

CHECKING OUT YOUR TEAM . . .

COOL JOBS IN ICE CORE RESEARCH

ICE DRILLING PROGRAM OFFICE
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CHECKING OUT YOUR TEAM: Cool Jobs in Ice Core Research

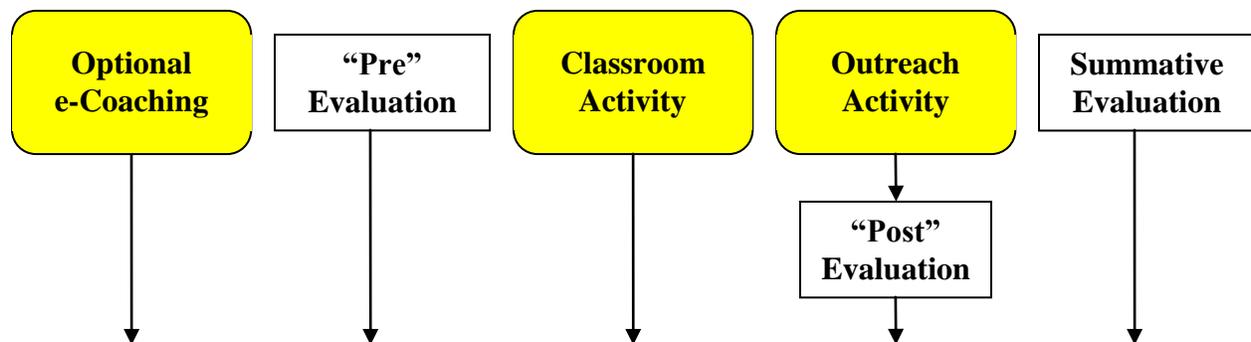
Teacher Notes: The primary goal of this scientist-supported activity is to generate information and excitement about careers in the field of ice core research. Like astronauts, polar research scientists and engineers may travel to remote regions, work in extreme conditions and have experiences that profoundly affect their view of earth and our responsibility for it. Hearing from someone who is passionate about their career firsthand is one way for you to help your students to begin to define directions for their own future and to expose them to real climate science in action.

Key Concept: Ice core research has yielded definitive data about climate patterns over the past 800,000 years, including the discovery that climate can change abruptly, in as little as 10 years. Evidence from diverse atmospheric indicators frozen in the ice is fueling models to help better predict the future. Working in this field is important and exciting!

Target Grade Levels: Middle and High School

Background: Checking Out Your Team is based on a partnership model, in which you oversee the preparation of your students for speaking with a scientist in a way that empowers them and puts them in the driver's seat. The Ice Drilling Program Office (IDPO) Education Program Manager is available via email to discuss your goals for the activity and to answer any questions in advance. The scientist or engineer presenter is responsible for simulating the role of someone being investigated by a research project team, for delivering a presentation to your class and for answering detailed content and process questions. The presentation is built on an inquiry framework, to model research processes appropriately for your students, and addresses the protocols, guidelines and standards that follow.

Activity Design Elements:



Responsible Parties:

IDPO Education Program Manager

Classroom Teacher

Classroom Teacher

Classroom Teacher Scientist / Engineer

IDPO Education Program Manager

Guidelines: Check the available event schedule and sign-up procedures at <http://www.climate-expeditions.org/educators/activities.html>. Please allow at least one class period for team research prior to the live event. You may wish to include your Librarian or Technology Coordinator and your school's Guidance or Career Counselor in the activity planning.



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Materials:

Students will need access to computers and the internet to support this web quest model. Each student will also need a copy of their Team Task sheet. Student instructions and materials are available at <http://www.climate-expeditions.org/students/links.html#learning>. Scientist interviews may be conducted in person or at-a-distance via Adobe Connect videoconferencing technology, depending on the availability of a mentor in your area. For presentation day, you will need internet access, a computer with projection capability, and a speaker phone for the class, if it is a "distant" event.

Standards:

Workplace Readiness Skills such as the SCANS Competencies and P21 goals

National Science Education Content Standards

- Unifying Concepts and Processes
- A: Science as Inquiry
- D: Earth and Space Science
- F: Science in Personal and Social Perspectives
- G: History and Nature of Science

Climate Literacy: The Essential Principles of Climate Science

- 2: Climate is regulated by complex interactions among components of the earth system
- 4: Climate varies over space and time through both natural and man-made processes
- 5: Our understanding of the climate system is improved through observations, theoretical studies and modeling.
- 7: Climate change will have consequences for the earth system and human lives.

Extensions: The 19 minute video featuring the latest Antarctica findings, **Climate Change –How Do We Know?** provides a wonderful all class summary for this activity. Available at: <http://www.waisdivide.unh.edu/multimedia/video.shtml>.

To provide students ways to respond positively to climate issues, there are challenges and potential solutions listed at this site: <http://epa.gov/climatechange/kids/index.html>

Evaluation: Checking Out Your Team has three key goals: to provide students with access to real world role models, to enhance student interest in science and STEM careers, and to help bridge the gap between research outcomes and classroom science content. Sample questions to duplicate for pre- and post-assessment of student learning outcomes are included for your use, on the next page. Feedback on the effectiveness of this activity will also be solicited from the scientist and educator partners, to contribute to improvements.

Please mail completed Pre/Posts to Linda Morris, Dartmouth Thayer School of Engineering, 14 Engineering Drive, Hanover, NH 03755. Thank you!

Activity Author: Linda Morris

For further information, please contact Linda at Linda.m.morris@dartmouth.edu.



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Student Identifier: _____ **Class/Period:** _____

Please share your thoughts about the following concepts by putting a check under the statement that best indicates your current thinking.

Concept	1 I strongly disagree	2 I disagree a little	3 I am not sure	4 I agree somewhat	5 I strongly agree
Understanding science is important					
All kinds of people can do science					
Scientists ask questions to learn new things					
Scientists gather evidence and analyze it to support their conclusions					
Doing science or engineering is fun					
I am interested in a science or engineering career					
Taking science and math courses will help prepare me for science or engineering jobs					
Scientists use tools and technology designed by engineers to do their work					
The sun's energy affects our climate					
What happens at the poles affects other parts of earth					
Evidence of past climate conditions can be found in ice cores					
Analyzing long term patterns can help us predict future climate					
What happens to the climate will impact me					