



# AK to NSTA

Highlights of climate change course in  
Alaska for local and global teaching

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Fairbanks, Alaska

# AK to NSTA

Highlights of climate change course in  
Alaska for local and global teaching

- Introduction to the Climate Change Course
- What makes it unique in Professional Development
- Science Highlights and Education Activities
- Participant Practices for PD

# Introduction to the Climate Change Course

**Climate Change:  
Seeing, Understanding, &  
Teaching**

Annual 4 Day Field Course  
Denali National Park, Alaska  
Teacher Training

Provide Classroom Teachers with  
Experience and Information

Work with Local Scientists

NPS, ARCUS, and AK GEO  
partnership

Engaged Cohort of Educators



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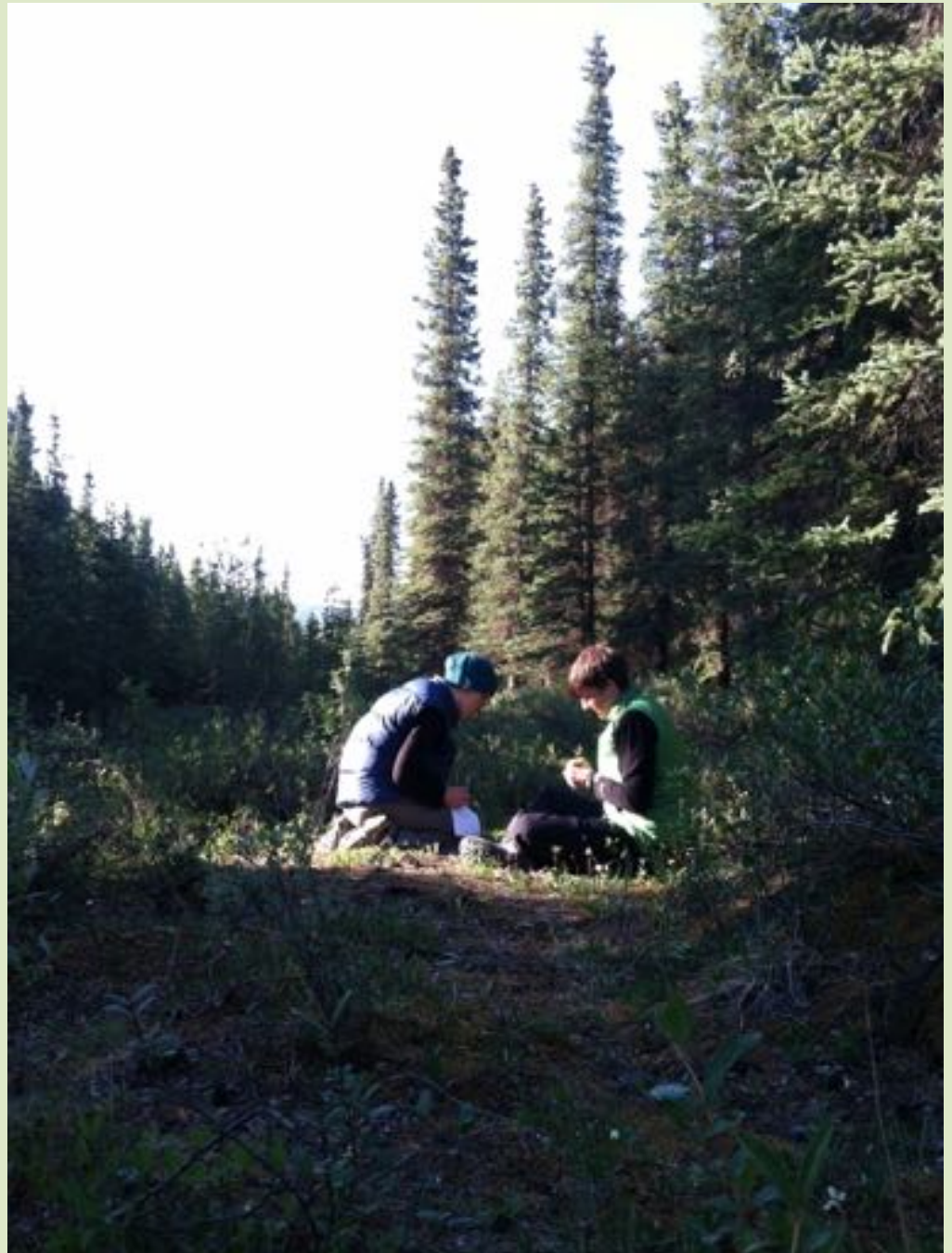
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## What makes it unique in Professional Development

**Hands – on**

Supportive/Non-Judgmental

Get Expert Answers

Making the Abstract Tangible

Making Meaning Together.

PolarTREC Mentor Teacher

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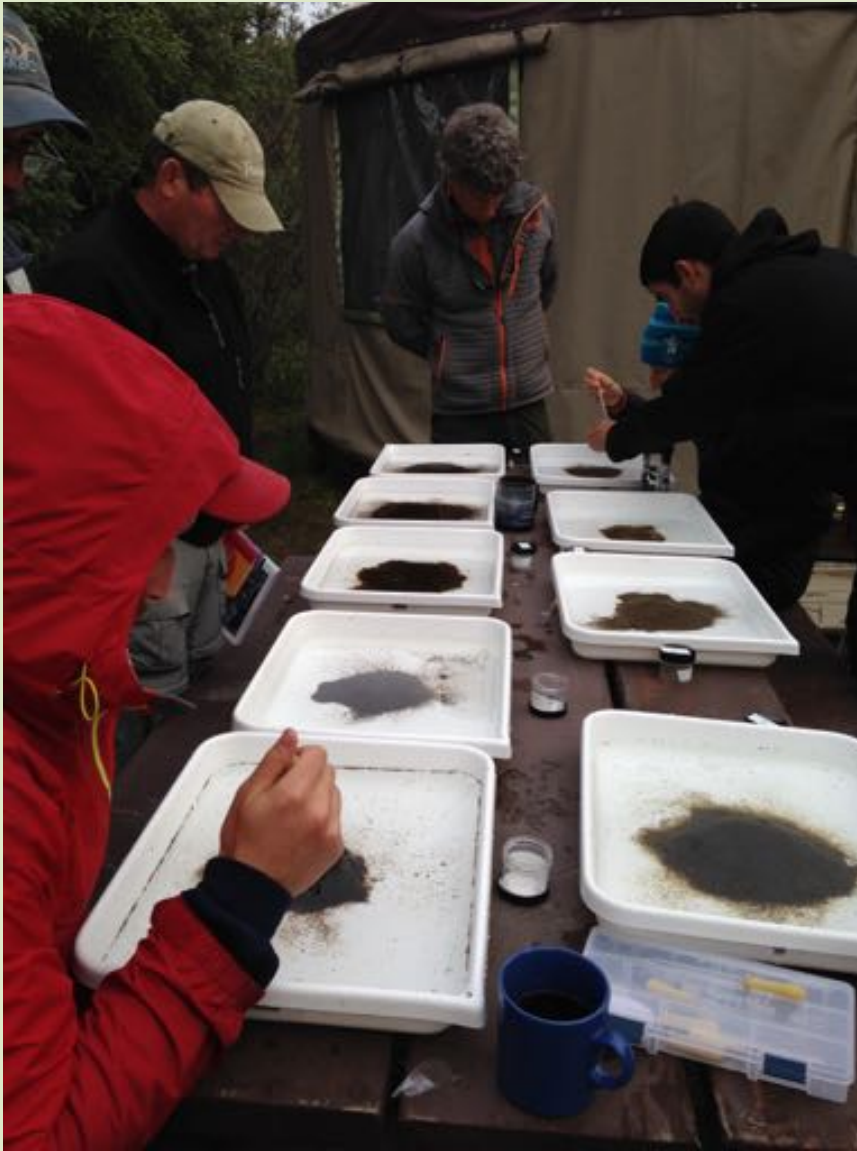
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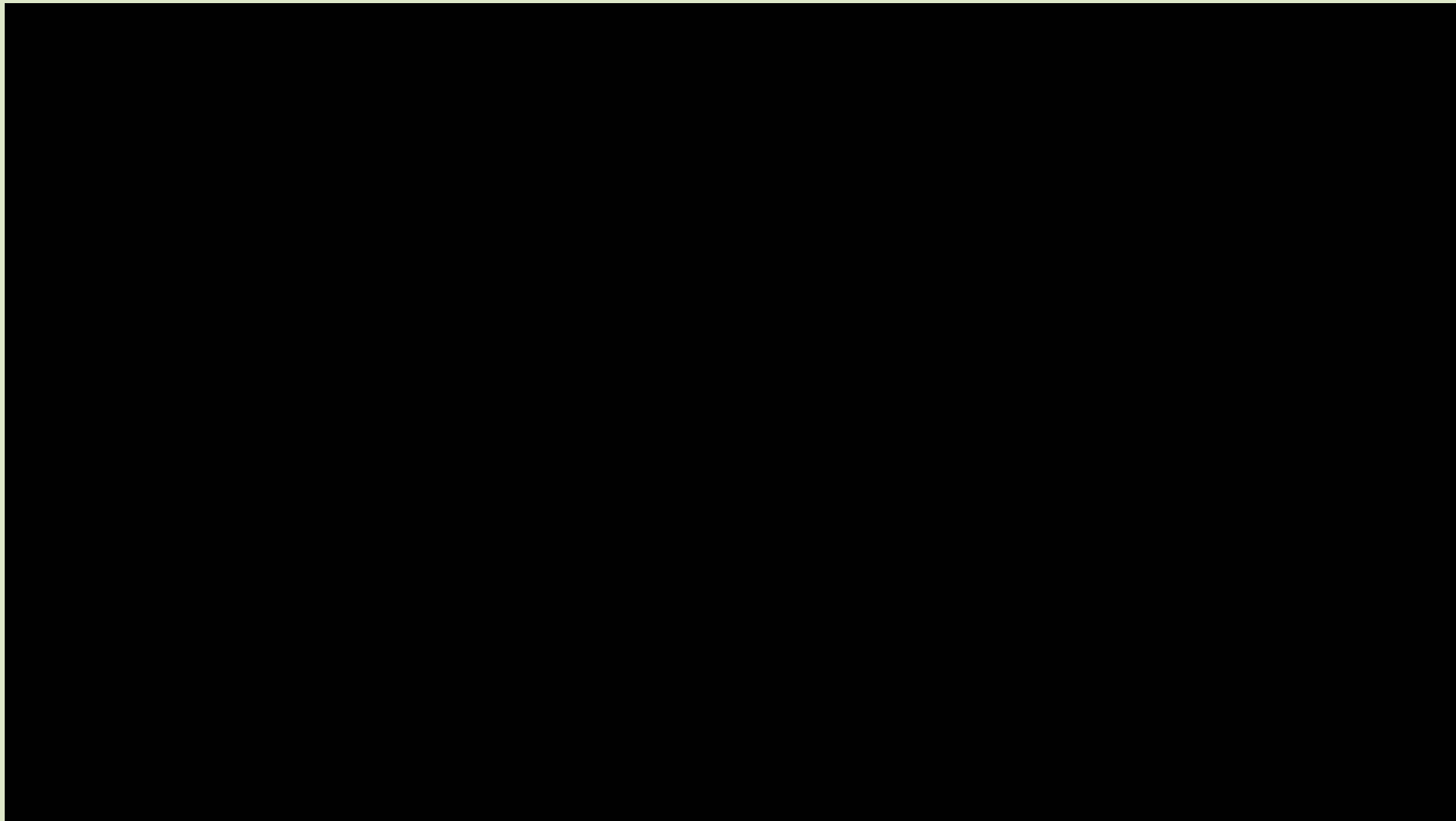
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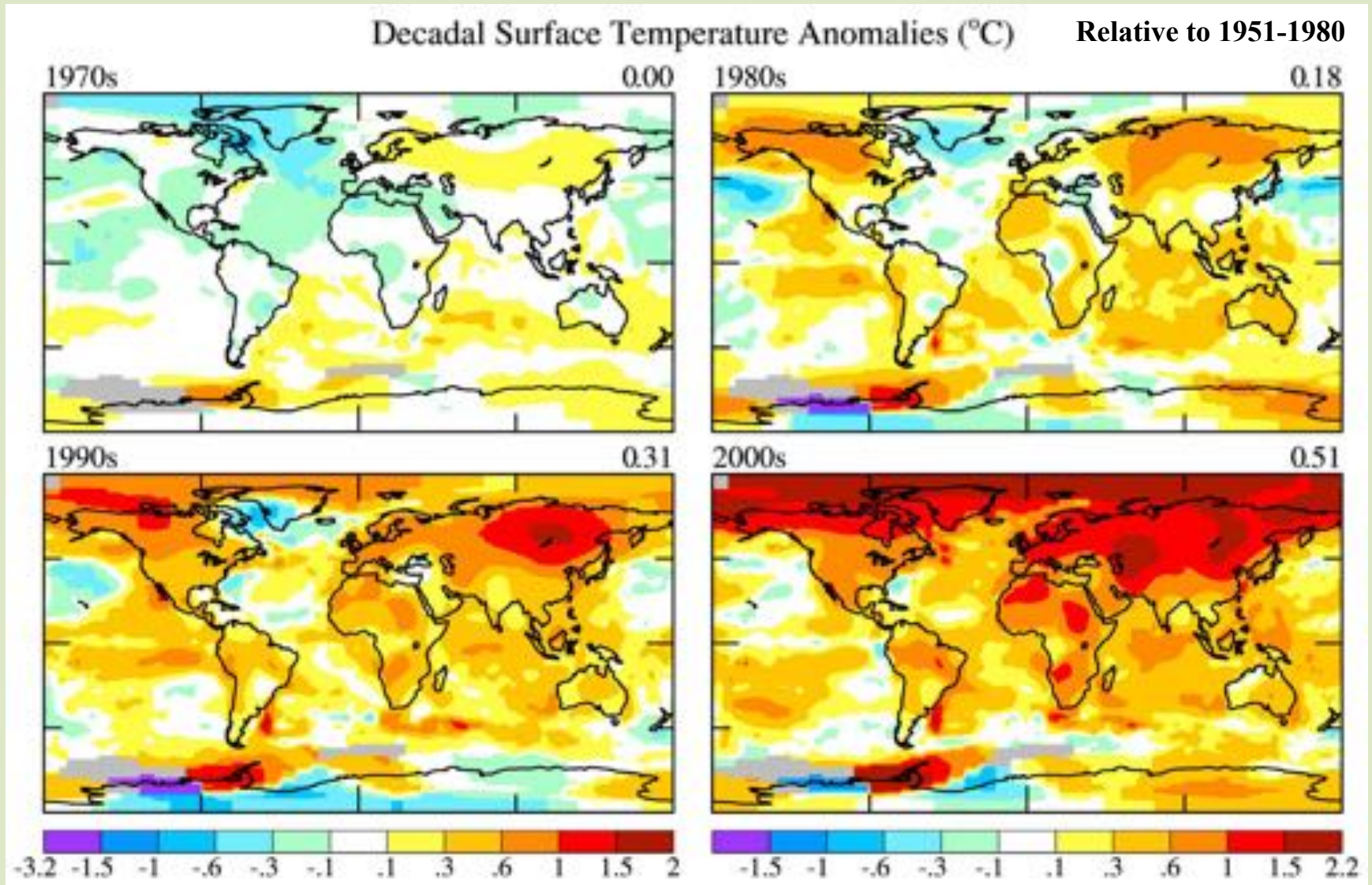
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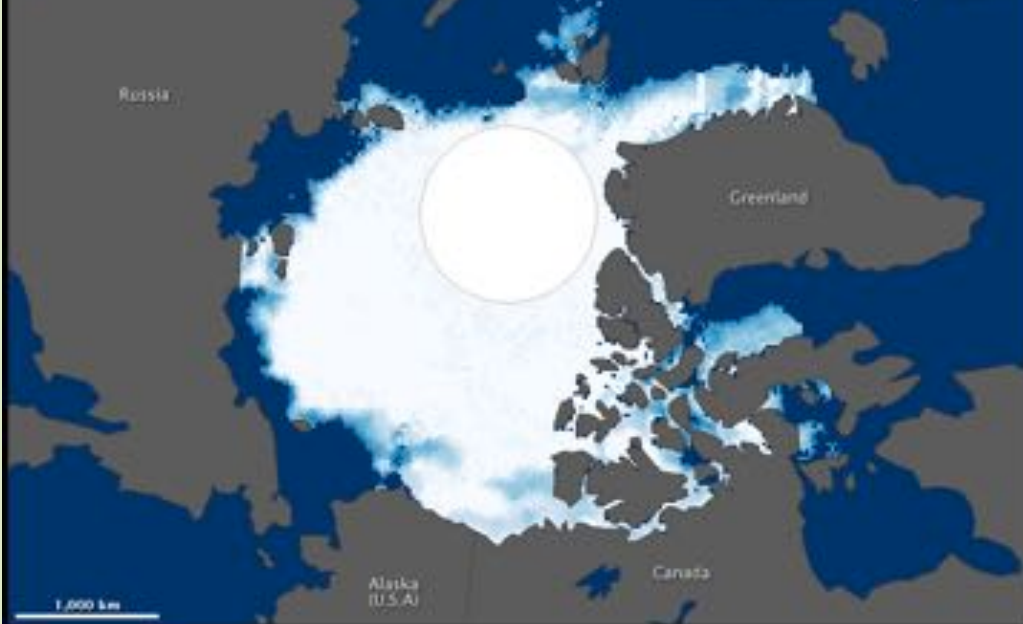
# The Big Picture of Science @ the Poles



SEPTEMBER 13, 2012



SEPTEMBER 14, 1984



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## LATEST NEWS



**Lindhpin.** Thwaites Glacier (shown) in West Antarctica is connected with its neighbors in ways that threaten a wholesale collapse if it recedes too far inland.

## West Antarctic Ice Sheet Is Collapsing

Tweet 200 Share 25



Thomas Sumner

By Thomas Sumner | 12 May 2014 6:15 pm | 3 Comments  
3 Comments

A disaster may be unfolding—in slow motion. Earlier this week, two teams of scientists reported that the Thwaites Glacier, a keystone holding the massive West Antarctic ice sheet together, is starting to collapse. In the long run, they say, the entire ice sheet is doomed, which would release enough meltwater to raise sea levels by more than 3 meters.

...west rifts on the recent retreat of the 100,000-year-old...

# Science @ Denali

Total Change in Mean Annual Temperature (°F), 1949 - 2009



Hidden Creek Glacier, S.R. Capps 1916



Hidden Creek Glacier, R.D. Karpilo 2004



**Sunset Glacier, Denali National Park, AK, McIntyre, August 29, 1939**



**Sunset Glacier, Denali National Park, AK, R.D. Karpilo, August 14, 2004**





1976



2001

# Educator Activities

Course Developed Capstones  
[www.polartrec.com](http://www.polartrec.com)

2015 Field Courses Available

Following PolarTREC Expeditions

Polar Educators International

Find your Park Initiative

The screenshot displays the PolarTREC website interface. At the top, the logo reads "POLAR TREC" with the tagline "TEACHERS AND RESEARCHERS EXPLORING AND COLLABORATING". A navigation menu includes links for Home, Virtual Base Camp, PolarConnect, Resources, For Teachers, For Researchers, and In Español. A search bar is located in the top right corner.

The main content area features a "Resource Search" section with a form containing the following fields:

- Type: Lesson
- Collection: All Ages
- Competitive Title: All Ages
- Grade Level: All Ages
- Permissions: All Ages
- Region: All Ages
- Topic: (Dropdown menu)
- Keywords: (Text input field)
- Sort by: Date
- Order: Desc
- Buttons: Search, Reset

Below the search form, a "Resources" sidebar lists various categories: Overview, About, Collections, Media Archive, Find a Resource, Contribute, and Fun and Fun Facts.

The main content area lists several resources, each with an overview and a "View Lesson" button:

- Two Views of Changing Climate**: Overview in this lesson, students will observe repeat photography samples from Denali National Park that show the change in vegetation over time due to change in climate. This activity introduces students to using observation techniques and visual art vocabulary and skills to create an interactive work of art. Topics Using repeat photography models to document change Understanding that... Lesson: About 1 period, All Ages, Download, Share, and Remix
- Sensational Parts of Speech**: Overview The inspiration for this lesson was to encourage students to experience and appreciate nature with their senses while addressing a Common Core State Standard. This activity allows students to infer what an object is by using all senses but sight. Phonemic awareness is a skill difficult to isolate outside of the context of reading; the audio portion of the lesson can help struggling... Lesson: Elementary and Up, Download, Share, and Remix
- Glaciers or Sea Ice - What Makes the Oceans Rise?**: Overview This activity works best for students who don't have a lot of lab experience and learn best through hands on activities. It allows them to not only investigate an aspect of global warming (rising sea levels), they will also get practice with making predictions and writing a hypothesis as well as understanding basic scientific concepts such as water displacement. Lesson: View Lesson
- What the Warming Future Holds for Our Alaskan Animals**: Overview This interactive lesson introduces students to a number of animals and individuals that will be affected by climate change in Alaska. It allows students to grapple with the complexities that face both humans and animals who face an uncertain future due to an uncertain climate. Students will connect how changing climates affect animal habitats; and in turn, how some animals will likely... Lesson: About a week, Elementary and Up, Download, Share, and Remix
- When Permafrost is Not**: Overview The students will bury ice (frozen in various shapes such as flat slabs, wedges, & lumps) at varying depths and under the various substrates and vegetation covers. The students will record the ambient temperature and how long it takes the various ice shapes with the various coverings to melt. Students will observe and record results. The students will then raise the ambient... Lesson: About a week, Middle School and Up, n/a



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Polar Educators International

Find your Park Initiative

The image shows the homepage of the PolarTRAC website. At the top, there is a blue navigation bar with the PolarTRAC logo and several menu items: About, Virtual Site Camp, PolarConnect, Newsroom, For Teachers, For Researchers, Resources, and Go Global. Below the navigation bar is a search bar. The main content area features three prominent buttons: 'Follow Expeditions' (orange), 'Find Resources' (green), and 'Locate Team Members' (red). The central focus is a large image of a telescope in a snowy environment with the text 'How do you find something that isn't directly visible?' and 'The IceCube telescope at South Pole is here.' Below this image is a 'Learn More' button. The page is divided into several sections: 'PolarTRAC News' with a 'New Website Feature' article, 'Featured Video' with a video titled 'PolarTRAC: Student Impacts', and 'Join the Email List' at the bottom. The 'PolarTRAC News' section includes a sub-header 'New Website Feature' and a paragraph of text about Project Projects, accompanied by a small image of people in a field. The 'Featured Video' section shows a video player with a play button and a title 'PolarTRAC: Student Impacts'. The 'Join the Email List' section has a green header and a sub-header 'Join the Email List'.

# Educator Activities

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2015 Field Courses Available  
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Following PolarTREC Expeditions  
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Polar Educators International  
[www.polareducator.org](http://www.polareducator.org)  
Facebook Group

Find your Park Initiative

The image is a screenshot of the Polar Educators International website. At the top left is the logo for Polar Educators International, which includes a stylized sun and the text "POLAR EDUCATORS INTERNATIONAL". To the right of the logo is a navigation menu with the following items: HOME, ABOUT, ACTIVITIES, NEWS, EDUCATORS, RESEARCHERS, and MEMBERS. Below the navigation menu is a row of three large images: a close-up of a polar bear's head, a sunset over a body of water, and a polar bear walking on snow. Below this row are two columns. The left column is titled "FEATURED EDUCATOR" and features a profile for "BETTY TRUMMEL" with a photo of her standing in a snowy landscape. The right column is titled "FEATURED RESEARCHER" and features a profile for "DR. CLIFF ATKINS" with a photo of him operating a snow machine. Below these columns is a section titled "WHERE WE ARE" which contains a world map with red and blue markers. To the right of the map is a section titled "OUR COMMUNITY" which shows a Facebook page for Polar Educators International.

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## PD Participant Practices

**Ask questions**

Find a Passion

Get curious

Reach BIG

Follow Up

Finish Up

Spring Board for MORE!



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# Thank You

**Sarah Bartholow**  
**Janet Warburton**

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