



OPP Education and Outreach



Image credit: Deanna Wheeler / JC Parks Elementary School

Peter West
Polar Education and Outreach
Program Manager



OPP Education and Outreach (E&O)



PolarTREC Teacher **Katey Shirey** pulls cable as part of the IceCube project.

- ❖ E&O relationships with other NSF directorates and offices
- ❖ Climate Change Education Partnership Program (CCEPP)
- ❖ External outreach coordination
- ❖ PolarTREC (Teachers and Researchers Exploring and Collaborating)
- ❖ Antarctic Artists & Writers Program
- ❖ Joint Science Education Partnership (JSEP)
- ❖ Albert Einstein Distinguished Educator Fellow
- ❖ Supplementary education materials

Education and Outreach liaison within NSF

OPP:

- ❖ Works with NSF's Office of Legislative and Public Affairs (OLPA).
- ❖ Partners with the Education and Human Resources (EHR) Directorate, a relationship that grew out of joint activities during the International Polar Year (IPY).
- ❖ Co-funds with EHR, and the Geosciences and Biological Sciences directorates, planning grants under the Climate Change Education Partnership Program (CCEPP).

Ice Stories: Dispatches from Polar Scientists



explOatorium®



Climate Change Education Partnership Program



- ❖ Seeks to establish a coordinated national network of robust, regionally- or thematically-based partnerships focused on common climate-change impacts.
- ❖ Focuses on integration across scientific disciplines relevant to climate change and between formal and informal learning environments.
- ❖ **Phase I Partnerships (CCEP-I):**
(FY 2010) Supports synthesis, network-building, and strategic planning activities leading toward potential Phase II Partnerships.

OPP supported four (of a total of 15) Phase I grants for a total of \$1.5 million a year.

Panels will be held on Phase I supplements next week.

External Outreach Coordination

- ❖ IceCube / WISSARD / South Pole Telescope / ANDRILL among other supported field projects all have dedicated outreach officers / programs.
- ❖ Outreach officers often make presentations at national teacher conferences and other large, national meetings.
- ❖ OPP's Education and Outreach Program Manager provides a Point of Contact for these outreach officers to communicate and coordinate with one another.

Clues from the Cryosphere

An Arctic and Antarctic symposium at the National Science Teachers Association (NSTA) annual meeting in March.

Organized by **Christine Foreman** and **Susan Kelly**, Montana State University / Whillans Ice Stream Subglacial Access Research Drilling (WISSARD) project

42 Educators, 4.5 hour event – **Ross Powell** and **Ed Brook** / six follow-up talks; 20-35 educators

PI's involved:

Cristina Takas-Vesbach
Slawek Tulaczyk
Michael Gooseff
Ross Powell
Jill Mikucki
Christine Foreman



PolarTREC

(Teachers and Researchers Exploring and Collaborating) / www.polartrec.com



Paula Dell

Lindblom Math and Science Academy
Chicago, Illinois
Palmer Station, Antarctica



John Wood

Talbert Middle School
Huntington Beach, California
Healy, Alaska

- ❖ **OPP Award 2010-2014:** 17 Arctic and 11 Antarctic teachers to date (goal is 48 total)
- ❖ **IPY award 2007-2010:** supported 32 Arctic, 19 Antarctic teachers with field projects
- ❖ Five of the 51 PolarTREC teachers deployed between 2007-2010 were Hispanic or Latino. Several posted journals to the Website in **both** English and Spanish.
- ❖ More than 60 lesson plans developed by teachers and researchers have been contributed to the on-line Learning Resources Database for public use.
- ❖ Field journals, images and videos posted by participants at the PolarTREC Website.
- ❖ More than 80 real-time, interactive events between researchers, teachers, and classrooms have been hosted from the Polar Regions. More than 15,000 people participated in these events from numerous states across the U.S. and in other countries.

Antarctic Artists & Writers Program



"...I must say I am awed by how well things run. Despite dinged props, four-day storms and that last extra box of meteorites, everything and everybody ends up getting where she or he or it is supposed to be."

Charles Hood, A&W participant, researched a history of Antarctic aviation and science during the 2010-2011 season.

- ❖ Artists selected through merit-review process. A new solicitation is pending.
- ❖ Those selected in the most recent competition, in 2008, continued to deploy to Antarctica in the 2010-2011 research season.
- ❖ As of the end of the 2009-2010 Antarctic season, NSF/ OPP had supported 98 artists and writers since the late 1950's.

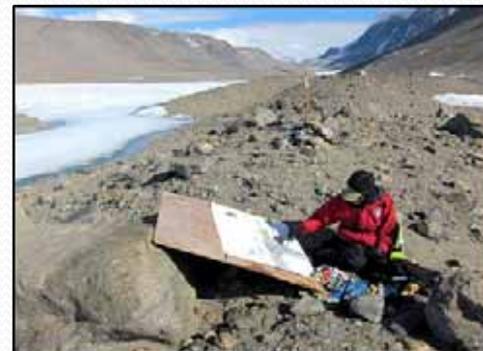


Chris Linder images: *Ranger Rick Magazine*

- ❖ A show of collected works by program participants was publicly exhibited in conjunction with the 2009 Antarctic Treaty Consultative Meeting in Baltimore.
- ❖ A list of past participants is available on the NSF Website: <http://www.nsf.gov/od/opp/aawr.jsp>

"Expectations get erased by experience...I know that anything I do in the future will be affected by this change in my work that started by going to Antarctica."

Elise Engler, A&W participant in the 2009-2010 season whose project was documenting all of the physical requirements needed to support a science team in Antarctica and the settings in which that science is done,



Albert Einstein Distinguished Educator Fellow

Laura Lukes, who teaches at Saguaro High School in Scottsdale, Arizona, is the current OPP Fellow.

She:

- ❖ Coordinates and leads the JSEP Science-Education Week.
- ❖ Presents at conferences.
- ❖ Facilitates inter-directorate communication through organizing a NSF "Einstein Fellows present..." brownbag series.
- ❖ Acts as resource to help program managers understand how to effectively communicate science to classroom teachers.
- ❖ Collects and organizes Polar-education links for Web posting as a resource for classroom teachers.



OPP Einstein Fellow **Laura Lukes**

Joint Science Education Project (JSEP)

- ❖ Developed out of IPY as international collaborative science-education effort between Greenland, Denmark, and the U.S. to inspire the next generation of STEM innovators in polar science.
- ❖ OPP's Einstein Fellow coordinates and leads the U.S. Science-Education Week.



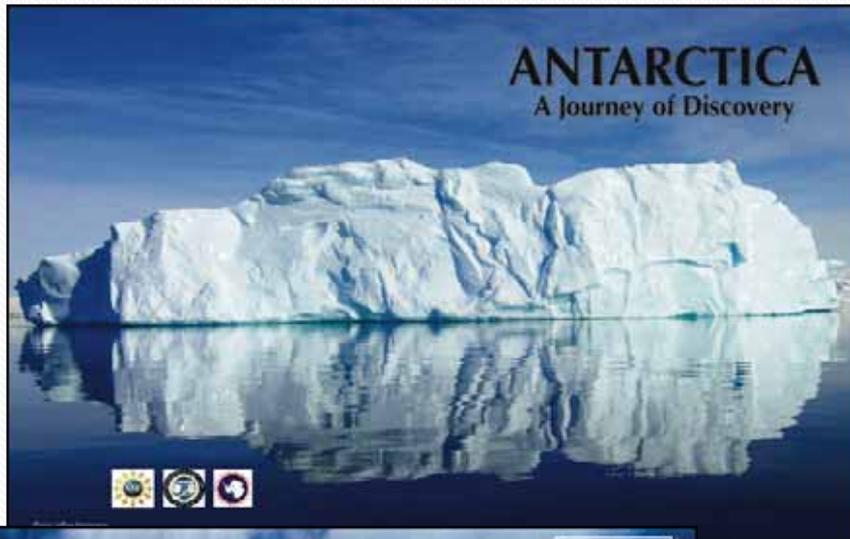
Image: **Laura Lukes** / OPP Einstein Fellow

- ❖ During the U.S.-led Science-Education Week, teachers and high-school students from the three countries travel to Summit, NEEM, and *Sondrestrom* field sites in Greenland.
- ❖ During the Greenland-led Field Research School, students hear lectures and see demonstrations by NSF scientists and work in internationally collaborative teams to design and conduct their own research in the *Kangerlussuaq* area.

On Facebook: <http://www.facebook.com/pages/Joint-Science-Education-Project-JSEP/187353734617058>

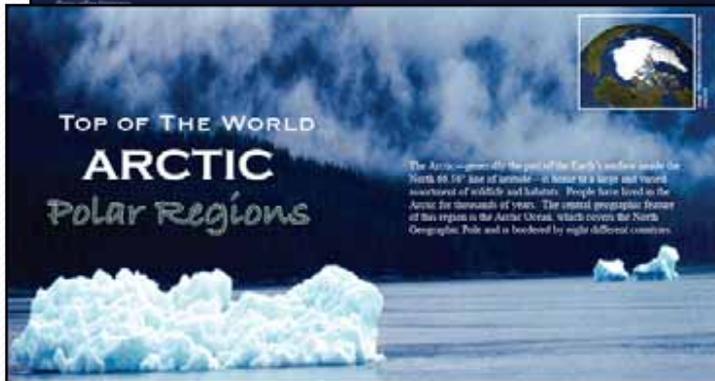
Sharepoint site: <https://extsharepoint.nsf.gov/sites/jsep/default.aspx>

Publications for Educators and the Public



Antarctica: A Journey of Discovery

- ❖ Published in April: more than 450 copies ordered or downloaded to date
- ❖ Publicized in an NSF news release
- ❖ Developed by ANDRILL / supported by Antarctic Earth Sciences
- ❖ Available online:
www.andrill.org/publications
- ❖ An Arctic companion document is in production



Questions?

"The biggest lesson I take back to my classroom is learning about the parts of the scientific process that are not written in the books... the joy I saw among the scientists as they try to make sense of the world, and how much scientists need to adapt to ever-changing circumstances when collecting data."

"La lección más grande que me llevo al salón de clases es el aprendizaje sobre el proceso científico que no se lee en los libros... la excitación que vi en los científicos al explorar el mundo que nos rodea, y lo mucho que se tienen que adaptar a las situaciones cambiantes en las campañas de medición."

-- **Juan Botella**,
Monona Grove High School
Monona , Wisconsin
PolarTREC teacher aboard the *Nathaniel B. Palmer*, Feb. to April 2011



Juan Botella