

Welcome to a Special Event!

Taking PolarTREC to the Classroom and Beyond
Reflecting on the Experience







16 June 2020

Agenda

- Update on the program and products
- Reflecting on the Experience
 - Teachers Reflection
 - Researchers Reflection
- ARCUS Resources for Staying Connected & Your Needs
- Additional Announcements & Adjourn

PolarTREC Participants

	Year	Total Teachers	Arctic	Antarctic
NSF IPY Award 	2007-08	20	11	9
	2008-09	15	10	5
	2009-10	19	14	5
NSF OPP 	2010-11	15	11	4
	2011-12	14	8	6
	2012-13	17	12	5
	2013-14	18	12	6
NSF OPP + 	2014-15	18	11	7
	2016-17	15	8	7
	2017-18	11	8	3
NSF OPP 	2018-19	12	7	3 (2)
	2019-20	12	7	5
		186*	119*	65

***Total includes 9 NSF Einstein Fellows**

STEM Experience Reports

These reports succinctly summarize teachers' professional benefits of the field experience, a description of field activities, and a classroom implementation plan. Reports are designed to target an audience of funders, researchers, and future participants. Researchers associated with PolarTREC expeditions will be able to utilize the reports to communicate their science and as a tool to share their broader impacts activities.

STEM Experience Report - Michael Penn



Never, in my 27 year career as a teacher, have I had so many students... many broad... immediately... participated in... the curiosity... interest in ew... during and af... thinking and... from geograp... and glacial dr

[View Full Report](#)

Learning Resources

PolarTREC Learning Resources is a collection of articles, lessons, activities, interactive media, and more for educators, families, students, or anyone interested in teaching or learning more about the science of the Arctic and Antarctica.

A majority of the resources have been contributed by educators that have participated in the PolarTREC program. In particular, lesson plans written by the PolarTREC alumni have been vetted and tested. Many of these resources have been aggregated into "Collections". The collections are a chance to find all types of resources that all pertain to a specific discipline or location.

We encourage you to explore the many resources using the search interface below.

Please email info@polar trec.com if you have any questions, suggestions, comments, or issues with the resources.

Displaying 1 - 50 of 1521

Search

Items per page

50

Date	Title	Resource Type	Author	Region
10 April 2019	PolarConnect Event with Kim Young and the Winter Respiration in the Arctic Team	Event	Judy Fahnestock	Arctic
26 March 2019	2019 Meet and Greet Webinar	Event	Judy Fahnestock	
13 March 2019	Investigating Penguin Populations of Antarctica	Lesson	Bridget Ward	Antarctic

Filter by Type

- Article (332)
- Web Link (303)
- Event (235)
- Lesson (217)
- Video (210)
- Activity (58)
- Presentation (58)
- Report (39)
- Audio (27)
- Fast and Fun Fact (18)
- Polar Profile (16)

Filter by topic:

- Polar Science (308)
- Earth Science (258)
- Life Science (252)
- Physical Science (144)
- Polar Careers (128)
- Environmental Studies (121)
- Archaeology and Anthropology (46)
- Engineering (28)

The 2019-2020 Cohort

STEM at the Poles! www.polarrec.com

Follow Expeditions • View Resources • Live Connections

STEM at the Poles takes audiences on a polar science adventures through PolarREC! SOU could be virtually transported to an icebreaker in the Amundsen Sea, a remote field camp in Alaska, or an archipelago of islands in the high Arctic. Experience the excitement of the polar regions by reading journals, looking at pictures, watching videos, and interacting with educators and researchers working in the polar regions by asking questions online and joining PolarConnect live events from the field.

Join the 2019-2020 PolarREC educators on their ARCTIC expeditions!

PolarREC is funded by the National Science Foundation Office of Polar Programs and managed by the Arctic Research Consortium of the United States. For more information, visit us online or e-mail info@polarrec.com.

- E: Educator, School or Organization, State
- R: Researcher, Institution, State
- D: Expedition Dates
- L: Expedition Location

Phenology and Vegetation in the Warming Arctic 2019

E: Ale Martinez, Memorial Junior High, TX
 E: Steve Oberbauer, Florida International Univ., FL
 D: 6 June 2019 to 4 July 2019
 L: Utqavik & Toolik Field Station, Alaska, USA

Northern Chukchi Integrated Study

E: Peter Barlett-Browne, St. Thomas Aquinas High School, NH
 E: Lee Cooper, University of Maryland, MD
 D: 29 July 2019 to 24 August 2019
 L: USCGC Healy, Northern Chukchi Sea

WOSAC

E: Katie Gavenus, Center for Alaskan Coastal Studies, AK
 E: Anne Gold, University of Colorado, CO
 D: 18 September 2019 to 24 October 2019
 L: Ship-based, Arctic Ocean

STP Arctic Change and Education

E: Monica Huffed
 E: Craig Tweedie, Univ. Texas - El Paso
 D: 13 July 2019 to 17 August 2019
 L: Utqavik, Alaska, USA

Fire and Carbon in Siberian Forests

E: Amanda Ruland, Saratoga Barn, School, NY
 E: Jennie Delancey, Western Colorado Univ., CO
 D: 14 June 2019 to 14 July 2019
 L: Cherski & Yakutsk, Russia

Carbon in the Arctic

E: David Walker, LASA High School, TX
 E: Rose Cox, University of Michigan, MI
 D: 2 June 2019 to 29 June 2019
 L: Toolik Field Station, Alaska, USA

Drifts Snow and Nitrogen in the Arctic 2019

E: Kate Steeper, Linnex Academy, CA
 E: Doris Bral-Harris, University of Alaska, AK
 D: 25 July 2019 to 17 August 2019
 L: Toolik Field Station, Alaska, USA

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IceCube and the Askaryan Radio Array 2019

E: TBD
 E: Jim Maden, University of Wisconsin, WI
 D: 3 weeks, December 2019 to January 2020
 L: South Pole Station

Thwaites Offshore Research

E: Sarah Stock, JPS 203 - The Manhattan School, NY
 E: Frank Nifliche, Lamont-Doherty Earth Observ., NY
 D: 7-8 weeks, 1925 January to 1926 March 2020
 L: Ship-based, Amundsen Sea

Thermal Sensitivity of Embryos and Larvae of Antarctic Marine Scudworms

E: Amy Colborne, Northumbria, CA
 E: Amy Moran, University of Hobart, HI
 D: 14 October 2019 to 25 November 2019
 L: McMurdo Station

Weddel Seals: Growing Up on Ice

E: Bridget Ward, Springfield Carroll HS, MA
 E: Heather Lwanga, Cal Poly State Univ., CA
 D: October 2019 for 5 weeks
 L: McMurdo Station

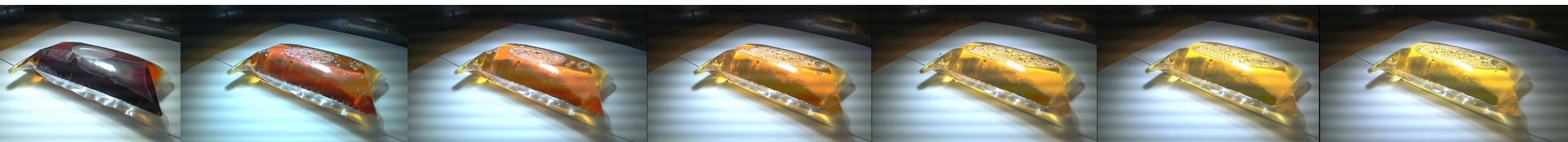
Antarctic Fish Development Under Future Ocean Conditions

E: Denise Horsley, San Antonio Elementary School, CA
 E: Anne Todgham, University of California, CA
 D: 14 October 2019 to 25 November 2019
 L: McMurdo Station

Reflections & Reports

A chance to hear from YOU!

- Implementation in the classroom
- Updates on outreach and lesson plans
- Highlights of challenges, surprises and successes
- Future plans to collaborate with the cohort and research teams



0 hrs

30 hrs

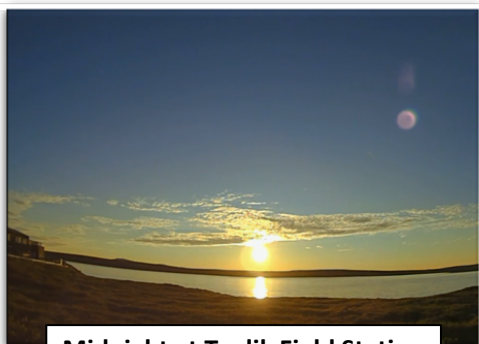
60 hrs

90 hrs

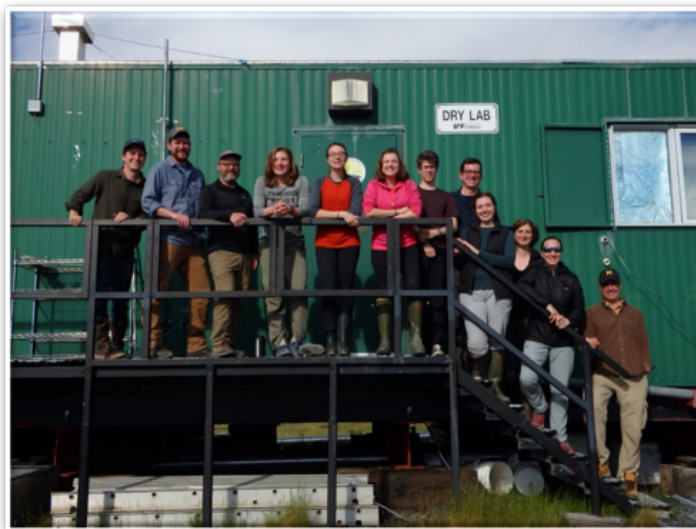
120 hrs

150 hrs

190 hrs



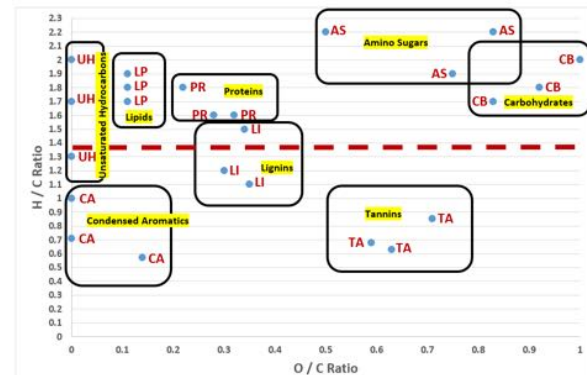
Midnight at Toolik Field Station
June 16, 2019



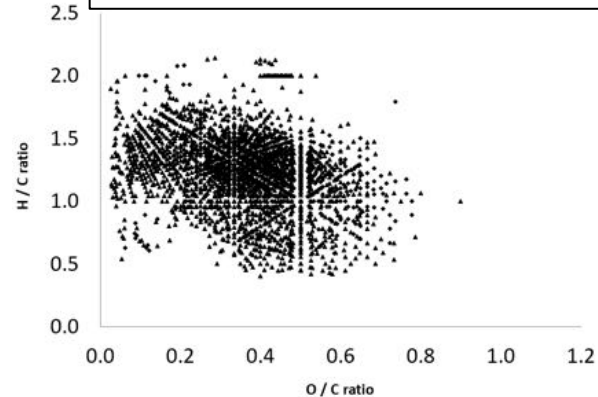
Carbon in the Arctic
David Walker - Toolik Field Station



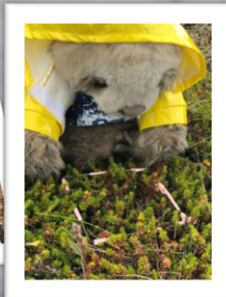
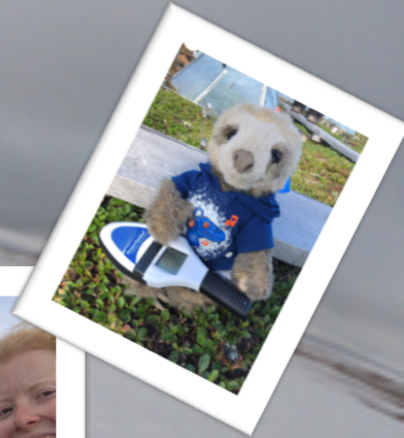
Photoexposure Pilot Experiment



Organic Characterization of Stream Water



Phenology and Vegetation in the Warming Arctic 2019





FIRE AND CARBON IN THE SIBERIAN ARCTIC

Northern Chukchi Integrated Study Bering and Chukchi Seas



MOSAiC Expedition Central Arctic Ocean

The 'Met Sled' Research Team, mostly from U of Colorado:
Sean Horvath, Ola Persson, Chris Cox, Anne Gold,
Matt Shupe (not pictured), Dave Costa (not pictured)
and MOSAiC School Students, including Tatiana Matveeva

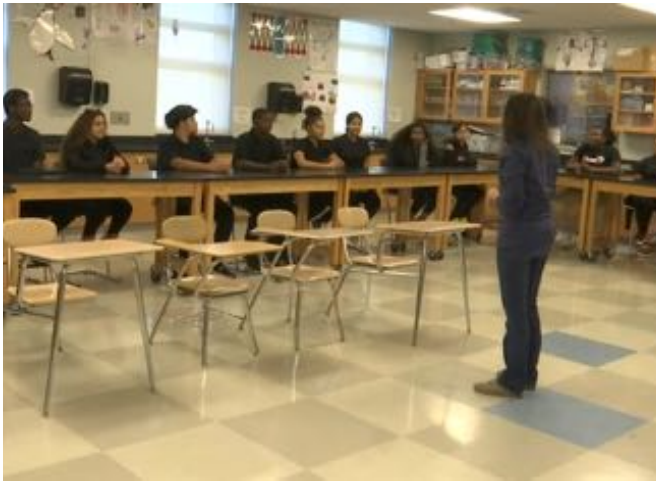


The Educators:
Falk Ebert (Germany), Katie Gavenus (US), Anne Gold (US),
Freiderike Kruger (Germany) & Lisa-Marie Heusinger
(Germany)



Katie's Ongoing Outreach (in collaboration w/ Anne & CIRES)

+ Games, Experiments, Outdoor Activities + After School + Linkages to Community-Based Monitoring + Seasonal Activities for EE



Weddell Seals: Growing Up on Ice

Thermal Sensitivity of Embryos and Larvae of Antarctic Marine Ectotherms aka **TEAM SEA SPIDER**



Activities with NatureBridge students using PolarTREC learnings:

- hermit crab behavior based on temperature
- Introduction to inquiry walk



The FUTURE:

- Jump Into Warming Seas lesson: Kinesthetic activity to demonstrate how warming seas are predicted to impact Antarctic and California marine animals
- Learning in retirement courses
- Cal Academy of Sciences NightLife



Post-trip presentations:

- Marietta Natural History Society in Marietta, OH
- La Canada pre-school
- Zoom with Ohio 8th graders



Our team:
Andrew Naslund, Denise Hardoy, Milica Mandic,
Anne Todgham(PI) and Mandy Frazier

Denise Hardoy

**Antarctic Fish Development Under Future
Ocean Conditions**

McMurdo Station, Antarctica



Presenting to a class of third graders in Chico, California.

IceCube and The Askaryan Radio Array 2019 Amundsen-Scott South Pole Station- Jocelyn Argueta



The 2019-2020 IceCube summer crew posing at the ceremonial South Pole. Credit: Yuya Makino, IceCube/NSF

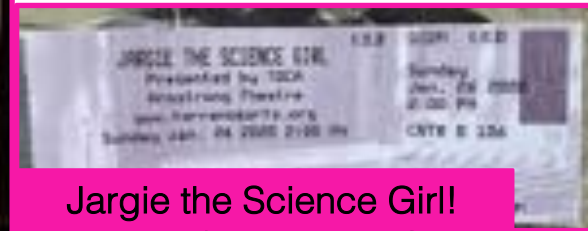
SCIENCE AT THE BOTTOM OF THE WORLD

Geography, Social Studies

- 3/11: Boys & Girls Club Dell Gardens
- 3/19: Benjamin Franklin Library Los Angeles, 3pm
- 3/26: El Sereno Library Los Angeles, 3:30pm



In-person outreach:
Boys & Girls Club



Jargie the Science Girl!
Jan. 26th Torrance, CA

Online outreach

YSP Alumni Spotlight: Jocelyn Argueta
by Jackie Lopez

I remember meeting CJ at an informational session for YSP she was wearing a signature science dress and spoke about a program that brought innovative science lessons to the schools surrounding USC. I immediately thought, "How 'MEDI' are my kind of people?" I searched for an application and then went down a rabbit hole looking up science-themed clothing. I was excited about my new discovery that day.

This fall, I joined YSP as a fourth grade TA at Norwood Elementary I taught dress classes at Friday, making it the perfect ending to my week. The students captured my heart and inspired me with every "ohhh!" moment, a million interesting questions and lessons when they challenged themselves to be creative within the experiment. This is how science is supposed to be experienced in a collaborative and fun way! I was proud to be a part of YSP and get back to these communities that don't always have the resources to advance science in this way. There are the same communities I grew up in and it was fantastic to see a program creating access to STEM in such a crucial way.

Thanks for the love at a Post YSP educator at Norwood while she was sharing and learning about the entire community at the USC Young Scientists.

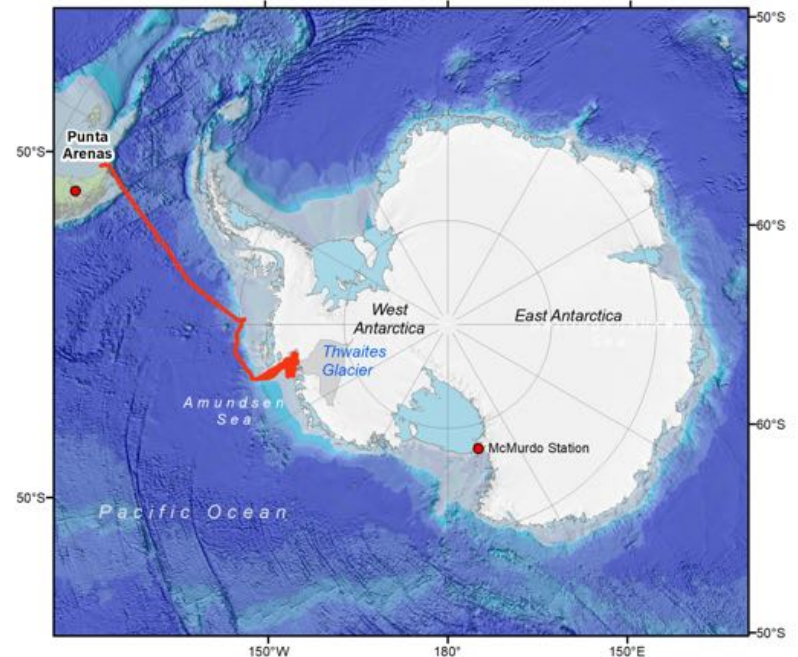


Thwaites Offshore Research



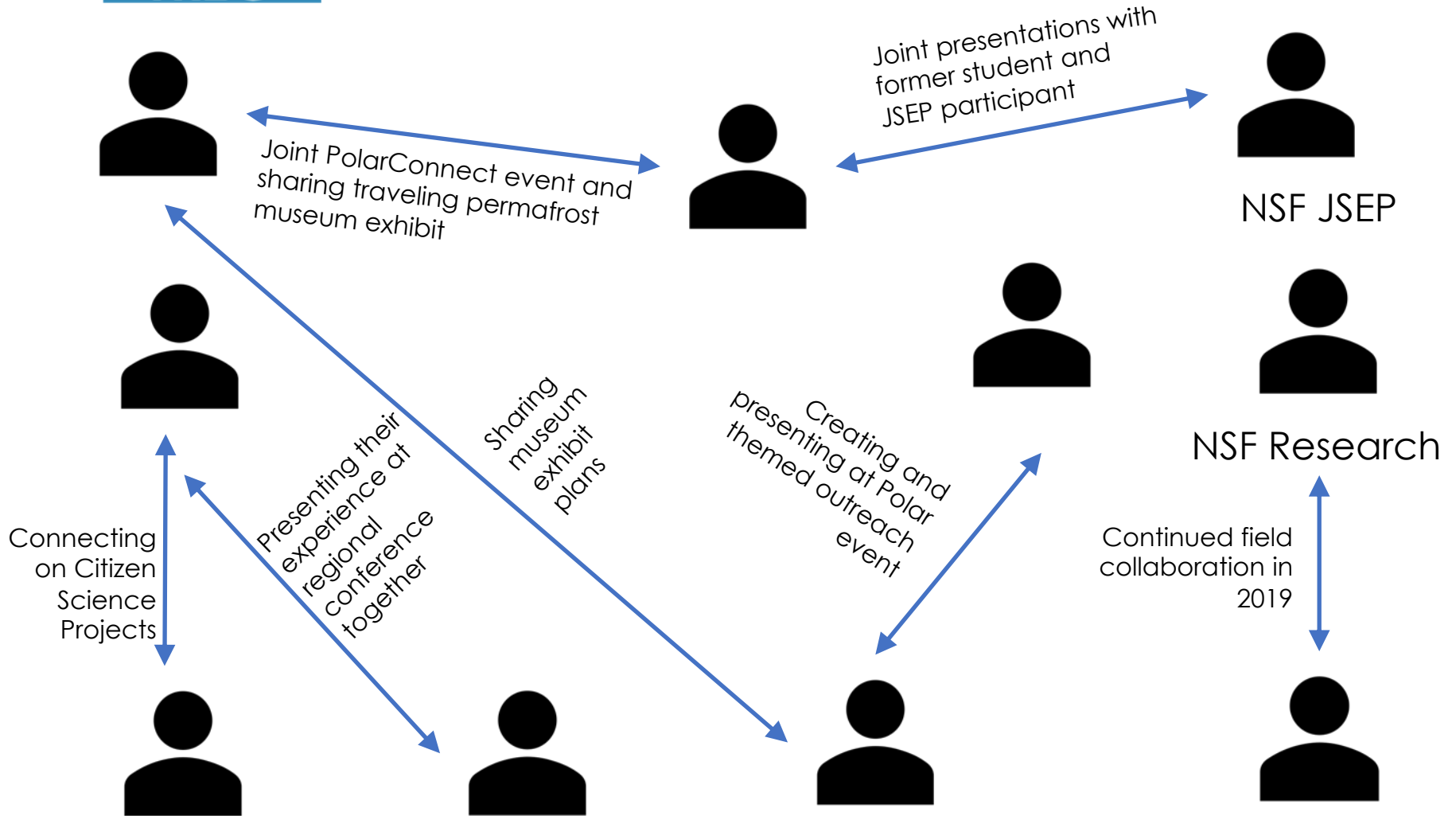
-By the time I returned from my expedition, schools in NYC had been shuttered for two weeks, so I'm planning to implement a year-long climate change curriculum (based on my PolarTREC experience) in my STEM class next year

-I did gain access to a lot of fantastic resources that can be used remotely- a SOCCOM float that my students named is collecting data and somewhere in the Southern Ocean, there is a seal named Slacker sending frequent updates on water temperature at different depths





How are 2019-2020 PolarTREC participants continuing collaboration after their expedition?



On-going support by program managers, school administrations, and PolarTREC alumni partner teachers.

Resources & Reminders

- Finish any program requirements (vet lessons & STEM reports with researchers)
- Researchers can view profile of teacher and see progress and share
- Funding to those that finish requirements
- Reminder: PolarTREC emails have been changed on website (for teachers)