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Fred Arteaga

Title and affiliation Principal, Fernando R Ledesma High School

Email Address freddy.arteaga@emushd.org

Phone Number 6267333221

Reference 2

Name DJ Kast

Title and affiliation Program Director at USC Young Scientist Program

Email Address dkast@usc.edu

Phone Number 9518184659

Reference 3

Name Thomas VanWinkle

Title and affiliation Science Department Chair and Content Specialist

Email Address thomas.vanwinkle@emuhsd.org

Phone Number 5623354520

Katya Erlij

1. Contact Information

Name: Katya Erlij

Email: kserlij@gmail.com

Home Address:
110 Warren St b405
Brooklyn, NY 11201 US

Home Phone:

Cell Phone : 7818562374

Institution Name: Millennium High School

Institution Address:
75 Broad St
New York, NY 10004 US

Institution Phone: 2128259008

Classroom/Office Extension:

Institution Fax: 2128259095

Institution Website: https://www.millenniumhs.org/

Other relevant websites:

Supervisor's Name: Colin McEvoy

Supervisor's Email Address: Cmcevoy@millenniumhs.org

2. Demographic Information

a. Gender: Female

Race: Hispanic or Latino, White, I do not wish to respond

c. Briefly describe your primary audience and surrounding community (e.g. K-12, public, rural/urban, technology access, economics): I work in an urban high school in the financial district of New York City. Students have access to technology on a limited basis in the classroom. Around 50% of students are eligible for free lunch.

d. Type of School (or students you work with): Public

Other Type of School

e. What is the population of your annual audience or school (estimates are fine) 630

f. School Ethnicity:
0% % - American Indian or Alaska Native
45% % - Asian
6% % - Black or African American
13% % - Hispanic or Latino
0% % - Native Hawaiian or Other Pacific Islander
31% % - White
5% % - Multiracial
If your school uses other categories to describe race/ethnicity, please describe:

g. Percentage of students who receive free or reduced lunch: 45%

h. Average class or audience size 34

i. Total number of students/audiences you teach in a year 156

j. If known, what are the approximate start and end dates of your school year or primary programs, etc. ? Include major professional vacation periods. i.e. Christmas break, summer break, etc.

September 8, 2020- June 26, 2021 Christmas Break is Dec 24, 2020- Jan 2, 2021 February Break is Feb 15-Feb 19, 2021 Spring Break is March 29, 2021- April 2, 2021

3. Teaching Experience and Education

a. What type of university degree or other academic experience or qualifications do you have?

Bachelor's Degree (Major): Biology

Bachelor's Degree (Minor): Environmental Science & Policy

Masters Degree (Discipline): Secondary Science Education

PhD Degree (Discipline):

Other Degree:

b. How many years of education experience do you have?: 12

c. How many years have you been working at your current institution?: 8

d. List up to 10 relevant professional licenses, certifications, registrations, awards or honors that you have received in your profession::
Biology 7 – 12 (Professional Certificate), Chemistry 7 – 12 (Professional Certificate), Columbia University Summer Research Program,

4. Professional Assignment

a. What is your primary education assignment? Check all that apply
Secondary (Grades 9-12)

Other Primary Assignment

b. What subjects do you teach? Check all Secondary Biology, Secondary Chemistry

Other Subjects

5. Motivation for Participation

a. What motivates you to apply to PolarTREC and professionally, what do you hope to gain from the experience? (200 words maximum)

I spent the last two summers conducting research in a molecular biology lab at Columbia University, where I gained a newfound understanding and respect for the scientific process and the scientists who are engaging in challenging, labor intensive yet exciting research. I want to experience this in the field. Working in the lab pushed me to think about science differently, in turn I teach about science differently now. The research experience provided me with the tools to use and challenge the “scripted” scientific method in my classroom instruction. I now push my students to use and work with data for developing experiments and drawing conclusions around major scientific principles that are often taught without direct evidence. I challenge them to work with data that doesn’t correlate perfectly and examine the value of “failure” in science. PolarTREC will give me the opportunity to conduct research in a place where I will be able to bring back to my NYC inner city classroom a first-hand experience of what it means to do research in remote areas. I hope to inspire students through my PolarTREC experience, by sharing new methods of collecting and analyzing data and its effects of human action on a global scale.

b. Aside from journaling/blogging, online photos, and webinars which all part of our program requirements, describe your ideas on how you will share this experience in your classroom or with the audiences you work with. (200 words maximum)

PolarTREC will further build my skills to teach students to design and conduct scientific research using data collection strategies, method development, analysis and restructuring of design to improve experiments. While I participated in laboratory bench work at Columbia University, PolarTREC will provide me with a unique research environment. In the classroom, I plan to incorporate the collected PolarTREC data, with the P.I.’s permission, into my Chemistry and AP Biology instruction. My students will evaluate the data collected, using that experience as a basis to design an experiment of their choosing through project-based learning. Seniors at my school are required to participate in Exhibitions Research Projects. The students work in small groups in a content area of their choice. Throughout the school year, students develop a research question, design and engage in the research. At the conclusion, they are required to prepare a ten-page research paper along with a ten-minute oral presentation. I plan on starting a new course at my school in the coming years that focuses on scientific research. Having both lab bench

and field work experiences will provide me with a strong background to be able to develop and conduct a curriculum that focuses on teaching skills and content on scientific research.

c. Describe how you envision sharing your experience with other educators, your personal and professional communities, and the general public. (200 words maximum)

In addition to sharing my experience with my students, I plan to make a presentation for my school's Parent Teacher Association (PTA) to enhance the education of both the parents and students in my school. In turn, I would plan a TED-talk style evening for parents, teachers and students where students and teachers alike could share the research they are participating in. There are students in the school who are doing research at laboratories in New York City and having a time and space for them to share their research and experience is valuable to the school community. I will attend and present at the national NSTA conference, of which I am a member of currently. I will submit lessons plans develop based on my PolarTREC experience for publication in the NSTA magazine. I will be attending the invitation-only Partners in Science National Conference, where I am already presenting current research I did in the lab at Columbia this past summer. Therefore, I would apply to present my PolarTREC experience as well. After the presentation I would have the attendees participate in a hands-on lesson that I developed based off of my PolarTREC experience.

d. Describe how you currently engage your audience and facilitate learning when educating on new and complex topics, concepts, or issues. (200 words maximum)

Making connections between various content areas and real life are priorities when I engage students in learning new content. Over the years I have moved away from direct teacher instruction. I'd rather my students learn information through hands on, project-based learning - working towards daily inquiry and facilitation of new content instruction. I pose questions and problems that make them think for themselves and push them further. I prepare various resources for my students to use, including articles, videos, models, labs and online resources that give them time and space to conduct their own inquiry and explore the content being introduced. This gives them the feeling of having a strong understanding, something they can rely on if they need to review some content at a later date. To introduce complex topics, I tie it to previous content or something that is relatable. For instance, when discussing Acid and Bases in Chemistry, we conduct a lab where students are measuring New York City rainwater to determine if it acidic rain or not. This ties back to content they

learned previously in Biology and incorporates concepts of climate change, pH, and effects on the city they reside in themselves.

e. Describe the particular strengths you would bring to the PolarTREC program and to a field research team. (200 words maximum)

Science can be challenging for students to learn, equally it has been a challenge for me at times. I have learned through paying attention to detail, to ensure important tasks are not overlooked, encouraging students to focus on the goal and making space for questions and misunderstandings help promote strong understanding of the tasks at hand. Empathy allows for space to make connections between us as learners and ways in which we learn. It is important to recognize the value in everyone's input and thinking when working towards a goal, because often the thing that is overlooked is extremely important. Leading a group is one of my strengths, as is being a part of one. I work well in both peer and student capacities, contributing guidance and direction. The relationships I have with colleagues and students, coupled with my positive outlook, allows me to be flexible when necessary. This is a quality I take pride in. My being flexible allows me to work with various groups of people, even those I have differences of opinion with. In addition to these strengths I have a genuine love and passion for science. It would be an honor, not to mention inspirational, to participate in the PolarTREC program.

f. Using examples from your own experience including your role and the contributions you made to a team effort, describe how you work as a member of a team. (200 words maximum)

Being a part of a team is essential to the way I work. Having been on a swim team for eight years to currently team teaching twice a day with the special education teacher, I'm motivated to constantly challenge myself physically and intellectually. I'm as much a leader as a contributor by ensuring that the other team members feel they are equally responsible in the decisions being made. Often, I'll lead a task, but discuss it with both my team and members outside of my team, to get feedback before incorporating it. I have recently taken on the task of chairing the School Leadership Team at my school, where I will be focusing on the school's goal of creating more trusting and communicative relationships between staff and students. This team will challenge me to develop a number of strategies to equally incorporate all team members, even when there is a difference of opinion. It is essential to ensure that all members feel heard, but also that the team stays on task and works in a direction that is productive. Being a leader and team member pushes me to constantly reflect and think about things with a new perspective.

6. Communicating the Experience and Science

Write your journal entry for the general/lay audience. (200 words maximum)

We were going to be getting smelly today. Bacteria stink and every year the students complain. If they could only see all the bacteria they already have all over them! I prepped for class, a bit worried about the timing of the lab, as it would take 8 days to grow the bacterial colonies before we could even plate them and between holidays and the weekend, the students would be missing a number of days of feeding their bacteria. It also required that students sterilize their instruments using a portable bunsen burner, that they properly micropipette for the first time and that they follow the directions to extract a sample size of bacteria from an agar plate and then start to grow it so they could make their own bacterial resistant colonies. I had entrusted them to read through the procedure and copy it into their notebooks, but I was unsure how many had actually understood what they should be doing. I modeled how to use the bunsen burner, the micropipette and left them to their own resources. I saw a number of confused faces and students whispering questions to one another, but students worked diligently to complete their tasks and even when they made a mistake, they caught themselves and fixed their error. I was impressed at their execution and got few questions other than “What is that smell?”

7. Scientific Interests and Research Area Preference

a. Where would you prefer to go on an expedition? Either

Please explain your preference
My goal of this experience is to participate in some field research that I can take back to community and share the experience.

b. How long would you prefer to participate in an expedition? (Most expeditions are AT LEAST three weeks.) List any dates or periods of time when you are NOT able to participate in a field expedition
I have no preference and am available at any time to participate.

c. Briefly describe your scientific interests. Which scientific topics interest you the most and why? Please note that climate change has become part of nearly all expeditions so you may choose to be more specific about this topic, if applicable. (200 words maximum)
I went to a lecture by Dr. James McClintock, from University of Birmingham, and was very inspired by his team, his research and became curious to learn more and engage in his work he had done in Antarctica. His research focused on the biomes under the water, addressing the increasing populations of crabs and other wildlife that used to be found further north. He mentioned something about the changes in the microbiota populations as well, which sparked my interest in learning more about the microbiome. I participated in a teachers workshop on the microbiome, which allowed me to take my students to their exhibit and use aspects of it in my classroom. We now conduct a lab every year where students sample and grow their own skin bacteria. My summer experience at Columbia opened up my eyes to the application of molecular biology in the medical field, learning about the challenges and processes required to evaluate whether specific steps were completed on a molecular level. By designing a plasmid that could induce stem cell differentiation into neuronal cells with the use of CRISPR, I was exposed to the challenges behind current work in genetic engineering and gene therapy that are employing the CRISPR-Cas9 system.

Atmospheric Systems I would really enjoy an expedition in this subject area

Cryospheric Systems I would really enjoy an expedition in this subject area

Human and Social Systems I am somewhat interested in this subject area

Marine Systems I would really enjoy an expedition in this subject area

Terrestrial Systems I am somewhat interested in this subject area

Ecology and Biotic Systems I am somewhat interested in this subject area

Physics or Space Sciences I am somewhat interested in this subject area

Engineering and Technology I am somewhat interested in this subject area

Other (please specify)

Other Areas of Scientific Interest

e. Are you applying to work exclusively with a specific researcher? If yes, please list their full name, institution, and email address. (200 words maximum)

8. Background Information and Skills

a. Briefly describe your outdoor skills or experiences.
I participated in an outward bound program for two weeks where I camped and lived on a boat. I spent three weeks kayaking, hiking, climbed the tallest mountain in Costa Rica and white-water rafting. I have traveled to New Zealand and Australia where I snorkeled in the Great Barrier Reef and hiked on a glacier. I traveled to Peru where I worked on an organic coffee farm and lived in rural villages as well as hiked to Machu Pichu. I spent on a week on a 10 person cruise in the Galapagos. These experiences have made me competent and comfortable with living, sleeping, and cooking in a tent, and being self-sufficient in the outdoors.

b. Provide a basic statement of your general health and physical condition.
I am in very good health. I do not have any health issues that would prevent me from participating.

c. Briefly describe the computer type and operating system (Mac/PC) with which you are most familiar and your skill level.
I currently use a Macintosh at home and at work. I am also familiar with how to use a PC.

d. Briefly describe technological devices and software you use on a regular basis and how you utilize these tools personally and professionally.
I have a computer, an ipad, an iphone and a digital camera. The camera is what I primarily use when I travel. I have experience with Chrome, Safari, Microsoft Word, Excel, Powerpoint and basics of iMovie.

e. List any additional skills or information that you wish to be considered.
I am bilingual (Spanish and English).

9. Previous Applications & Participation

a. Have you previously participated in a teacher research experience (e.g. NOAA Teacher at Sea, Earth Watch)? We do not accept applications from PolarTREC alumni.

Program Information

If yes, did you complete all program requirements?

If yes, how do you see the PolarTREC professional development opportunity continuing to develop your professional skills, or how will it build on your previous research experiences?

10. Orientation Availability

Are you available to attend the Orientation during this time period? Yes

If no, please explain

11. How did you hear about PolarTREC?

Email listserve. Please provide the name and/or URL

Friend or colleague. Provide a name if you wish

Former PolarTREC, TREC, or TEA teacher. Please provide their name

From a website. Please list the website name and URL

Conference or presentation. Please list the venue and/or presentation title

Other (please explain)

b. Please suggest other places we might advertise this opportunity for teachers

12. References

Reference 1

Name Samuel Silverstein

Title and affiliation Emeritus John C. Dalton Professor of Physiology & Cellular Biophysics, and Professor of Medicine

Email Address scs3@columbia.edu

Phone Number

Reference 2

Name Colin McEvoy

Title and affiliation Principal, Millennium High School

Email Address Cmcevoy@millenniumhs.org

Phone Number 2128259008

Reference 3

Name Matthew Craddock

Title and affiliation Teacher, Millennium High School

Email Address mcraddock@millenniumhs.org

Phone Number 2128259008

2020-2021 PolarTREC Educator Application