



GEOGRAPHY EDUCATORS' NETWORK OF INDIANA

NEWSLETTER

Volume 105, Issue 1

Winter, 2005

Inside this issue:

Competitions/Awards	8
Educator opportunities	4,7,8
Events	
Featured Geographers	5
Lesson Plans	
Resources	15

NEW HIGH SCHOOL COURSE: "THE GEOGRAPHY AND HISTORY OF THE WORLD" - WHAT? WHY? HOW?

As many of you have heard, several **proposed** changes **may** be made to the Indiana high school Social Studies requirements fulfilling the two academic diplomas. In the past, students wishing to obtain either the Core 40 Diploma or the Academic Honors Diploma must have taken six units within the Social Studies options provided by the school, in part mandated by the state. Those options included one semester (unit) of U.S. Government, two semesters of U.S. History, one semester of Economics, and two se-

mesters of a world studies course: World History, World Geography, Sociology, Anthropology, Psychology, Current Events, or additional courses offered based on educator expertise. Possibly beginning with high school Freshmen in the Fall, 2005, the same six Social Studies units will be required, but the options within the Social Studies are limited to the following: one semester in Economics, one semester in U.S. Government, two semesters in U.S. History, and two semes-

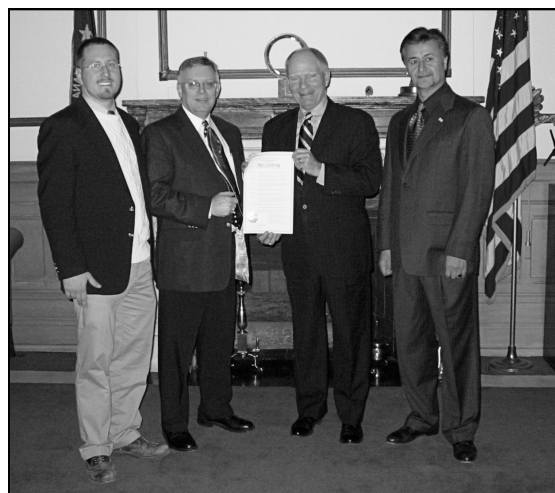
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GAW-GEOGRAPHY ACTION! PHOTO-OP WITH GOVERNOR

Social Studies Educators came together at the State House on December 20th to celebrate the Governor's recognition of National Geography Awareness Week (November 14-20, 2004) for the state of Indiana. The national theme for the week focused on World Cultures—Sounds of Place, a theme which weaves thought the entire Social Studies curriculum at all grade levels. Civics, economics, history, geography, sociology, and anthropology all teach aspects of the world cultures/place theme which enhances the student's abilities to become a more affective global citizen.

Featured in the photo from left to right are, Alan Hagedorn (Center Grove High School), representing the History Educators' Network of Indiana; Lou Camilotto (McCutcheon High School),

representing the Geography Educators' Network of Indiana; Governor Joseph Kernan; Mohammad Kaviani (IUPUI Department of Economics), representing the Indiana Center for Economic Education.



Special Points of Interest:

- New course: **Geography and History of the World**
- The Weekend Workshop is back!
- Deaths of renowned Geographers

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Chesterton High School, Chesterton

Calendar of Events:

- Feb. 1, 3 or 8—**Systems Thinking: Teaching about Economic and Political Systems** workshop. See page 8.
- Feb. 2-4 - The **Hoosier Association of Science Teachers, Inc.** annual conference will be held at the Indiana Convention Center; contact Edward Frazier, Executive Director of HASTI at 5007 West 14th Street, Indianapolis IN 46224, (317)243-0107, elfrazier@comcast.net, www.hasti.org/convention.html for further details.
- Feb. 5—**Children's Literature and Social Studies** Workshop for educators at the Indiana Historical Society. Visit www.indianahistory.org for details.
- Mar. 5—**GENI Annual Board Meeting** to be held at IUPUI's Cavanaugh Hall #438 from 8:30am to 3:00pm. All are welcome to attend!
- Mar. 11-13—**Weekend Workshop** to be held at Purdue University. See page 4 announcement and registration information.
- Mar. 11—**Indiana Council for the Social Studies** Annual Conference at the Marten Hotel and Lilly Conference Center on the north side of Indianapolis. For details, visit www.bsu.edu/web/dcantu/icss.
- Mar.—**Bridges to the World Educational Fair** for Indiana Youth (grades 3-12), to be held at a variety of Indianapolis locations. For more information contact Cheryl Strain at (317)955-5150 ext. 230 or visit <http://www.icenterindy.org/>.
- Apr. 1—**Indiana State Geographic Bee** to be held at IUPUI, 10:00am—5:00pm. Contact the Bee Coordinator, Kathy Kozenski, for more details (317)274-8879, geni@iupui.edu.
- Apr. 5-9—**Association of American Geographers** Annual Meeting to be held in Denver, Colorado. Visit www.aag.org for more information.
- June 3-4—**GENI Long Range Planning Meeting** to be held at Taylor University. Contact the GENI office if you are interested in attending.
- July 10-23—**International Studies Summer Institute** at IU, See page 8 for details.
- Aug. 27—**GENI Advance Board Meeting** to be held at IUPUI's Cavanaugh Hall #438 from 8:30am to 3:00pm. All are welcome to attend!
- Oct. 14-15—GENI's annual **Fall GeoFest** to be held at Brown county State Park from 5:00pm Friday until 4:pm on Saturday.

Geo-Technologies in the K-12 Classroom

January 21, 2005**3:30 p.m. – 6:30 p.m.****Purdue Calumet, Powers Building M-120**

Join us for a workshop provided for Indiana's tri-county educators by the Geography Educators' Network of Indiana, the Northwest Indiana GIS Initiative, and Purdue Calumet.

- Connect to area GIS (geo-technology) users and providers.
- Understand real-life applications of GIS (geo-technologies) and how students can be involved in regional problem solving.
- Receive lots of classroom ideas, resource suggestions, and materials.
- Become aware of the diverse possibilities that geo-technologies offers your students.
- Interact with colleagues.

(Snacks provided! Space is limited!)

To register, send an e-mail message to geni@iupui.edu with the following information:

Name, School, Address, Telephone, E-mail



ters in either *World History and Civilizations* OR *The Geography and History of the World*. All of the diverse Social Studies courses that a school offered previously

Continued from page 1

– Civics, Psychology, Anthropology, Current Events...
- will satisfy the general elective units. **Final approval for the proposed changes by the State Board (<http://www.doe.state.in.us>) are scheduled for a February meeting but may be postponed.**

The need to offer more in-depth study opportunities in the Social Studies was deemed necessary by the Indiana Education Roundtable, expanding the traditional one semester World Geography and World History courses seemed natural. Through much effort by key educators and through much discussion with key decision-makers, the traditional one semester World Geography course offered at many high schools will evolve into a two semester, *The Geography and History of the World* course. History can be roughly defined as “the aggregate of past events” (*from the WorldWeb Online Dictionary*,

<http://www.wordwebonline.com/en/FUTURE>). Geography can be roughly defined as “the study of human systems and physical systems and the interaction among and between systems” (*from a variety of sources*).

Realistically, (spatial) geography helps to create history and geography cannot be taught without understanding the (temporal) history of a place. The new course offers the opportunity to combine the best of traditional World History and World Geography courses, infuse additional enhancements, and apply twenty-first century geo-spatial technologies. The new course will enable students to grasp the connection among disciplines and apply their knowledge to the real-world by incorporating economics, civics, government, language arts, fine arts, and Earth science. Students will leave the course with a more practical sense of World History, with a better understanding of history’s impact on modern day World Geography, and with knowledge of twenty-first century technologies applications to address future human and environment interactions. Infusing the students with concepts and skills about yesterday and today and teaching them to apply those concepts and skills to tomorrow incorporates abilities and technical skills that enhance and diversify employment opportunities.

If the proposed changes are approved, GENI, in conjunction with the History Educators’ Network of Indiana (HENI), the Indiana Department of Education, the Indiana Council for the Social Studies, the Indiana

Council for Economic Education, The Ackerman Center for Civic Education, the Indiana Teachers of Writing, and other education, professional development outreach organizations will provide a series of multi-day summer workshops, one-day semester workshops, online website, and postal mailings to encourage and support the inclusion of the new, two semester *The Geography and History of the World* course into the high school curriculum. Initially, an announcement to all middle and high school Social Studies educators around the state will be sent; the announcement will include standards and indicators for the new course, professional development plans for the next three years, and opportunities for collaboration with local resource persons. The website supporting the new course will be dynamic, friendly and appropriate AND will require input from you.

Whether or not the new Social Studies options truly address the diversity that is the Social Studies is for you to decide, personally and professionally. Decisions have been made by the Indiana Education Roundtable, and many additional decisions will be made by the Roundtable in the next few years that impact kindergarten, math, science, foreign language, professional development, and post-secondary issues. YOU should become involved in the process! By visiting the Indiana Education Roundtable’s website (www.edroundtable.state.in.us) to view past meeting minutes and upcoming meeting agendas, Indiana citizens are encouraged to provide feedback about the various issues on the table. **YOU, as a professional educator, are the most important Indiana citizens necessary to the process of education change!** Without your involvement, inappropriate decisions that will last for years to come may be made. Until education is truly viewed as a national priority (dollars), you must speak loudly on your chosen profession’s behalf.

Kathy Kozenski
GENI Executive Director

GENI'S WEEKEND WORKSHOP

MARCH 11-13

GENI will be hosting a three-day basic geography workshop for Indiana K-12 educators. All sessions (with the exception of field experiences) will be held at the Union Building on the Purdue campus in West Lafayette. Parking will be provided; however, this is a commuter workshop so overnight lodging will be the responsibility of the participants. Some meals will also be provided, with optional dinner gatherings. The registration fee is \$20 for GENI members and \$35 for non-members. To register, fill out the form below and mail along with the registration fee as soon as possible. Spaces are limited and will be filled on a first-come basis.

Graduate credit and Professional Growth Plan Points will be offered!

Workshop topics:

Five Themes of Geography

Latitude and Longitude

Climates

Environmental Issues

Music in the U.S.A.—Dulcimers

Cultures

Family Geography Challenge

International Trade and Economics

Architecture: A Sense of Place and History

Field experiences include visits to the Climatic Center on Purdue Campus and the Loeb House in the Centennial Historic District in downtown Lafayette.

WEEKEND WORKSHOP 2005 REGISTRATION

NAME _____ Phone _____

ADDRESS _____

CITY _____ STATE _____ ZIP _____

SCHOOL _____ Phone _____

District _____ Years Teaching Experience _____

Grade(s)/Class(es) _____

EMAIL _____

Signature _____ Date _____

Check enclosed for [circle one]: \$20 (member) \$35 (includes GENI membership)

Mail to:

GENI-WEEKEND WORKSHOP
IUPUI-CA 345,
425 University Blvd.
Indianapolis, IN 46220

WOODWARD AND ROBINSON: TWO GIANTS OF CARTOGRAPHY

By James Baldwin

Two influential American cartographers, both retired professors of geography at the University of Wisconsin at Madison, died during the second half of 2004. David Woodward died on August 25th at the age of sixty-one; Arthur H. Robinson died on October 10th at the age of eighty-nine.

Woodward, perhaps the world's leading expert on the history of maps, was born in England. He received his bachelor's degree from the University of Wales (Swansea) and his master's and doctoral degrees from Wisconsin. Robinson, one of the world's leading map designers and cartographic educators, was born in Canada. He received his bachelor's from Miami University, his master's from Wisconsin, and his Ph.D. from Ohio State University.

David Woodward published seven well-received books on such topics as the cartography of the Italian Renaissance and the relationship between art and cartography. By far his major contribution, however, was the organization and co-editing (with the late J. Brian Harley) of the multi-volume *History of Cartography*. This



massive work has made three major contributions to the study of maps: 1) it is (or will be when completed) the most encyclopedic history of map-making ever compiled, 2) it is the first history of the field to give major attention to non-western mapping, and 3) the emphasis of the work is on the cultural and philosophical aspects of cartography rather than on technological advances in the field.

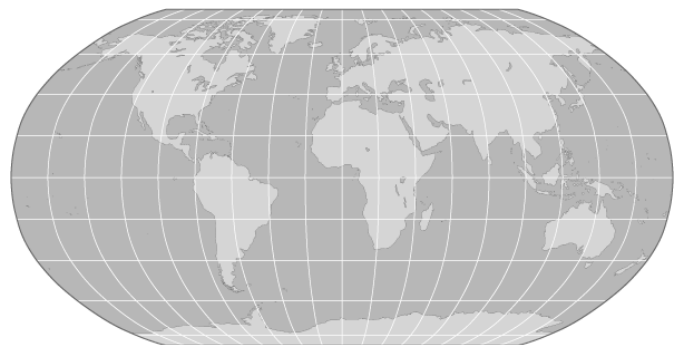
Woodward and Harley's *History*, the first volume of which was published in 1987, has so far produced volumes on prehistoric, ancient, and medieval European map-making, and on the traditional cartography of the Middle East and South Asia, the cartography of East and Southeast Asia, and the cartography of African,

native American, and Oceanic societies. A volume on the cartography of the Renaissance is set for 2005, and preparation is well-underway for volumes on the Enlightenment, the Nineteenth Century, and the Twentieth Century.

Arthur H. Robinson, in contrast to the historical-cultural contributions of Woodward, will be remembered for the technical advances he made to map-making. Robinson's major accomplishment was the development of a radical new projection for attempting to solve the so-called "Greenland problem," the problem of minimizing the errors of shape and size that occur when the features of the round earth are projected onto a flat surface.

By centering his projection on the two parallels of 38° north and south, Robinson was able to construct a world map with minimum mid-latitude distortion of continental shapes and areas. This "Robinson projection" was quickly adopted by Rand McNally, the National Geographic Society, and the Pentagon. Robinson authored fifteen books, the most influential of which was *Elements of Cartography*, first published in 1953. Many

The Robinson Projection



American geographers learned their earliest cartographic techniques and skills from Robinson's ideas as expressed in the six editions of this popular textbook.

Books written by Woodward and Robinson -- two giants of modern cartography -- can be found at IU-PUI's University Library and at other libraries around Indiana. You can visit the Arthur H. Robinson Map Library at the University of Wisconsin—Madison at: http://www.geography.wisc.edu/maplib/rob_proj.html. You can also learn more about Woodward and Harley's *History of Cartography Project* by visiting their site: <http://www.geography.wisc.edu/histcart/index.html#Home>.

James Baldwin is an Associate Librarian and Adjunct Associate Professor of Geography at Indiana University Pur-

The Huck Finn Project

Celebrating Youth, Geography and the Arts

"Indiana PINK? Why, what a lie!"

"It ain't no lie; I've seen it on the map, and it's pink."

You never see a person so aggravated and disgusted. He says: "Well, if I was such a numbskull as you, Huck Finn, I would jump over. Seen it on the map! Huck Finn, did you reckon the States was the same color out-of-doors as they are on the map?"

"Tom Sawyer, what's a map for? Ain't it to learn you facts?"

Do maps really reflect what we see on the ground?

Can I make my own mark on the world?

How are maps made in the 21st century?

Learn the answers to these questions and more through fun and exciting activities!

In the Spring of 2005, the entire State of Indiana will be flown for high quality color orthophotography - aerial photography that is rectified to have the geometric properties of a map. The Huck Finn Project celebrates youth through fun and creative learning experiences that kids can really "own". Through a series of lesson plans and activities, Indiana schools are invited to learn about art, geography, literature, math, science and government, history and their community while developing creative artworks to be captured in the "IndianaMap".

The Huck Finn Project invites schools to participate in a variety of activities and lesson plans that meet national education standards for their discipline. All Indiana schools are encouraged to join the Huck Finn Project - a fun adventure in exploring our world through art and geography. Schools can participate in several hands-on activities designed for grades K – 12 (www.huckfinn.in.gov).

Even though it's fun, the Huck Finn Project also serves to support educational standards and subtly introduce students to the emerging field of geospatial technologies – a field with a high projected job market growth!

"The geospatial industry is fast-growing and exciting and it offers a great deal of job opportunities. The workforce in this industry has doubled in the last four years and accelerated growth is expected in the years ahead," said Secretary of Labor Elaine L. Chao, September 2004

The Huck Finn Project involves whole communities! We seek individual and corporate project partners, sponsors and donors to lend support to celebrating Indiana youth, geography and the arts. Here are some examples of how you can help:

- Schools always need volunteer support! Dad's Clubs / PTO / etc. can help schools prepare and clean outdoor surfaces for painting, help with painting, clean-up, etc.
- Schools always need supplies! Hardware and home supply stores can donate paint and painting supplies to schools.

Suggestions for the painting include: Map of the UNITED STATES or the WORLD (stencils kits available at <http://www.peacefulplaygrounds.com/stencils.htm>; American Flag, or an expression/representation of the local community through an art design.

Visit the GENI website (www.iupui.edu/~geni) or www.huckfinn.in.gov for more information.



Partners:

Indiana Geographic Information Council, Inc.
Geographic Educators' Network of Indiana,
Inc.
IndianaView
Indiana Geological Survey
Access Indiana



Systems Thinking: Teaching about Economic and Political Systems Workshops

Sponsored by: The Indiana Council for Economic Education, Purdue University—Civics Mosaic, the Indiana Department of Education, the Indiana Council for the Social Studies, and the Indiana Historical Society.

ATTENTION: MIDDLE AND HIGH SCHOOL SOCIAL STUDIES TEACHERS, SECONDARY SOCIAL STUDIES EDUCATION STUDENTS, AND HIGH SCHOOL CIVICS, HISTORY, AND GOVERNMENT TEACHERS!

Come learn new strategies to integrate comparative economic and government systems into the secondary classroom.

Workshop participants will receive:

- **Activities and content** from the *Civics Mosaic*, a comparative political systems curriculum, and two economic education teacher resources: *Trading Around the World* from the Indiana Department of Education and *Focus: Economic Systems* from the National Council on Economic Education
- **Techniques** to help students develop stronger cognitive skills related to comparative analysis
- Eligibility for **scholarships** up to \$100 for use in covering substitute teacher costs

Choose from three day-long workshops:

Central Indiana	February 1, 2005:	Indiana Historical Society – Indiana History Center 450 W. Ohio Street, Indianapolis, IN 46202
Southern Indiana	February 3, 2005:	Evansville Central High School Media Center 5400 First Avenue, Evansville, IN 47710
Northern Indiana	February 8, 2005:	IUNW Portage Commons Instructional Site 5916 U.S. Route 6 (Ridge Rd.), Portage, IN 46368

To register, contact Chris McGrew, Indiana Department of Education, Purdue University, 615 West State Street, AGAD 221, West Lafayette, IN 47907-2053 cmcgrew@doe.state.in.us

Economics Calendar Contest

Enter your students in this year's Economics Calendar Contest.

Twelve student winners (grades 2-8) will receive a \$50 savings bond and have their entry featured in the 2005 Economics calendar. For more details and registration information, including examples of last's year's winners, see http://www.econed-in.org/calendar_rules.asp. Be sure

Indiana University's 10th Annual International Studies Summer Institute July 10-23, 2005

The Center for the Study of Global Change at Indiana University annually organizes a summer residential institute for middle and high school teachers. Participants join the Institute's faculty, IU professors, and nationally prominent speakers to explore diverse topics such as global environmental change, international trade, populations at risk, and conflict resolution.

Teachers may elect to earn one to three graduate credits through the School of Education at in-state tuition rates. Participants are accepted on a first come, first served basis. The first twenty teachers accepted will be offered scholarships worth \$750.00 each. For more information, visit the International Studies Summer Institute website (<http://www.indiana.edu/~global/institute.htm>) or call (812)855-0756.

How Past Climate Cycles are Revealed by Ice Cores

Page 11

by Dr. John Heinrichs, Fort Hays State University

Grade Level: 6-12

Time Required: About 1.5 hours of classroom time, no out-of-class time

National Geography Standards: Standards 7 (The physical processes that shape the patterns of Earth's surface) and 22 (How to apply geography to interpret the past)

Indiana Social Studies Standards: 6.3.6; 7.3.7; 8.3.4; WG.2.3; WG.3.3; WG.3.5; WG.6.1

Objective: The students will understand what climate is, and how climatologists use data to understand past climates and infer future climates.

Materials/supplies:

- Tall glass or plastic jar (a spaghetti jar will work very well)
- A multicolored, crushable material (small marshmallows or packing peanuts) sorted into cups of four different colors
- A dark-colored granular material (for example, peppercorns, jellybeans, or chocolate chips)
- Plots of the Vostok ice core temperature record with and without the Holocene portion (attached)
- Pictures of ice core drilling operations, ice cores, and core storage facilities (optional, can be obtained via the Internet sites listed below)

Vocabulary: Climate, Climatologists, Dendrochronology, Ice age, Ice core, Layer, Milankovich variations, Paleoclimatology, Time scale

Procedure:

Introduction

Write the word *climate* on the board and ask the students to describe what the word means to them. Write down the definitions provided by the students. Some of the definitions might be synonymous with weather. Explain that weather and climate both refer to processes in the atmosphere, but that weather is what happens on short time scales (seconds to years) and climate is what happens over scales from years to billions of years. Some student definitions might refer to the particular characteristics of a place (how hot it is or how much rain the place gets). Help refine this definition to "the average, range, and extreme states of the earth-atmosphere-ocean system". Describe how temperature and precipitation are the most obvious climate elements, but that climate may also include cloudiness, wind, sunshine, and many other characteristics. Build a concept diagram on the board as you go along.

Now ask whether climate changes (in other words if a particular place always has the same climate). Ask if the amount of rain received this year is different from last year (be prepared with the numbers in case the students don't know). Ask how someone can find out if this year and last year's rainfall are different. A student will likely suggest that records of rainfall are kept and can be looked up. Then ask how someone could find out if the rainfall 100 years ago was different. The students might not have any idea how to do this. Point out that records were kept then as well. Extend the question to 1,000, 10,000, or 100,000 years ago, to a time when there were no records. The students might mention tree rings (dendrochronology) or ice cores. Explain that in today's lesson you'll be looking at ice cores, what they tell us about past climates, and how climatologists (climate scientists) use them. Climatologists who study past climates are called paleoclimatologists.

Carry out Activity 1 at this point.

Now describe ice core operations, including showing pictures obtained from the Internet. In places like Greenland or Antarctica, even though only a little snow falls each year, the temperature is so low that the snow doesn't melt. Instead, as more and more snow falls through the years, the snow gets compressed into layers. The thickness of each layer is related to the amount of snow that fell that year. Layers of dust and ash in the ice cores reveal volcanic eruptions (like Krakatoa, also spelled "Krakatau") that can be used to date the layers precisely. There are even bubbles of air that get trapped in the layers that scientists can sample to know what gases were in the atmosphere at some time in the past. Mention that the ice in Antarctica is so deep (4 kilometers) that it contains hundreds of thousands of years of climate information. One of the best-known ice cores from Antarctica came from a Russian station at Vostok (which means "East" in Russian). Scientists drill into the ice with a special drill that lets them retrieve sections of an ice core. Each section is about 6 feet long. The scientists cut the cores in half and then use microscopes and other tools to identify the layers and measure their thickness. Based on these measurements, the paleoclimatologists can observe the changes in climate over time and try to understand them. Carry out Activity 2 at this point.

Activities

Activity 1: Simulating an ice core

Seat the students around a table and give each student but one a cup of marshmallows, making sure that the marshmallow colors repeat in sequence around the table. Explain that each of the colors represents the amount of snow that falls in a season. Give the remaining student a cup with the peppercorns and explain that student will represent a volcano. Put the empty jar in the center of the table. Now, go around the table and have each student put in a handful or two of marshmallows in sequence. Tell the students to change the amount of marshmallows they put in, and sometimes to put in 3 or 4 handfuls. The students representing summer should put in the smallest amount of marshmallows. Every so often, tell the student with the peppercorns to dump some in the jar. When the jar fills up, squeeze the contents downward and continue putting marshmallows in. Repeat until the jar is extremely full and most of the air has been squeezed out of the spaces between the marshmallows. Now have the students pretend that they are climatologists and have just taken the core out of the ice. Assign years to the volcanic eruptions (you might pick the largest eruption as Krakatau, which erupted in August 1883). Have each student create a timeline describing how much precipitation fell in each season of each year (giving the years numerically). The students should then compare their timelines and see how different they are.

Activity 2: Using ice core data to understand climate cycles and predict future climate

The students should sit at their desks for this portion. Pass out the copy of the Vostok temperature record without the latest portion. Have the students draw on the graph what they think the temperature record would look like up to the present. When all students are finished, post all of the graphs and ask each student to explain why they extended the curve the way they did. Most or all will note the clear 100,000 year cycles and describe that they continued the cycle up to the present. Now show the graph with the actual data up to the present, and praise the students for seeing the cycles. Mention that the Earth's climate shows three variations at time scales of terms of thousands of years, at 19,000, 26,000, and 100,000 years, and that these cycles are caused by wobbles in the Earth's orbit (called Milankovich variations). These wobbles are believed to be responsible for causing periodic ice ages, in which large ice-sheets spread away from the poles. During the last age, Kansas had a climate much like Minnesota does today, with spruce ~ trees covering the landscape. The glaciers also create landforms and lakes. The basins of the Great Lakes were carved out by the ice sheets as they moved south, and were filled by meltwater when the glaciers retreated after thousands of years. Mention that it was ice core data just like the students used that enabled climatologists to discover how climate cycles repeat. This science is called paleoclimatology.

Closure:

Ask the students to discuss what kinds of things could make an ice core difficult to interpret and why. Answers could include poor handling of the ice core (melting or contamination), movement of the ice, and local variations in snowfall. Have the students retrieve their Vostok graphs and use them to predict the climate of the Earth for the next 10,000 years. Then ask the students to discuss their predictions and why they made them.

Assessment:

Have each student write an essay describing:

- How climate is different from weather
- How ice cores are used to estimate past climates
- How past climate cycles can be used to predict future climates

Extensions:

- Have students discuss and/or research Indiana landscapes created by glaciers.
- Focus on specific climate regions based on grade specifications (ie-6th grade focus on Europe and the Americas).
- Further discuss how climate affects biomes and natural resources.

Other resources:

<http://deschutes.gso.uri.edu/~rutherford/milankovitch.html>

http://www.museum.state.il.us/exhibits/ice_ages/

<http://www.secretsoftheice.org/icecore/cores.html>

<http://www.ngdc.noaa.gov/paleo/milankovitch.html>

<http://niel.usgs.gov/>

<http://www.arm.gov/docs/education/globwarm/icexpert.html>

<http://www.ngdc.noaa.gov/paleo/paleo.html>

http://vulcan.wr.usgs.gov/Volcanoes/Indonesia/description_krakatau_1883_eruption.html



Resources

Maps:

- For an extensive site on MAP PROJECTIONS, visit www.colorado.edu/geography/gcraft/notes/mapproj/mapproj_f.html
- Visualizing Topography—an instructional tour that shows how to visualize topography in 3D. It contains Quick Time movies and questions that help students visualize 2-dimensional topography in 3 dimensions. http://geology.asu.edu/~reynolds/topo_gallery/intro_title.htm
- US Daily Weather Maps Project—view national weather maps going back to 1872. http://docs.lib.noaa.gov/rescue/dwm/data_rescue_daily_weather_maps.html
- USGS Education Map Catalog—The USGS publishes over 76,000 maps on a huge variety of topics. This catalog allows the user to examine the maps in detail and provides ordering instructions. The education map catalog represents a subset of some of the most useful USGS maps for teaching purposes. <http://rockweb.cr.usgs.gov/outreach/mapcatalog/>

GPS:

- GPS in Education—This site offers basic information and ideas on introducing GPS to your students. It also includes a list of good videos and books for teaching GPS/GIS for educators. http://rockyweb.cr.usgs.gov/public/outreach/gps/gps_in_education.html
-

GIS and Mapping Resources:

- POSTERS AND LITHOGRAPHS—If you have access to a plotter, check out the amazing, free posters that can be downloaded from Shuttle Radar Topography Mission. Topics include mapping, geology, terrestrial ecology, and more. www2.jpl.nasa.gov/srtm/multimed.htm
- GIS Data Map Studio, USGS—find a public web map service, including hazards distribution, elevation data, high-resolution orthoimagery. <http://gisdata.usgs.net>

Weather:

- IMPACTS OF A WARMING ARCTIC - This site is especially rich in climate change related graphics, graphics that don't just focus on the Arctic region. These (PDF) files include links to the individual

graphic files, which are available for public download in two alternative resolutions (72 and 150 dpi). <http://amap.no/acia/>

- SEVERE ANDHAZARDOUS WEATHER—here are more than fifty online examples demonstrating severe weather phenomena and the mechanisms for their formation. Links to photo galleries, animations, and demonstration applets on all topics. <http://severewx.atmos.uiuc.edu/>
- Snow Crystals—This site “is all about snow crystals and snowflakes—what they are, where they come from, and just how these remarkably complex and beautiful structures are created.” <http://www.its.caltech.edu/%7Eatomic/snowcrystals/>

Misc:

- Wildlife Management Activity Guide for Teachers from the National Park Service—This collection of activities for high school students was developed by teachers in Michigan and includes lesson plans and activities for investigating a wide range of topics. Additional teacher resources include a basic overview of wildlife and wildlife management, a listing of other educational curricula and reference material, and information about a fee video that offers guidance in the implementation of outdoor education activities. http://www.nps.gov/piro/wl_lesns.htm
- Virtual and On-Line Geologic Field Trip Guides—Find a listing of field trips, organized by region, for the US and Canada. Also included are links to downloadable versions of published paper texts. <http://www.lib.utexas.edu/geo/onlineguides.html>
- Answers to Questions About Earth/Sun Relationships—Get your students thinking about earth/sun relationships and stimulate questions. Then hook them up with an interactive website through Cornell University so they can get answers to their questions. <http://curious.astro.cornell.edu/teachers.php>
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The Weekend Workshop is back!

March 11-13

(See page 3)

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(See page 6)



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