

# NSF's Investment in Education during International Polar Year

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OPP Office Advisory Committee  
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# Goals for IPY Education

## Inspire

*"I could be a scientist"*

*"I want to study the polar regions"*

*"The polar regions are important regulators of earth's climate"*

## Educate

*"My students enjoy learning science when we **do** science"*

*"There is less ice than there used to be."*

*"Presenting polar science to this crowd made me feel like a rock star - people wanted my autograph"*

*"Think of what we have learned in 50 years since IGY"*

## IPY Legacy

*"I learned about the Arctic Skyping with a student who lives there."*



# Criteria for Successful Proposals

- Develop innovative science education resources
- Engage diverse and underrepresented communities
- Use recent advances in research on STEM education
- Encourage interdisciplinary teaching and learning
- Attract and develop the next generation of polar researchers
- Reflect the international aspect of IPY, building partnerships and collaborations where possible
- Evaluate the impact of the project on the audience



# Summary of Competitions

	2006 Competition	2007 Competition
Proposals Received	64 (49 projects)	77 (56 projects)
Proposals Funded	11	21
Projects Funded	9	14
Success Rate	18%	25%
Funding Requested	\$50 million	\$75 million
Funding Total	\$5.7 million	\$10.5 million



# Summary by Audience

	2006 Competition	2007 Competition	Total
K-12	2	5	7
Undergrad/Grad	3	3*	6
Informal Science	4	8*	12
<b>Total</b>	9	14	23

\*denotes some awards to be made in 2008



# Partnerships

Education and Human Resources	Office of Polar Programs
Dave Campbell	Renee Crain, OPP
Al DeSena	Kim Silverman, OPP
Valentine Kass	
Eileen Lewis	<b>Interagency</b>
Sharon Locke	Christos Michalopoulos, NOAA Education
Sonia Ortega	Frank Niepold, NOAA Climate Change
Keith Sverdrup	Jackie Poston, EPA Alaska Region
Sandra Welch	Ming-Ying Wei, NASA Education
<b>Other NSF Partners</b>	
Cassandra Dudka, OISE	
Jill Karsten, Geosciences Education	



# What's Happening?!

Informal Science Education		
Project Title	Investigator	Institution
<i>Engaging Antarctica</i>	J. Michael Farrell	University of Nebraska-Lincoln
<i>Polar-Palooza</i>	Geoffrey Haines-Stiles	Geoffrey Haines-Stiles Productions
<i>Live from the Poles: A Multimedia Educational Experience</i>	Christopher Linder Paul Fontaine	Woods Hole Ocean Institution Museum of Science Boston
<i>Polar Hydrobot Simulator</i>	Brad McLain	Space Science Institute
<i>Ice Stories: A Public Educational Resource for IPY</i>	Mary Miller	Exploratorium
<i>Improving the Public's Understanding of Polar Research Through Hands-On Fellowships for Science Journalists in the Arctic and Antarctic</i>	Christopher Neill	Marine Biological Laboratory
<i>Encounters: Radio Experiences in the North</i>	Richard Nelson	Raven Radio
<i>Pole to Pole</i>	Moira Rankin	Soundprint Media Center, Inc.
<i>Ice Planet Earth</i>	Annette Schloss	University of New Hampshire





# Events Already Taking Place

**"STORIES FROM A CHANGING PLANET"  
POLAR-PALOOZA NATIONAL TOUR**

Confirmed 2007 cites and dates: [Click Here for 2008 venues - dates to come!](#)

SAN FRANCISCO, CA (Berkeley & Oakland) - Event Now Past  
 LOS ANGELES, CA - Event Now Past  
 SAN DIEGO, CA - Event Now Past  
 ALBUQUERQUE, NM - Event Now Past  
 ATLANTA, GA - November 11-13  
 BATON ROUGE, LA - November 15-17  
 TAMPA, FL - CANCELED

**TAKING THE POLES ON**

[Polar Palooza Home](#) | [About The Poles](#) | [About Polar Palooza](#) | [The Seamless Education's Corner](#) | [Sites and Cities](#) | [The HINCC](#) | [Media Palooza](#) | [Simplicia & Resonance](#) | [Credits & Contacts](#) | [Site Search](#) | [Polar Palooza Blog](#)

**POLAR PALOOZA! MEDIA PALOOZA**

Podcasts, [blogs](#), vlogs and, coming soon, an invitation to Remix/Mash-up our IPY stories and win an iPod!!!

Click an iPod's Play Button on the list below for a Pop-Up PodCast

**EMILY ALDRIDGE**  
 Professor at University of Alaska  
 Captain Jack & the Hologram Hunters  
 Jack & Jill  
 Road Trip to Greenland  
 Barbara & Jeff's Polar Journal  
 IPY Handbook  
 The Arctic Life  
 The Arctic: A Polar Tale

**POLAR-PALOOZA PodCasts come in five flavors:**

- The very latest video reports from the poles! Two comparison podcasts from Summit Station in Greenland, "Ice on the Ice, Core" and "Ice, Different on the World Stage." Also, an expanded version of researcher Jackie Grebmer's recent cruise in the Bering Sea, documenting the impact of climate change on local walrus, and the USCGC Icebreaker HEALY's Captain gives a guided tour of his vessel. Also parts 1 & 2 of "Captain Jack Dobb and the Hologram Hunters", a look at a sunlight, snow and atmosphere experiment at Greenland's Summit.

**Past Pods**

[http://www.pbs.org/newshour/bb/environment/july-dec07/greenland\\_08-01.html](http://www.pbs.org/newshour/bb/environment/july-dec07/greenland_08-01.html)





# Live From the Poles

## Next expedition Nov 11

**PolarDiscovery**  
WOODS HOLE OCEANOGRAPHIC INSTITUTION

Home | Live from the Poles | Arctic: Frozen Ocean | Antarctica: Frozen Continent | Compare the Poles

**Expedition 2: Arctic Seafloor**

Arctic Seafloor Expedition: July 1-Aug. 10, 2007

**About the Expedition**

No one has ever laid eyes on the bottom of the Arctic Ocean. For the first time in the history of humankind, a scientific team—using unique underwater and under-ice vehicles—will. Join our expedition this summer on a potentially historic and groundbreaking (and certainly noteworthy) research cruise aboard the Swedish icebreaker Oden.

At the top of the world, the Arctic Ocean is cold, remote, and covered in darkness for half the year. It's hard enough to get onto the ice-covered ocean. It's even harder to get under it and down to its seafloor.

For this 40-day cruise to the Gakkel Ridge in the eastern Arctic Ocean, engineers have built two new robotic autonomous underwater vehicles (AUVs). The two vehicles, called PUMIE and Jaguar, are designed to be put into holes in the sea ice and to explore the deep reaches of the Arctic Ocean. Many hours later, they will have navigated back to another hole in the ice and be recovered by the icebreaker.

Scientists are excited about what they might find. The Arctic Ocean floor may be different than other oceans—including deep-sea life forms, some ocean bacteria, or "living fossils" of species that existed when life on Earth was just beginning to evolve. You can follow what happens on this cruise each day through our photojournal—and perhaps witness history unfold.

**The Gakkel Ridge**

It wasn't until 2001 that scientists first found tantalizing clues that the Arctic seafloor may be unlike the seafloors of the more-explored Atlantic and Pacific Oceans. They explored the Gakkel Ridge, part of the 90,000-kilometer (40,000-mile) continuous chain

### Video Interviews


### Videos from the Oden


<http://polardiscovery.who.edu/multimedia.html>



# Graduate & Undergraduate Students

Graduate and Undergraduate		
<i>Adapting SENCER to the Arctic - Improving Polar Science Education as a Legacy</i>	Lawrence Duffy	University of Alaska Fairbanks
<i>The Polaris Project: Rising Stars in the Arctic</i>	Robert Max Holmes Andrew Bunn Katey Walter John Schade Karen Frey William Sobczak Sudeep Chandra	Woods Hole Research Center Western Washington University University of Alaska Fairbanks St. Olaf College Clark University College of the Holy Cross University of Nevada Reno
<i>IPY-ROAM: International Polar Year Research and Educational Opportunities in Antarctica for Minorities</i>	Craig Tweedie	University of Texas El Paso
<i>Fostering Collaborative, Interdisciplinary Relationships among the "New Generation" of Polar Researchers Participating in the IPY</i>	Susan Weiler Sheldon Drobot	Whitman College University of Colorado, Boulder



# Graduate & Undergraduate Students

Students participating in the International Polar Year Research and Educational Opportunities in Antarctica for Minorities visit NSF.



Photo courtesy of Craig Tweedie.





# Projects for K-12 Teachers, Students

<b>K-12 Education</b>		
<i>Antarctic Penguins, Teaching the Science of Climate Change: A Celebration of IPY</i>	David Ainley	H.T. Harvey & Associates
<i>Beyond Penguins and Polar Bears: Integrating Literacy and IPY in the K-5 Classroom</i>	Kimberly Lightle	Ohio State University
<i>SPRINTT: Student Polar Research with IPY National (and International) Teacher Training</i>	Glen Schuster	The U.S. Satellite Laboratory, Inc.
<i>Teachers' Domain - Polar Sciences</i>	Theodore Sicker	WGBH Educational Foundation
<i>IPY STEM Polar Connections</i>	Morton Sternheim	University of Massachusetts Amherst
<i>Polar TREC-Teachers and Researchers Exploring and Collaborating</i>	Wendy Warnick	Arctic Research Consortium of the U.S.
<b>Additional IPY Activities</b>		
<i>National Science Teachers Association Symposia for IPY</i>	Al Byers	National Science Teachers Association
<i>An IPY Symposium: New York and Polar Research - A Partnership Spanning the Centuries</i>	Stephanie Pfirman	Columbia University
<i>Barrenlands Traverse: Snowstar 2007</i>	Matthew Sturm	U.S. Army Cold Regions Research and Engineering



# Live and Archived Materials

Home About FAQ Store Contact Newsroom Search

## POLAR TREC

TEACHERS & RESEARCHERS EXPLORING & COLLABORATING

**LIVE FROM IPY!**  
Location: *McMurdo, Antarctica*  
Teacher: *Hindy Bell*  
Live Event on November 13

JOIN POLAR TREC VIRTUAL BASE CAMP CARE NETWORK LEARNING RESOURCES

### Live From IPY!

#### Virtual Base Camp Expeditions

- Antarctic Undersea ROV
- Human Impacts in Antarctica
- Oden Antarctic Expedition '07
- Antarctic Ice Sheet Studies
- South Pole Ozone Changes
- Antarctic Weather Stations
- Oden Antarctic Expedition '06
- SEDNA Beaufort Sea Ice
- Bering Ecosystem Study
- Greenland Snow Studies
- Arctic Tundra Dynamics
- Bering Sea Predators
- Greenland Education Tour
- Greenland Seabird Ecology
- Climate Change Svalbard
- Alaska Climate Variation
- Kuril Islands Biocomplexity
- SIHBA Antarctic Sea Ice

#### Previous Expeditions

#### Photo Gallery

#### Project Maps

**Legend**  
■ Current Expeditions  
■ Upcoming Expeditions  
■ Completed Expeditions

#### Recent Posts



**Polar Bears**  
Posted: November 07 11:04 am  
By: Guest

**Ham Radio contact**  
Posted: November 06 9:10 pm  
By: Guest

#### Photo Gallery

### Antarctic Undersea ROV

Ms. Bell's Journal Ask the Team Photo Gallery Maps

 <p>Paul Dayton in dive gear Date: 11/05/2007</p>	 <p>Paul Dayton with cage Date: 11/05/2007</p>	 <p>Group with VideoRay Date: 11/05/2007</p>	 <p>Stacy baking Pumpkin Pie Date: 11/05/2007</p>
 <p>Marcus checking turkey Date: 11/05/2007</p>	 <p>Helicopter bringing supplies Date: 11/05/2007</p>	 <p>Goggles with Tape Date: 11/05/2007</p>	 <p>Computers at New Harbor Date: 11/05/2007</p>



# Additional IPY Activities



Photos courtesy of Stephanie Pfirman.



The NSTA Learning Center BETA RELEASE

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Learning Center Home • Resources • Web Seminars • Archives • IPY: The Fragile Ice (Salt Lake City)

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## NSTA WEB SEMINARS

LIVE INTERACTIVE LEARNING @ YOUR DESKTOP

WEB SEMINARS ARCHIVES

- Spring, 2007
- Fall, 2006
- Spring, 2006
- Fall, 2005
- Spring, 2005

ABOUT WEB SEMINARS

- Features
- Frequently asked questions (FAQs)

WEB SEMINARS SOFTWARE

**Eliminate**

### The Fragile Ice

This web seminar focused on clues to past weather conditions found on snow packs. This interesting field of study was presented by Dr. Mary Albert, a senior research engineer at the U.S. Army ERDC Cold Regions Research and Engineering Lab in Hanover, New Hampshire. She is also an Adjunct Professor at the Thayer School of Engineering at Dartmouth College. Her research focuses on heat, mass, and electromagnetic transfer in porous media. In this seminar Dr. Albert discussed snow crystals and the ways they change their shapes, the changes that take place on the shape of snow crystals over time, after colder and warmer events. To view this seminar and gain an understanding of past weather climates and how that helps to predict current patterns check out our archive and the PowerPoint presentations. These Web Seminars are designed for grade 5-8 educators.

Learn more about the [features](#) of the Web Seminar and read answers to [frequently asked questions](#) from participants.

#### Schedule

Web Seminar #  
Date: Tuesday, J  
Time: 6:30-8:00 p  
Topic: The Fragile





# Synergy and Legacy

- Curriculum and teaching materials developed plus Teacher Professional Development experiences
- Video, audio, planetarium, museum and other exhibits that will live on for many years to come
- Researcher professional development
- Lehrer News Hour – Polar Palooza Video
- IPY Education PI web conferences
- IPY.gov



A screenshot of the IPY 2007-2008 International Polar Year website. The page features a navigation menu on the left with categories like 'Science &amp; Nature', 'People &amp; Culture', 'Explore &amp; Learn', 'Multimedia', 'News &amp; Events', 'About U.S. IPY', 'U.S. Participants', and 'Resources'. The main content area includes a large image of penguins with the title 'Emperors of the Extreme', a 'News' section with three articles, and a 'Features' section with an article titled 'The Log from the Southern Ocean'. The footer contains the USA.gov logo and a list of links including 'RSS Feeds', 'U.S. IPY Contacts', 'Image Credits', 'FOIA', and 'Policies and Important Links'.

