

GIS FUNDING AND RESEARCH OPPORTUNITIES

National Geographic Young Explorers Grants

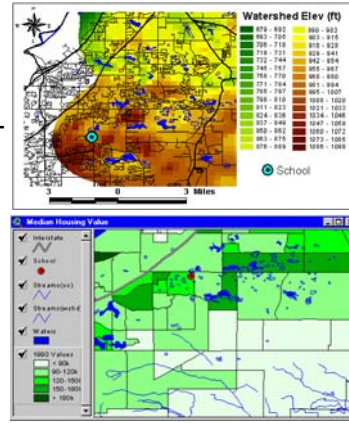
<http://www.nationalgeographic.com/yeg>

Seed grants for individuals aged 18-25 for research in the fields of anthropology, biology, paleontology, geology, geography, and other fields supported by the Young Explorers Grants Program.

ESRI Community Atlas Grants

<http://www.esri.com/industries/k-12/atlas>

Group project in which students produce a community profile consisting of original static maps, descriptive documents, and original collaborative research into the definition of "community."



CUTTING EDGE GIS FOR EDUCATION

Paleo Exploration Project



Professional Development Opportunity
Montana 7th and 8th Grade
Math, Science, and Technology Teachers

Field Methods and Spatial Analysis in Paleontology

Use geospatial technologies (GIS and GPS) to analyze actual fossil excavation sites, construct fossil geodatabases, and contribute to scientific discovery. No previous GIS experience required!

Contact Heather Almquist at heather.almquist@umontana.edu



SpatialSci/GTEC
School of Education
University of Montana
Missoula, MT 59812

To:



Science Goes Spatial



www.SpatialSci.com

Geotechnology in the Classroom Project

School of Education, The University of Montana, Missoula, MT 59812

WINTER 2006 VOLUME 1

Upcoming Events:

- **SYNCHRONOUS CHAT: TUESDAY DECEMBER 12, 4:30-6:30pm.** Web-based interactive discussion among current and future GTEC fellows and project leaders. Agenda includes program overview, component survey, discussion of the upcoming GIS Competition, and presentation of a new lesson!
- **GIS COMPETITION - MARCH 2007.** 1st annual GTEC GIS Competition to be piloted in cohort one classrooms. This year's working title is **Montana's Changing Snowpack and What it Means for Your Community - GIS Analysis.** Look for details during this December's synchronous chat!

FROM THE PROJECT LEADERS

First, a big thank you to our sponsor, the **Toyota USA Foundation**, and to all the GTEC cohort one teachers and students for their commitment to incorporating GIS in their classrooms and for submitting the spatial literacy and student interest surveys. Second, we extend a warm welcome to the GTEC cohort two teachers, who will be joining the program in June 2007. They are:



- Mark Ayers, Cut Bank Public School**
- Susan Dreyer, Canyon Creek School**
- Jean Hagler, Savage Public School**
- Reed Kuennen, Whitefish High School**
- Bill Lee, Winifred School**
- Loriann Muchmore, Lone Rock School**
- Darla Williams, Highland Elementary**
- Maree Mitchell, Sussex School**
- John Wehrman, Cayuse Prairie School**
- Suzie Flentie, Lewistown Junior High School**

Inside this biannual GTEC newsletter you will find featured teacher projects, GIS funding and grant opportunities, curriculum ideas, and upcoming events. Using GIS in your teaching encourages your students to identify physical and spatial relationships by constructing multiple representations of data. Students spend more time working with data, thinking about data, and developing their problem solving and critical thinking skills when using a GIS interface. We know finding and managing data can take too much time away from your students and that is where GTEC can help. In development are spatial data sets exploring cancer clusters, asbestosis, invasive plant species, and climate change, to name of few. If you or your students have a GIS-related project you would like to include in an upcoming newsletter, please let us know by emailing lisa.blank@mso.umn.edu.

What is GTEC?

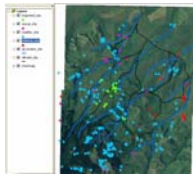
GTEC is a collaborative partnership between the University of Montana, Montana Association of Geographic Information Professionals, and a geographically and culturally diverse representative group of Montana school districts. The goal of GTEC is to **contribute to a national model for improving the teaching and learning of science in grades 5-12 using geotechnologies** (Geographic Information Systems, Global Positioning Systems, and satellite data). GTEC supports teacher training, curriculum development, and statewide professional collaboration.

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THANKS TO OUR 2006 WORKSHOP PRESENTERS!

Dr. Faith Ann Heinsch, The University of Montana: **Latest Update on Global Warming**



Niels Maumenee, The University of Montana: **Flathead Lake Biological Station Typology Project**



Bob Rumney, Montana:

Application of Geospatial Technologies for Precision Agriculture



Bill Granath, The University of Montana:



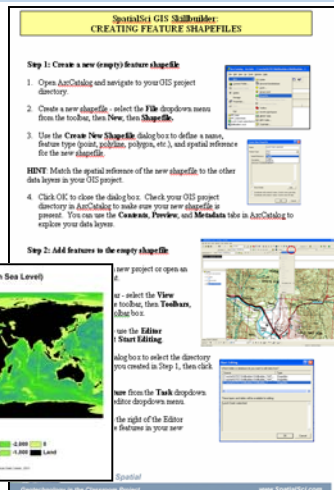
EmTrix Electron Microscopy Resources for Educators

Bryant Ralston, ESRI Montana Sales Representative: **ESRI GIS Resources for Education**



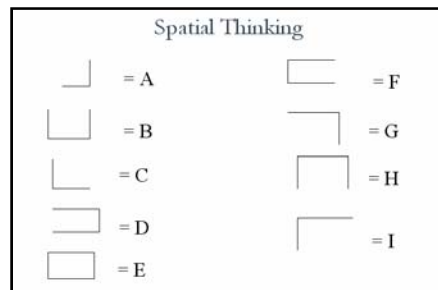
FROM THE HELP DESK

Help desk support (phone and email) is available for GTEC participants, and has proved useful for our teacher fellows. In addition, your questions and comments help us identify GIS training needs, structure workshops and activities to address those needs, and improve integration of geospatial technologies in the classroom. Your questions also directly enhance our spatial data and curriculum warehousing activities through integration of new data sets and materials that become available to the geospatial users community. For example, the data set and GIS Skill-builder to the right were developed with input from teacher fellows. **Keep those great questions coming!**



GIS AND SPATIAL LITERACY

As of this month all cohort one (2006-2007) GTEC teachers and students have completed a **Spatial Literacy Survey**, administered by our program outside evaluator, Randy Knuth. This survey is designed to capture base levels of spatial knowledge, and will be re-administered at the end of the year to quantify the efficacy of GTEC in improving spatial literacy among participating teachers and students. A recent report released by the National Research Council recommends that schools use geotechnologies to help students practice and apply spatial thinking across all areas of curriculum, and calls the omission of such teaching "a major blind spot in the American educational system" (see *Learning to Think Spatially*, 2006. National Academies Press ISBN 0-309-09208-6).



David McDonald
Sidney High School, high school science.

Project title: Integrating GIS into High School Physics Lessons

Mariann Prewitt

Opheim School, middle and high school science.



Project title: Are We in Danger? A GIS Analysis of Cancer in Montana

Carl Benson

Plains High School, 11th and 12th grade science.



Project title: Watershed Analysis for Riparian Restoration

Paul Halfpop

Hardin High School, high school science.



Project title: Exploring Pixel Resolution Using GIS



Jennifer Schlepp
Utterback Middle School, middle school science.

Project title: Using GIS for Ranchland Planning and Sustainability

Meet the 2006-2007 GTEC fellows

Dave Christensen

Lolo Middle School, 5th grade science.



Project title: GIS Mapping and Monitoring of Tansy Along the Bitterroot River

Mike Plautz

Hellgate Middle School, 7th grade science.



Project title: Exploring Plate Boundaries and Sands

Tim Mosbacher

Hellgate Middle School, 7th grade vocational technology.



Project title: Presidential Elections of 2000 and 2004: A Close Examination

Dean Herreid

Libby High School, high school technology (alternative).



Project title: Tracking Asbestosis: Mapping Libby, MT Vermiculite Exports

FEATURED GTEC PROJECTS



Dave Christensen ~ GIS Monitoring and Mapping of Tansy Along the Bitterroot River

Lolo School students, in collaboration with the U.S. Forest Service, Region One Botany and Research Natural Area, the GTEC Project, and Rocky Mountain Research Station are developing an ongoing, long-term environmental education program in which students study processes that lead to the maintenance and restoration of native vegetation species in Research Natural Areas, and use geospatial technologies to map and monitor restoration efforts.



Mike Plautz ~ Exploring Plate Boundaries and Sands

Students use GIS to work with data on volcanoes, earthquakes, earth topography and ocean crust ages. By classifying the plate boundaries and looking for relationships between the data sets, students determine what is happening at these plate boundaries. Examination of sand samples from around the world extends student experiences in authentic geology research as they categorize the sand's components and predict sample origin in relation to plate boundary types.



Tim Mosbacher ~ Presidential Elections of 2000 and 2004

Using GIS software students will closely analyze voting patterns by county of the 2000 and the 2004 elections. Students discover how a state is declared a blue or red state, and whether this is an accurate statement. Students learn how to critically interpret maps and understand the data layers that make up a map.



Dean Herreid ~ Tracking Asbestosis: Mapping Libby, MT Vermiculite Exports

Dean Herreid and his students are developing a geodatabase of over 200 American cities that received asbestos-containing vermiculite from Libby, Montana. It is estimated that the Libby, Montana, Zonolite mine was the source of over 70% of all vermiculite sold in the U.S. from 1919 to 1990. The death rate from asbestosis in Libby and surrounding areas is 40 to 80 times higher than elsewhere in the state and the nation, suggesting that export of asbestos-containing vermiculite from this area presents a serious health hazard.