Polar Education Internet Resources for 9th-12th Grade Teachers

**ANDRILL Project Iceberg (www.andrill.org/iceberg/educators/index.html)**

This is an education site put together by ANDRILL, which is a collaborative Antarctic geological drilling project. They have downloadable materials with lessons to accompany the video journals that are available. You can also order a free hard copy of the book and DVD with the videos on it. Don't miss clicking on the Project Iceberg logo on the left to access more resources.

**Antarctic Photo Library (photolibrary.usap.gov/)**

Lots of great photos from the United States Antarctic Program (USAP). The pictures here are free to use for educational purposes so long as the photographer and the National Science Foundation (NSF) are credited. The photos are organized into categories and are searchable by keyword.

**Arctic Climate Modeling Program (www.arcticclimatemodeling.com/index.html)**

Curriculum resources for weather and climate for all grade levels. There are also videos and multimedia resources available to explore various aspects of weather and climate. You can also access real-time weather data from the Student Network for Observing Weather, where students in rural Alaska collect weather data and post it to the Internet.

**Arctic Stories (www.arcticstories.net/index.html)**

This site is primarily a collection of videos which the science, sea ice, wild life, life, climate, and people of the Arctic. The perspectives include scientists as well as an Inupiaq Eskimo elder. These videos provide a wide range of perspectives on topics related to studying the Arctic. There is also a collection of photographs from the Arctic.

**Center for Remote Sensing of Ice Sheets Education Page (www.cresis.ku.edu/education/k-12/)**

The education page of the Center for Remote Sensing of Ice Sheet (CReSIS) has some great resources. There is a nice collection of K-8 lessons as well as video lectures on various topics relating to ice sheets that would be great to use with older students or to get some good background information.

**Dive and Discover : Polar Regions (www.divediscover.whoi.edu/polar/index.html)**

This site from Wood's Hole has a lot of good background information on both Antarctica and the Arctic. Especially nice are the exploration timelines and the section on comparing the poles. Each section has a short, interactive quiz.

**Diving Under Antarctic Ice (www.norbertwu.com/galleries/Antarctica.html)**

This site highlights scuba diving expeditions in Antarctica. Lots of great photographs from under the ice as well as information about what it is like to dive under the ice in Antarctica.
Earth’s Polar Regions (www.windows.ucar.edu/tour/link=/earth/polar/polar.html)

The polar regions section of the Windows to the Universe site provides nice background information on a variety of polar topics. There are also a few nice lessons, mostly targeted at upper elementary and middle school aged students.

Education Center: Where the World is Frozen (nsidc.org/cryosphere/)

Lots of good background information relating to all things frozen. Don't miss the "Education Resources" link on the right side of the page where you can find some nice interactive ice maps.

Encounters: Radio Experiences in the North (encountersnorth.org/index.htm)

Encounters is a series of radio programs that focus on the environment and traditions of Alaska and northern Canada. The radio programs are available as podcasts and cover a wide range of topics such as "wildlife, ecosystems, weather and climate, glaciology, communities and land, and indigenous traditions".

Extreme Ice Survey - Glaciers and Climate Change (www.extremeicesurvey.org/index.php/education_toc/)

This site has a nice set of informational pages related to glaciers and climate change. Not to be missed are the fantastic time-lapse videos that show glacial processes. There is also a nice set of glacier photographs as well.

GoNorth! adventure learning curriculum for K-12 classrooms (www.polarhusky.com/)

The website for the Polar Husky Go North! project. This project allows classrooms to participate in an online adventure learning as a team explores the Arctic by dogsled. There are lots of lessons provided in the curriculum guide that accompanies each expedition.

Ice Stories: Dispatches from Polar Scientists (icestories.exploratorium.edu/dispatches/index.php)

This website, produced by the Exploratorium features dispatches from polar scientists who are working at both poles. There are webcasts as well as videos available. There is also a downloadable Google Earth layer that allows you to follow the locations of polar expeditions and research.

IceCube: Educational Outreach (www.icecube.wisc.edu/outreach/)

This is the website for the IceCube project, a telescope under construction at the South Pole that will search for neutrinos from outer space. There are a few activities to introduce students to some of the concepts related to this project. Be sure to check out the "IceCube: Extreme Science!" section for good background information about neutrinos and this project.

In The Chill Of The Night: 2009 Antarctic Weddell Seal Winter Expedition (antarctica.ucsc.edu/)

Website of a research expedition focusing on Weddell Seals in Antarctica. Features information about what the research team was doing each week of their expedition. In addition to being available online, each week's entry is also available as a pdf download.
IPY-ROAM Education (ipyroam.utep.edu/education)

This is the education site from the International Polar Year - Research and Educational Opportunities in Antarctica for Minorities (IPY-ROAM) program. There are a few lessons, mostly for middle and high school, as well as a nice image and movie gallery. The glossary provides nice information, especially related to the flora and fauna of Antarctica.

IPY STEM Polar Connections (k12s.phast.umass.edu/ipy/)

This is the site of the IPY STEM Polar Connections program from UMass-Amherst. The project brought together middle and high school educators to work towards integrating Polar Science into their curricula. The "Educational Materials and Presentations" link on the left side contains lots of presentations and lesson ideas related to Polar Science.

MaudNESS Cruise (www.esr.org/maudness_cruise/cruise_main.html)

MaudNESS Cruise: Eastern Weddell Sea, Winter 2005

An outstanding online journal kept by Gerhard Behrens, an elementary school teacher from Oregon, as he traveled on a 56-day research cruise on an icebreaker. The trip left from Chile and explored a seamount in the eastern Weddell Sea off Antarctica. There are great details about life on the ship and the scientific research that Mr. Behrens participated in.

Norwegian-American Scientific Traverse of East Antarctica (traverse.npolar.no/education-outreach)

This is the education page of a joint Norwegian-American traverse of East Antarctica. The education page provides some polar puzzles (mostly math/logic), links to some other educational sites, and a set of questions that students can research. The site also has information related to the traverse, including an expedition diary and more detailed information on the scientific research carried out by the team which would be interesting to older students.

Penguin Ranch (antarctic.ucsd.edu/index.htm)

Penguin Ranch

The website of a research project studying the ecology and diving physiology of emperor penguins. The photo gallery has some really nice penguin photos. The science and journal sections provide a nice overview of the research and a glimpse into life in Antarctica.

Polar Discovery (polardiscovery.whoi.edu/index.html)

Fantastic resource that provides background information and comparisons of the Arctic and Antarctic. Don't miss the "Live from the Poles" section that has videos, photos, journals, and animations from research expeditions. An especially nice feature of this area is the "What Is It?" under the "Polar Fun" section. These would be a great tool to use to get kids hooked into any lesson focused on the poles.

Polar Science Station (www.literacy.net/polar/index.html)

This website is the home of two projects relating to polar science. There is also a nice background information section, "What is polar science?", as well links to activities and more information about polar science.
Polar Science Station: The Case of the Elusive Element
(www.literacynet.org/polar/elements/elements_home.html)

This website follows an Antarctic expedition investigating phytoplankton populations in the waters of the Southern Ocean. There are very informative journal entries about both life on a research vessel as well as the science that is being studied. There are also a few good lesson ideas building on themes of the expedition.

POLAR-PALOOZA (passporttoknowledge.com/polar-palooza/)

Polar-Palooza was a touring exhibition that was part of the International Polar Year (IPY). There are lots of great media resources on their site, including audio soundscapes and video podcasts. Make sure you check out the Educators' Corner for activities that you can do in your classroom.

PolarTREC (www.polartrec.com/home)

PolarTREC gives teachers the opportunity to join a scientific expedition to the Arctic or Antarctic. All of these teachers keep online journals of their trips and these journals can be found here organized by expedition. There is also a nice set of lessons and other resources in the "Learning Resources" section.

Teachers Experiencing Antarctica and the Arctic: Activities (tea.armadaproject.org/tea_activities.html)

The Teachers Experience Antarctica and the Arctic (TEA) is no longer active, but the resources developed by their teacher participants are still available at this site. There are some lessons here as well as online journals kept by teachers while they participated in a scientific expedition. The resources are organized by subject area and labeled by grade level.

Teachers' Domain: Polar Sciences Collection (www.teachersdomain.org/special/ipy07-ex/)

Teachers' Domain is a collection of digital media produced by PBS. This is their special Polar Sciences Collection that was created as part of the celebration of the International Polar Year (IPY). There are lots of resources here and they are browsable by content areas or searchable by keywords. You have to join the site, don't worry it is free, and once you join you can save resources in your folders so that they are easy to access at a later date. The entire Teachers' Domain site is fantastic and this special collection of polar resources doesn't disappoint.

The Antarctic Sun (antarcticsun.usap.gov/)

Check here for the latest news coming out of the United States Antarctic Program (USAP). Of particular interest are the science sections and the section about life on the ice. There are also some nice features on the history of Antarctic exploration and research.

The Polaris Project (www.thepolarisproject.org/index.shtml)

The Polaris Project is an undergraduate field research experience in the Siberian Arctic. Don't miss the stories section which provides multimedia presentations on some of the science that has been done as part of the Polaris Project.

U.S. International Polar Year 2007-2008 (www.ipy.gov/)

This is the United States website for the International Polar Year (IPY). Check here to see some of the latest news coming out of IPY projects. There are some
video webcasts with scientists as well as some audio files you can download. The "Explore & Learn" section features stories and resources of particular interest to educators.

**UAB in Antarctica** ([antarctica.uab.edu/](http://antarctica.uab.edu/))

Blogs from the University of Alabama - Birmingham expedition to Antarctica. The blogs give good insight into the activities of the team on the ice and the photographs are great.

Compiled by: Marti Canipe, Albert Einstein Distinguished Educator Fellow 2009-2010
NSF-Office of Polar Programs
Edit in 2011 by Shelly Hynes, Albert Einstein Distinguished Educator Fellow 2011-2012