

Report of K-12 Material Available at State Surveys

Rather than attempt to summarize the material at state surveys, since specific questions were not asked of the surveys, but rather the general question: "What K-12 material do you have available?", this report will just list the replies by the surveys.

Alabama

Geological Survey of Alabama provides to K-12 teachers and students.

David Kopaska-Merkel of this office will address the activities and programs we provide for K-12 teachers and students. I will list the publications we have available that can be used by K-12 teachers and students.

One of our regular series of publications is the Education Series. There are currently 14 items in this series:

ES 1 and ES 3 are slide sets with text. ES 1 (on carbonate porosity) is the only one of the series that is aimed at the college level student. ES 3 is a slide set and text on hurricanes. Price: \$25 and \$27

ES 2, 4, 5, 6, 7 and 8 are booklets of classroom exercises for K-12 earth science teachers. Price: \$1.25 to \$2.25

ES 9 is a rock and mineral kit with 20 small samples of Alabama's industrial rocks and minerals. It includes a booklet describing each specimen and its uses. Price: \$5

ES 10 "Fossils, Environment and Society" is a booklet of classroom exercises originally printed to be included with our "Fossil Kit," which is available to teachers on loan. The booklet alone can be purchased for \$5.00.

ES 11 and ES 12 are posters on water resources of the state and fossils of the state respectively, including brief written descriptions. Price: \$1

ES 11A is a small (and free) version of ES11.

ES 13 is a field trip guidebook to fossil collecting sites, a trip originally organized for K-12 teachers. Price: \$6

ES 14 is a video "Living with Sinkholes" explaining the causes of sinkholes. Price: \$5

There are many of our publications in other series which are used by K-12 teachers and students. A few of them are: Circular 19 "Curious Creatures in Alabama Rocks" (on fossils), Circular 38, "Rocks and Minerals of Alabama, a Guidebook for Alabama Rockhounds," Circular 104 "Alabama Gold," and Information Series 46, "Hurricanes and Tornadoes in Alabama."

A complete list of publications by the Geological Survey of Alabama can be found on our Web site at <http://www.gsa.state.al.us/>

If I can be of further assistance to you, please let me know.

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I will attempt to briefly summarize the educational-outreach activities of the Geological Survey of Alabama.

As you have already heard from Sydney DeJarnette, one aspect of our educational program is publication. One might quibble about when our first educational publication was printed, but no matter how you slice it; it was many decades ago. For instance, Circular 19 was published in 1963. One current facet of our publication program, which began many years ago, but was revived in the 1980s, is the publication of brochures, which are distributed at no charge. We have brochures in print on topics ranging from landslides to radon to ground water, and new brochures are published as time permits. These are aimed at lay adults, whereas many of the publications in the Educational Series are aimed at K-12 teachers. Other no-charge publications include posters, calendars, fact sheets and post cards. If you have anymore questions about publications, Sydney or I will be happy to try to answer them.

Most of our other educational-outreach activities serve teachers or children. We have an active field workshop series for K-12 teachers. At the present time we run one workshop each year in Sumter County, in which we focus on the Cretaceous marine faunas of Alabama's Black Belt. We also sometimes run a similar workshop in Mississippian strata of northwest Alabama. About 30 teachers attend each workshop. Survey staff members attend teacher's professional meetings, such as the annual meeting of the Alabama Science Teachers Association. At these meetings, we staff booths in the exhibit halls (giving away free publications and fossils) and we sometimes also run workshops. Survey staff members also run workshops at other meetings, such as those of the League of Municipalities and other groups that have a professional interest in earth science but whose members are not earth scientists. The Survey routinely sends free publications and other materials to other gatherings such as drinking-water festivals when staff members do not have time to attend.

Many of our outreach efforts are aimed at the public-school classroom. Staff members frequently visit schools to speak or conduct demonstrations about anything geological, ranging from using a GPS unit to basic paleoecology. Similar visits are also made to girl-scout and boy-scout troops and other social groups. Survey staff members constructed several fossil kits, which are lent to schools and day-care centers. The fossil kits contain 37 different Alabama fossils, an activity book, and other materials. One of our publications is a rock and mineral kit, which is sold for \$5 to the general public (and sometimes given to teachers). The Survey participates in the Adopt-a-School program, and is a partner of two local schools. The Survey donates many labeled fossil specimens to schools all over the state, and most of these specimens are provided by a tireless fossil collector in north Alabama, Mr. Don Williams. Mr. Williams provides the fossils, and the Survey gets the fossils into the hands of teachers who will be able to use them.

An activity strictly for children is a fossil dig, which is held in conjunction with Tuscaloosa's annual CityFest.

The Survey is currently helping the University of Alabama Arboretum develop a set of earth-science activities, and has in the past provided advice and assistance to other educational organizations around the state, such as the Turtle Point Science Center, Legacy (the state environmental-education organization), Tuscaloosa Children's Hands-On Museum, and the Alabama Historical Commission. The Survey also redistributes (at no charge) publications of the U.S.G.S., A.G.I., and other professional geological organizations. The Survey has partnered with an amateur organization (the Birmingham Paleontological Society) and the Alabama Museum of Natural History to salvage trace fossils from a coal mine in Walker County. This project has immense scientific value but also has an educational component. One result of the salvage operation will be an illustrated monograph to which the Survey is contributing editing expertise and several chapters.

Other educational-outreach activities include class tours of the Survey facilities, an earth-science art contest, science-fair judging, shadowing by middle school and high-school students, and internships for high-school and college students and K-12 teachers.

The educational program of the Survey is supported by an informal group of staff members called the educational committee. This group raises several thousand dollars every year (primarily through an annual golf tourney) in order to support educational outreach activities that cannot be paid from the Survey's General Fund.

I hope I have given you an accurate summary of the scope and variety of our educational-outreach activities. Please do not hesitate to contact me if you have questions.

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Alaska

Members of our staff make presentations to a few classes, usually elementary grade level, each year on an ad hoc basis in response to teacher or student requests.

The Alaska Miners Association has an active educational outreach program that provides an extensive kit of materials for teaching several units of geology concepts to various grade levels up to the junior high school level.

Milton Wiltse

Arizona

The Arizona Geological Survey publishes a quarterly newsletter, *Arizona Geology*, that is written for non-technical audiences. Many subscribers are Earth Science teachers. Our agency also has a publication series called "Down-to-Earth" that is appropriate for high school science and earth science students. Neither the newsletter nor the Down-to-Earth books are written specifically for K-12 teachers and students. We produce nothing specifically for K-12 teachers and students.

One person on our staff serves as the primary agency contact with Earth Science teachers. He participates in annual Arizona Science Teacher meetings and field trips. He welcomes any opportunity to work with groups of teachers, including taking them on field trips in the vicinity of their schools. Because he has many other duties, I ask that he not give talks to individual classes. At one time he did give talks to classes, but it got to be quite time consuming. His effort is to inform the teachers so they, in turn, can inform their students.

We devote quite a bit of effort to adult education. Our Down-to-Earth publications are very popular with older citizens. The older folks are really interested in the subject and are a delight to work with.

Arkansas

Listed below is a synopsis of the Arkansas Geological Commission's resource materials for teachers and students. If you have any questions, you can contact me at (501) 296-1877 or e-mail at susan.young@mail.state.ar.us

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The Arkansas Geological Commission (AGC) offers teachers a free packet of earth science materials upon request. The packet includes brochures on quartz crystals, diamonds, bauxite, Magnet Cove, fossil collecting, and the Arkansas Dinosaur, "Arkansaurus fridayi". The packet has maps on the geology, mineral resources and the physiographic divisions of Arkansas. A 12-pack, color-coded, rock and mineral set is also included in the packet.

There are various publications and maps listed in the AGC Publications Catalog and the Arkansas Topographic Index map which are available for sale. The catalog and index are available free upon request.

The AGC also has staff geologists who provide preliminary examination and limited analysis of geologic samples, and identification of rocks, minerals and fossils. The staff will also assist with data and map interpretation, provide public presentations, and guidance for planning geologic field trips.

The AGC also provides tours at the agency's Geology Learning Center. The Center features several displays that illustrate the importance and diversity of Arkansas' geological resources. Staff geologists will offer discussions on topics of geological interest for small groups touring the Learning Center. Tours need to be requested with at least two weeks advance notice.

Colorado

The Colorado Geological Survey has an Active minerals education program aimed at high school and junior high school audiences. Our materials are free to any Colorado teacher upon request. Out of state teachers or other persons pay a nominal \$15 for our CD-ROMs. A standard description of our products is attached.

Colorado Mineral Education Project (CMEP)

An education program of the Colorado Geological Survey (CGS) aimed at the Middle and High school audience.

FY 95-96

CGS worked with Rocky Mountain Association of Geologists (RMAG) to produce a Teachers Guide for a video ("Lighting the Frontier") on the discovery of oil in the Canon City area in the 1860s. CGS distributed 100 copies free of charge to teachers in the spring and summer of 1996.

Since FY 96-97, CGS has received Severance Tax Funds to create educational products. CGS distributes all CMEP educational materials to any Colorado schoolteacher free of charge upon receipt of a letter on school letterhead. Others are charged a nominal fee of \$10.

FY 96-97

- Product: Teachers Packet on Minerals and Mining
- Distribution: 200 packets to teachers

CGS hired a consultant (Guy Johnson) to assemble a teacher's packet containing materials explaining the role on mineral resources in the Colorado citizen's daily lives.

The CGS CMEP Stage 1 packet consisted of the following materials:

1. Caterpillar Corp. video *Common Ground*, and accompanying Teachers Curriculum
2. Asarco Corp. video *America's Buried Treasure*
3. Pikes Peak Mining Co. video *Cresson: Continuing a Golden Heritage*
4. Cyprus Amax Coal Co. video *Quality from the Ground Up*
5. *Coal Country* computer game; produced by the US Bureau of Mines
6. Assorted booklets and pamphlets from companies and institutes on sand and gravel, gold and coal.

CGS closely monitored the distribution of the CMEP products during this first year of the SEVTAX funded CMEP program. We sent out letters to recipients of the teacher's packet with questions regarding the quality and effectiveness of the materials we sent to them. (A list of comments along with a map showing the distribution of recipients is attached)

FY 97-98

- Product: CD ROM on Minerals and Mining
- Available through CGS

CGS' consultant (Guy Johnson) produced an interactive CD-ROM about mining in Colorado. Using material from the video *Music and Minerals* produced by the National Energy Foundation of Salt Lake City, the CD-ROM requires interaction with the student. By clicking on a map of Colorado the student can find information about various types of mineral deposits currently mined in Colorado. The CD-ROM includes stories about the geology of mineral deposits, the production of mineral deposits, the uses of the minerals and the reclamation of the mining sites.

FY 98-99

- Product: Teachers packet on Oil and Gas in Colorado
- Distribution: 125 packets

CGS again hired Guy Johnson to produce a teacher's packet on Oil and Gas in Colorado designed along the same lines as the Minerals and Mining teacher's packet. Johnson worked closely with the Colorado Oil and Gas Association (COGA) on this project. Guy Assembled 125 of these packets and all were distributed to teachers except for a few to COGA for their assistance.

The Oil and Gas Packet consisted of:

1. Duke Energy Field Service video *My Mom, the Rattlesnake Hero*
2. American Petroleum Institute video *Fueless*
3. Several other pieces of literature from various sources about oil and gas

FY 99-00

- Product: CD-ROM on Gas and Oil in Colorado.
- Available through CGS

CGS staff member Laura Wray designed the storyboard for this CD-ROM using materials from the *Fueless* videos in the previous year's Teachers Packet. The storyboard includes the geology of oil and gas deposits, the production and transportation of oil and gas, the uses of oil, and gas in our daily lives. Careers in the oil and gas industry, and environmental considerations are also included. CGS contracted with Digital MediaVision, a production company, to build the CD-ROM from the storyboard and their own considerable stock of oil and gas training materials.

FY 00-01

- Product: CD-ROM on Coal and Coalbed Methane
- Available through CGS

CGS staff member, Laura Wray, and a consultant, Janet Schultz, designed a story board for a CD-ROM on coal and coalbed methane in Colorado, utilizing materials and ideas from our summer 2000 "Rock Talk" Newsletter on coal and coalbed methane. Again, Digital MediaVision was hired to do the production work.

FY 01-02

- Product: Pamphlet on The role of geology in all resources

CGS hired a contractor to build this product. The pamphlet is in final review and should be ready for distribution in the Fall of 2002.

Connecticut

First, you can get information about all of the State surveys at the Kansas Geological Survey Web Site (www.kgs.ukans.edu). The information resides in the AASG section of that site. We run teacher workshops about four times a year, and have produced several teacher-oriented booklets on various aspects of Connecticut geology. The most recent of these are also available on CD. Unfortunately we cannot do very much with this aspect of our program because money to produce educational material ("other than new and innovative curricula") is hard to come by for us.

Ralph Lewis
State Geologist

Delaware

The Delaware Geological Survey Earth Science Information Center (DGS-ESIC) provides K-12 teachers with a teacher packet filled with both USGS and DGS pamphlets and information fact sheets covering a wide variety of topic including geology, hydrology, earthquakes, volcanoes, minerals, fossils, mapping and more. Other than our publications and this teacher packet, there are no other materials we offer. I have a Web page dedicated to Education with information about Delaware Geology (including fieldtrips called GeoAdventures) and the DGS staff does give talks to school children frequently on fossils, geology, and hydrology in Delaware. We also offer class tours of the DGS building so that children can come and see where geologists work and what we do. If you need anymore information, please contact me directly via this e-mail address or the information given below my signature.

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Florida

At the request of Walt Schmidt, I am responding to your recent e-mail concerning state survey K-12 educational products and services. Paulette Bond and I collaborated on compiling the following summary for the Florida Geological Survey. The FGS provides both publications and educational outreach to K-12 students and teachers. In our publication series we have several posters, including *Florida's Hydrogeologic Environment*, *Florida Minerals*, *Florida's Fossil Mammals*, and *Geologic History of Florida*, which are popular with teachers and students. The FGS also distributes a map series titled *Guide Map to Geologic and Paleontologic Sites in Florida*, which is used by older students and adults alike. We have produced a video, "Florida's Geology Unearthed", aimed at the 8th grade level, and used by teachers in the classroom. In addition, we provide Florida rock and mineral samples to students upon request, and a boxed set of our state's rocks and minerals to teachers for classroom use. Our more technical maps and publications are occasionally requested and used by upper-level students and teachers in the K-12 range. The FGS Web site also provides an overview of Florida geology and Survey activities, with downloadable maps and data, and links to on-line publications.

The K-12 outreach and service components of our work include the following:

1. A free copy of any publication to any teacher who requests it on school letterhead.
 2. Talks on requested geologic subjects to classes in reasonable proximity to the FGS.
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3. Lead local class geology fieldtrips.
4. Answers to specific questions received from teachers at our Web site concerning geology, publications or other resources available to them.
5. Assistance to middle school and high school students seeking earth science related internships.
6. Staff participation as local school science fair judges and providing technical assistance to students working on earth science projects.
7. Staff participation in agency and community science education events aimed at least in part at K-12 students.
8. Participation in local school cooperative programs, engaging selected students in actual FGS projects.

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Georgia

The Georgia Geologic Survey provides a Teacher's Set of publications to Georgia's K-12 teachers who request geologic information. All Teacher's Sets contains one each of the following documents:

- General Information on Gold in Georgia
 - Common Rocks and Minerals of Georgia
 - Mineral Industry Survey, Georgia
 - Exfoliation and Weathering at Stone Mountain
 - Environment and Origin of the Cretaceous Kaolin Deposits of Georgia and South Carolina
 - Mineral Industry Survey, Georgia
 - Mining Directory of Georgia
 - Publications of the Georgia Geologic Survey
 - 7.5-minute Quadrangle, USGS Topographic Map
 - 15-minute Quadrangle, USGS Topographic Map
 - Multiple sets or multiple copies of individual publications may be provided, depending on availability and as requested.
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Hawaii

The Hawaii Geological Survey receives requests for material from students all over the United States. Depending upon the age of the student, we provide a small sample of basalt, a copy of a booklet describing the geology of the Hawaiian Islands, and a generalized geologic map of the state. Typically, local schools will ask for a speaker at "career day" or to present a talk on the geology and hydrology of the state.

Aloha,
Glenn Bauer
State Geologist

Illinois

The following is a list of materials and services offered by IL State Geological Survey for K-12 teachers. If you need more information please feel to contact me.

3-D Block Model of Illinois. Instructions and maps for creating a three-dimensional model of Illinois. Includes a template for cutting a base, cross sections, a geologic map, a Quaternary map, and shaded relief maps of both the surface and of the bedrock. (\$10.00)

- **Guide to the Preparation and Use of Illinois Topographic Maps:** W.E. Cote. 1972, revised 1978. 26 p., 11 figs. (\$3.00)
 - **GeoActivities Series:** Janis Treworgy. 2000 (\$20.00)
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- A compilation of geologic activities developed by professional geologists for use in K-12 teacher workshops and in Grades 4-12 classrooms in Illinois. Each activity fulfills many of the Illinois Learning Standards and includes some background information, procedures for doing the activity, worksheets, and answer keys.

POSTERS

- **Karst Land in Illinois: Hills, Hollows, and Honeycomb Rock:** written by Samuel V. Panno and Ellen M. Wolf; photography by Samuel V. Panno, Joel M. Dexter, and Brian T. Schaffner; design by Pamela K. Carrillo. 1997. 31 1/2 x 30 inches (\$2.00)
This poster shows photographs of karst land in Illinois and describes groundwater problems that frequently occur in these areas.
- **Geology of the Chicago Lakeshore: The Chicago River Mouth:** Michael J. Chrzastowski; design and production, Pamela K. Carillo; coordination, Ellen M. Wolf. 1998. 31 1/2 x 45 1/2 inches (\$5.00)
Historic shorelines near the Chicago River mouth are shown on a modern aerial photograph and shoreline movement is explained.
- **Geology of the Chicago Lakeshore: Shaping the Chicago Shoreline:** Michael J. Chrzastowski; design and production, Pamela K. Carillo; editor, Ellen M. Wolf. 1999. 31 1/2 x 45 1/2 inches (\$5.00)
Digital version available.
Shows how and where the Chicago shoreline has been shaped to meet the needs of the people.
- **Geology of the Chicago Lakeshore: Chicago's Underwater Landscape:** Michael J. Chrzastowski. 2000. 32 x 46 inches (\$5.00)
The underwater landscape is shown and discussed.

GEOBITS SET (\$2.00)

- **GeoBit 12. Coal Illinois' Black Treasure:** Colin G. Treworgy and Robert C. Vaiden. 2001. 2 p.
- **GeoBit 11. Caves in Illinois: Our Subterranean Landscape:** S.V. Panno and C.P. Weibel. 2000. 4 p.
- **GeoBit 10. Plate Tectonics: Mysteries Solved!:** Robert C. Vaiden. 1999. 4 p.
- **GeoBit 9. Oil Fields in Illinois:** David G. Morse. 1999. 4 p.
- **GeoBit 8. History of Oil and Gas Production in Illinois: The Early Days--Accidents and Seeps:** B. G. Huff and J. H. Goodwin. 1999. 4 p. Digital version available.
- **GeoBit 7. Karst Landscapes of Illinois--Dissolving Bedrock and Collapsing Soil:** S.V. Panno and C.P. Weibel. 1998. 4 p. Digital version available.
- **GeoBit 6. The Trilobite--an Early Inhabitant of Illinois:** Dennis R. Kolata. 1997. 2 p. Digital version available.
- **GeoBit 5. Illinois' State Fossil--Tullimonstrum gregarium:** D. G. Mikulic, J. Kluessendorf. 1997. 2 p. Digital version available.
- **GeoBit 4. Fluorite--Illinois' state mineral:** D.L. Reinertsen and J.M. Masters. 1997. 2 p. Digital version available.
- **GeoBit 3. Geodes--Small Treasure Vaults in Illinois:** David L. Reinertsen, D. Scott Beaty, and Jonathan Goodwin. 1997. 2 p. Digital version available.
- **GeoBit 2. End Moraines--the End of the Glacial Ride:** A.K. Hansel. 1997. 2 p. Digital version available.
- **GeoBit 1. Exotic Rocks or Erratics are Erratic:** M.M. Killey. 1997. 2 p. Digital version available.

GEONOTES

- **GN 1. Mississippian Rocks in Illinois:** Janis D. Treworgy. 1997, rev. 2000. 8 p. (\$1.00)
- **GN 2. Depositional History of the Pennsylvanian Rocks in Illinois.** 1973, revised 2000. 12 p. (\$1.00)
- **GN 3. Quaternary Glaciations in Illinois.** 2000. 10 p. (\$1.00)
- **GN 4. Build Illinois: the Last 500 Million Years:** Robert C. Vaiden. 2000. 12 p. (\$1.00)
- **EDX I. Industrial Minerals in Illinois: a Key to Growth:** Subhash Bhagwat. 2000. 4 p. \$1.00
- **EDX L. Landscape and Mineral Resources of Illinois.** March 1976, revised July 1978. 2 p. (\$1.00)
- **EDX Z. Zinc-Lead Deposits in Northwestern Illinois.** 1965, revised 1971. 5 p. (\$1.00)
- **GES 14. Illinois' Ice Age Legacy:** Myrna M. Killey. 1998. 66 p., 25 figs., 2 tables (\$5.25)

(Series name changes from Educational Series to Geoscience Education Series)

- **ES 13. Guide to Pennsylvanian Fossil Plants of Illinois:** James R. Jennings. 1990. 75 p., 27 pls., 21 figs. (\$3.00)

- **ES 11. Fossil Peat from the Illinois Basin--A Guide to the Study of Coal Balls of Pennsylvanian Age:** Tom L. Phillips, Matthew J. Avcin, and Dwain J. Berggren. 1976. 39 p., 3 pls., 17 figs. (\$3.00)
- **ES 8. Industrial Minerals and Metals of Illinois:** J.E. Lamar. 1965. 48 p., 23 figs. (\$3.00)
- **ES 5. Guide to Rocks and Minerals of Illinois.** 1959. 40 p., 11 figs. (\$3.00)
- **ES 4. Guide for Beginning Fossil Hunters:** Charles W. Collinson. 1956, revised 1959. 39 p., 11 pls., 19 figs. (\$3.00)

We offer four Geological Science Education Field trips for the public each year. Many times a pre-trip is done for the local teachers. Our Education Coordinator does programs at many teacher workshops throughout the State of Illinois. Rock and fossil identification and general questions are responded to on a regular basis.

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Indiana

Here are some of the services offered by the Indiana Geological Survey to K-12 teachers and students:

Web Site

The Indiana Geological Survey reaches more teachers and students through its Web site (<http://igs.indiana.edu>) than by any other means. The site features many articles and lessons about Indiana geology topics that were developed for use by K-12 teachers and students.

Indiana University Geology Bldg. Visit

Visits typically include presentations about geologic topics and demonstrations of field and laboratory equipment and techniques used in geologic research.

McCormick's Creek State Park Field Trip

IGS staff leads hikes in the park and makes presentations about geologic features found there (including a canyon, falls, cave, sinkholes and natural bridges).

Indiana Rock Set

The set includes six specimens (one a larger size for the teacher) of each of six types of rock found in Indiana: limestone, dolomite, gypsum, sandstone, shale and chert. The set also comes with a 20-page guidebook for elementary school teachers that includes many lesson plans.

Publications

The IGS Publication Sales office (812-855-7636; igsinfo@indiana.edu) has many maps, books, brochures, CD-ROMS, and video tapes that support K-12 earth science education.

Answers To Geologic Questions

Teachers and students may receive answers to questions about Indiana geology by sending e-mail to igsinfo@indiana.edu or by calling 812-855-1337.

Workshops/Short Courses

IGS staff conduct about half a dozen workshops or short courses each year that are targeted at K-12 teachers. Teachers should visit the events calendar on the IGS Web site (<http://igs.indiana.edu/survey/eventsUpcoming.cfm>) to learn about upcoming workshops.

Science Teachers Convention

The IGS staffs a large booth at the Hoosier Association of Science Teachers, Inc. annual convention. This three-day event provides teachers the opportunity to learn what the IGS has to offer them and it provides IGS staff with an opportunity to learn how they can do more to help teachers.

Jeff Kirby
 Education Specialist & Web Manager
 Indiana Geological Survey

Kansas

We're also currently publishing (with the KU Natural History Museum) a poster that describes fossils in the state, but it isn't out quite yet. Should be soon. Also, if you need e-mail addresses for the other state surveys, there's a link on the Kansas Survey Web site that takes you to a map of the 50 states, and clicking on each state will take you to their Web site, if that's of any help.

The Kansas Geological Survey (KGS) has a number of non-technical services and publications that are useful to educators, along with technical maps and books, including field trip guidebooks and open-file reports (informal, unpublished reports). All of those publications are described in the KGS catalog, available both in hard copy and online at the KGS Web site (<http://www.kgs.ukans.edu/>). Publications can be ordered through the KGS Publication Sales Office, 1930 Constant Ave., Lawrence, KS 66047, or by calling 785-864-3965.

The KGS has developed a specific Web page, called GeoKansas, that is aimed at educators (<http://www.kgs.ukans.edu/Extension/about.html>). GeoKansas is a branch of the Geology Extension program at the KGS, designed to provide regionally focused information about the state's geology. Initially, we've focused on the rocks and minerals, fossils, and interesting places to visit in the eleven different physiographic regions of Kansas.

The KGS has also begun offering twice-annual non-technical field trips that are appropriate for teachers. The fall field trip is held in conjunction with the national Earth Science Week. For more information, go to <http://www.kgs.ukans.edu/Extension/fieldtrips.html>.

The KGS has created a new database of photographs of the geology and landforms of the state. To explore these photos taken by KGS staff over the years, go to <http://www.kgs.ukans.edu/Images/DB/index.html>.

The following non-technical, educational series publications are particularly appropriate for educators.

- Educational Series 1--Ancient Life Found in Kansas Rocks (Common Fossils of Kansas), by R.B. Williams, 44 p., 1975, \$5.00*
- Educational Series 2--Kansas Rocks and Minerals, by L. L. Tolsted, A. Swineford, 64 p., 1957, \$3.00, Revised and reprinted, 1986, 1998. A corresponding rock box of 18 specimens is also available for \$5.
- Educational Series 3--Kansas Clays for the Ceramic Hobbyist, by M.P. Bauleke, 35 p., 1977, \$5.00.
- Educational Series 4--Kansas Geomaps, by D.W. Steeples, R.C. Buchanan, 30 p., 1983, \$5.00, Revised and reprinted, 1984.
- Educational Series 6--From Sea to Prairie--A Primer of Kansas Geology, by C.S. Evans, 60 p., 1988, \$5.00.*
- Educational Series 7--Petroleum--A Primer for Kansas, by D.L. Baars, W.L. Watney, D.W. Steeples, E.A. Brostuen, 40 p., 1989, \$5.00, Reprinted 1993.
- Educational Series 8--A Guide to Finding Kansas Maps, by C.S. Evans, 80 p., 1990, \$5.00.
- Educational Series 9--Caves in Kansas, by J. Young, J.C. Beard, 48 p., 1993, \$7.50.
- Educational Series 10--Kansas Ground Water, by R.C. Buchanan, R.W. Buddemeier, 44 p., 1993, \$5.00.
- Educational Series 11--Wichita's Building Blocks--A Guide to Building Stones and Geological Features, by L.H. Skelton, 32 p., 1996, \$7.50.
- Educational Series 12--Climate and Weather Atlas of Kansas, by D.G. Goodin, J.E. Mitchell, M.C. Knapp, R.E. Bivens, 24 p., 1995, \$7.50.
- Educational Series 13--Primer of Industrial Minerals for Kansas, by David A. Grisafe, 28 p., 1999, \$7.50.
- Educational Series 14--An Atlas of the High Plains Aquifer, by Jeffrey A. Schloss, Robert W. Buddemeier, Blake B. Wilson, 92 p., 2000, \$15.00.*
- Educational Series 15--A Kansan's Guide to Science, by Paulyn Cartwright, Roger L. Kaesler, Bruce S. Lieberman, Adrian L. Melott, 20 p., 2001, \$7.50.

*Full Version available online

The KGS publishes Public Information Circulars that are short, non-technical discussions of issues and topics of importance to the state. The following Circulars may be particularly helpful to educators. All are also available online on the KGS Web site.

- Earthquakes (PIC 3)
- Hugoton Natural Gas Area of Kansas (PIC 5)
- Safe Yield and Sustainable Development of Water Resources in Kansas (PIC 9)
- Kansas Springs (PIC 11)

- Kansas Kimberlites (PIC 16)
- Lead and Zinc Mining in Kansas (PIC 17)
- The High Plains Aquifer (PIC 18)
- The Public Land Survey System in Kansas (PIC 20)
- Salt in Kansas (PIC 21)
- The KGS also has the following page-sized maps. Single copies are available free-of-charge.
- Physiographic Map of Kansas
- Generalized geologic map of Kansas
- Kansas Geologic Timetable.
- General availability of ground water and normal annual precipitation in Kansas

The KGS makes available a number of additional books and maps published by other organizations, including

- Geologic Highway Map of Kansas. 1 p., 1988, \$5.00, Folded only, Map Info: 37 X 24 inches; Scale: 1:1,000,000, Western Geographics.
- Kansas Geology--An Introduction to Landscapes, Rocks, Minerals, and Fossils, by R.C. Buchanan, ed., 212 p., 1984, \$17.95, University Press of Kansas.
- Land of the Post Rock, its Origins, History, and People, by G.E. Muilenburg, A. Swineford, 221 p., 1975, \$19.95, University Press of Kansas.
- Roadside Kansas--A Traveler's Guide to its Geology and Landmarks, by R.C. Buchanan, J.R. McCauley, 379 p., 1987, \$9.95, Reprinted 1990, University Press of Kansas.
- Kansas Atlas & Gazetteer, 80 p., 1997, \$20.00, Scale: 1:200,000, DeLorme.
- The State of Kansas Data Access and Support Center (or DASC) is housed at the KGS. Through its Web site (<http://gisdasc.kgs.ku.edu/>), DASC provides digital data that may be useful for educators.

Kentucky

The Kentucky Geological Survey maintains an Earth Science Education Network www.uky.edu/KGS/education/education.html. This site hosts lesson plans, activities, suggestions for projects, topic in geology, and links to hundreds of other earth science educational sites. It is hit thousands of times per month. This site has won awards and is very popular with earth science teachers. There has been a lot of effort put into this.

KGS has a number of education-related posters and publications that we distribute free or at very low cost. These include recent posters on Karst hazards, groundwater protection, fossils, and mapping. Most all of our publications are on the Web.

We feel the KGS Web site is our strength to reaching K-12 earth science students. We give dozens of demonstrations and short field trip experiences to classes each year. We have a very small collection in the lobby of our building that some schools use as an outing for students.

Our geologists are encouraged to volunteer in schools. We cooperate with University faculty to host special events such as Earth Science Week activities, national speakers on dinosaurs, space and the environment. Some high schools give credit for students who attend our lectures.

We host national and regional geology society meetings and have made a practice to give FREE registration to earth science teachers to attend our field trips. This has been successful as teachers love the trips but cannot afford the cost. The geologists love having teachers along to share their knowledge.

This last year KGS did the judging for the national high school science fair. This was held in Louisville, KY. We often do science fair judging as public service.

For the past 15 years KGS has hosted high school students in the experiential education program. A student will be mentored by a geologist for a semester or less. The students get some real experience from this mentoring program.

Education is in the mission statement of the Kentucky Geological Survey. It is our feeling that teacher education is a better deal for us than us trying to become K-12 teachers. Therefore we encourage Web-based and teacher-based activities over contact with student. We found that direct contact with classes usually did not have the best result because our geologists were unable to get on the level of the students. And, direct contact takes enormous amounts of time.

We feel strongly that earth science is not given enough time or attention. The Kentucky Geological Survey has done a lot in this area over the past 20 years.

I hope this helps your information collection.

Jim Cobb, State Geologist and Director

Louisiana

Educational Series – (No charge for Louisiana teachers requires written request on school letterhead)

1. **Earth Stuff, Minerals and Rocks: A Primer**, by Bradford C. Hanson, 1999, 35 p. plus appendices. Series introduction. Basic presentation of definitions of minerals, crystals, and rocks, with an emphasis and history on those found in Louisiana. Groups information into grades K-2, 3-6, and 7-9. Includes puzzles and a glossary suitable for transparencies (photocopy available).
2. **Earth Stuff, Ground Water: A Primer**, by Bradford C. Hanson, 1999, 18 pp. plus appendices. Discusses origins and uses of water in Louisiana, with word puzzles and instructions for making a 3-D potentiometric surface map. Groups information into grades K-2, 3-6, and 7-9 suitable for transparencies. (Photocopy available)
3. **Guide to Rocks and Minerals of Louisiana** by Riley Millnew, 2001 (draft)
4. **Black Gold Beneath the Bayous**, developed by Bob Bradley and Bradford Hanson, 2000. A single CD-ROM, ver. 1, designed as a comprehensive electronic teaching product developed specifically for science teachers that target oil and gas topics on Louisiana and the Gulf of Mexico. Contains professional development materials that teachers can utilize to develop lesson plans and is divided into seven chapters that contain test accompanied by interactive color graphics, animation, audio and video clip-its, illustrated concepts and embedded definitions. \$4.00

Public Information Series – (no charge for publications in this series)

1. **Overview of Operations and Contractual Services, April 1998, 2 pp.** Introduction and mission statement; general outline of the Survey's programs and function.
2. **Louisiana Petroleum Industry Facts, February 2000, 8 pp.** Lists pertinent historic facts of the oil and gas industry, salt domes, crude oil refineries and industry statistics.
3. **The Value of Geologic Maps, June 2000, 4 pp.** Discusses the myriad potential uses, applications, and benefits of surface geologic maps of the state, with a figure illustrating the cumulative map production of parish at scales of 1:62,500 and greater.
4. **Geologic Mapping in Louisiana, March 1998, 2pp.** Presents the background of geologic mapping in the state and summarizes geologic mapping activities since 2985, with special emphasis on cooperative agreements with the U.S. Geological Survey for compilations of surface geology at intermediate scales (1:250,000- and 1:100,000-scale quadrangle formats).
5. **Lignite Resources in Louisiana, June 2000, 4pp.** Provides information on lignite formation, occurrence and history of lignite mining in Louisiana.
6. **Louisiana Geofacts, February, 2001, 8pp.** Provides summary information on not well known, but interesting geological facts of Louisiana.
7. **Earthquakes in Louisiana, Jun3 2001, 8 pp.** Presents information on fault types, measurements and magnitudes of Louisiana earthquakes.

Maine

The Maine Geological Survey maintains a Web site with educational information
(<http://www.state.me.us/doc/nrimc/pubedinf/crest/crest.htm>

<http://www.state.me.us/doc/nrimc/pubedinf/crest/crest.htm>). On this site, we have posted Curriculum Resources for Earth Science Teachers, including about 50 activities on various geological topics and field trips. We add several fieldtrip localities each year. We also maintain a "Geological Site of the Month" highlighting a different site each month.

We organize an annual Earth Science Day at the Maine State Museum during Earth Science Week. Last year the event attracted about 1,000 students.

We are completing a generalized, page-sized geologic map of Maine for publication this fall.

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Maryland

The educational material currently provided by the Maryland Geological Survey to both teachers and K-12 students are free pamphlets and fact sheets (please refer to our online publications listing for the list of pamphlets and fact sheets at www.mgs.md.gov). The Survey also sells publications pertaining to fossil collecting in Maryland (Educational Series 4), dinosaurs in Maryland (ES 6), mineral collecting in the Washington, D.C. area (ES 5), earthquakes in Maryland (ES 9), and a coloring and activities book (ES 8).

Through the Survey's Earth Science Information Center (ESIC) project, we do give talks to school groups in the central Maryland area related to geology as a science and profession, rocks and minerals, fossils and other specialized topics if knowledgeable. Our Web site contains a variety of information about the Survey as well as links to other geologic Web sites.

Hope this helps. If you would like additional information, feel free to call or e-mail me.

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Michigan

We have a long but sporadic history of having materials available for teachers and students. We are in the process of building up our services to this and other groups.

We will provide information packets to fill individual requests from teachers with the following:

An 8 1/2 x 11 card of Michigan rocks, Bedrock and Quaternary geology maps (wall size), publications list, Michigan fossils information as available, any free publication in stock, topographic map index, a list of museums with geology displays, Michigan Sand Dunes, a list of other geology information sources, Michigan Beach Stones poster, Ways to Care for Our Environment pamphlet, Eddy Discovery Center trail hiking map, and other items as available.

We are working on other free publications in specific and general areas of interest. Recently published pamphlets are Mineral Rights, Oil and Gas Well Spacing, and Salt-A Michigan Resource. Several other pamphlets are in the works and we hope will be out in the next year.

We are also working to place on the Web our PowerPoint file on the Michigan Rock Cycle. It is currently available on CD with most of the PDF files listed above and much more. We hope to place the entire contents of this CD onto our Web sites. The cost of the CD is \$10.

The following information is for any to access on the Web Michigan Web data PDF documents under <http://www.michigan.gov/deq/> "Information and News" and "Geology in Michigan selection:

- Bedrock Geology
 - Core and Sample Repository and Inventory
 - Dimension Stone Feasibility
 - General Geology of Michigan (in brief)
 - General Geology of Michigan (in more detail)
 - Glacial Lakes Around Michigan
 - Glacial Lakes Around Michigan - Illustrations
 - Glacial Lakes Flip Book
 - Illustrations of Fossils Found In Michigan
 - Michigan Basin Block Diagram
 - Michigan Earth Science - Rock, Gem, Mineral and Fossil Clubs
 - Michigan Museums with Rock, Mineral, Fossil and/or Geology Displays
 - Oldest Fossil Found in Michigan
 - Quaternary Geology
-

- Rock Column & Time
- Sources of Additional Geologic Information
- Statewide Oil & Gas
- Stratigraphic Succession

Web documents at the same sub-page

- The Michigan State Stone - the "Petoskey Stone"
- The Michigan State Gem - the "Greenstone" or "Isle Royale Greenstone"
- Native Copper Deposits In Michigan
- Iron Deposits in Michigan

Link

- Mineral Information Institute (Link)

The "Maps & Data" button takes you to our publications list of items that can be ordered. Most of these are not available on the Web.

Under the category "Land" - "Fuels and Minerals," you have access to online oil and gas regulations and data.

We used to have a Geological Survey Division site, however, all State of Michigan sites have been reorganized to a "public friendly" organizational format. We are slowly moving things from where they were placed to where they belong under the new format.

Please note that in September, our Division name will change from the Geological Survey to the Geological and Land Management Division under a new organizational structure of the Department of Environmental Quality.

If you have any other questions or need anything clarified, please contact me.

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Missouri

Please see the response from Debi Breuer to your e-mail request. She has historically handled the inquiries and requests that we receive from schools and teachers. We also have staff that participate in training academies or short courses through universities. Sometimes they teach a particular subject matter at the short course or lead a field trip or they may lecture about a specific site or work product that we recently completed as a real world example of putting earth science education to work. Most of this is part of a "training teachers" program. We also have tours of our office building throughout the school year. If we are contacted by a teacher, we arrange a staff person to provide a guided tour of our facilities. We have numerous displays of interest, as well as a water well in our back lot to show students the importance of proper well construction and can put a down whole video camera in the well to show them casing, rock, water, etc. We also host a "Rolla School Daze" event. Over 300 Rolla 5th grade students visit our grounds for a day of earth science education. We set up educational stops (12-14). At each stop a staff person explains the importance of all types of geological, hydrological, survey, etc. information. We have one session on rock types, fossils, water protection, dam safety, surveying instruments, water tracing, earthquakes, etc. Our office prepares trading cards for students and teachers. They are just like baseball cards, but they show and explain a variety of earth science topics. We have had three series of cards completed and are now starting to work on a Lewis and Clark series to be out in 2004.

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----- Forwarded by Mimi Garstang/DGLS/MODNR on 06/11/2002 02:18 PM -----

I send out one set per teacher (by request) that contains 23 samples of Missouri rocks and minerals with a written text explaining the samples, what they are used for and where they might be found in Missouri. I also furnish students (by request) with samples of our state rock and mineral. I am not sure what other programs might furnish to teachers. I believe Dolly has a teacher packet she sends out but I don't know what is in it.

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Mississippi

We have only limited material available as free material for teachers. All items listed here are in limited supply (i.e., we can send only a few copies in response to individual requests), except the schoolbook covers, which we have in some quantity.

- geologic post card (photograph of Red Bluff)
- state geologic map (8.5x11", color)
- pamphlet on fossil whale (the state fossil)
- sample of petrified wood (the state stone)
- earthquake schoolbook covers (elementary on one side, high school on the other)

Our quarterly journal Mississippi Geology (unfortunately not published the past two years) contains a few articles that may be of interest to educators.

We participate in teacher workshops. Staff geologists give talks to classes and at career days, and judge science fairs at all levels.

We have an annual contest called the "egg carton collection," where students submit egg cartons with identified rocks and fossils (mostly from chert gravel). The judging is at our booth at the annual Rock Show of the Mississippi Gem and Mineral Society the last weekend of every February.

The List of Publications of this agency is posted on our Web site: <http://deq.state.ms.us>, then click Geology and then List of Publications.

I hope this information will be of use to you.

Michael B. E. Bograd
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Montana

The Montana Bureau of Mines and Geology generally is not in position to generate printed products specifically for K-12 teachers and students. The exception might be our geologic map postcard of the state, but those are for anyone, not only K-12. However, we do provide numerous services for this group. Among these are:

1. Staffing of our Mineral Museum, and guided tours and activities, if requested ahead of time. This is the only such facility in the state, and is visited by 1000-2000 students per year as part of organized groups. Additionally the staff provides 4-6 varied activities per year that range from talks, to field trips for mineral collecting, to talc carving, and these events either target or include children. As part of the Museum tour, visitors may also visit with the staff that manage our earthquake-monitoring network and see seismographs and displays developed for earthquake education.
 2. We receive numerous requests from out-of-state students for a rock, mineral, etc. from Montana, as well as numerous questions about geology from anywhere. These are always answered appropriately.
 3. Staff provides classroom talks and sometimes activities for both elementary and high school teachers. We cannot possibly handle all requests, but do respond when time and distances are not prohibitive, or when a visit can be tied in with other activities in an area.
 4. For the last two years, staff has participated in a day-long environmental field program attended by 5th or 6th grade students from the local school district.
-

5. This summer we participated with the university's Outreach Coordinator in writing a successful grant that provided a week-long "camp" for underprivileged students. The theme was water and Bureau staff incorporated everything from map reading to geomorphology to ground water in leading the students during the week.
6. Several of the staff has banded together to build a much larger and ambitious K-12 program, which will depend on soft dollar funding and cooperation with other agencies. So far, results have been mixed, mostly on the funding side. The focus has again been on water, particularly ground water, and a second focus on GIS, which evolved through an offer of free software access made by ESRI. The eventual success of this program remains questionable because of funding.

This list is not comprehensive, but provides an idea of some of the spectrum of services and activities that we offer. I would love to have one individual devoted to outreach activities, but funding does not enable us to consider it seriously. Instead, numerous individuals take small amounts of time and in all the result is a largely uncoordinated, but respectable effort to support K-12.

Sincerely,

Ed

Edmond G. Deal

Director and State Geologist

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Nebraska

This material supplied by Conservation and Survey Division, Institute of Agriculture and Natural Resources, University of Nebraska, Lincoln

Nebraska Earth Science Education Network - NESEN

The NESEN Concept

Goal: To Improve Linkages between K-12 Educators and Earth Science Resources

Objectives:

1. To promote and enhance K-12 earth science education in Nebraska
2. To improve teacher knowledge and understanding so that students become better informed about the complexities of environmental and natural resources
3. To enhance the transfer of earth-science information to the K-12 teaching community.

Resources

Internet Links

A categorized listing of links related to Earth Science. A description of links and frequency of hits to the Internet site from NESEN are included. A user can also suggest links to add to the site at an online form. Approved new links will be added to the listing periodically.

Teaching Tools

A collection of conversion and time-tables useful in classroom and real world scenarios.

Lending Library

A collection of resources (videos, books, posters, maps, etc.) that can be requested for temporary use from NESEN for only the cost of shipping the resource to the user. An on-line form allows for an easy request process.

Earth Science Information Center (ESIC)

A listing of mostly-free publications related to earth science topics from the Conservation and Survey Division of Nebraska. Publications range from maps to booklets to posters.

Educational Service Units (ESU)

The Nebraska Educational Service Units (ESUs) are intermediate agencies providing supplementary educational services to K-12 and rural, Class I school districts in Nebraska. Educational Service Units were

created by the Nebraska Legislature in 1965. There are 19 units across the state. Schools benefit from cooperative programs which are cost effective. Services and programs have evolved over the years to meet the changing needs and requests of school districts.

Nebraska Academic Standards

A compilation of educational standards in science, math, reading/writing and social studies disciplines adopted by the Nebraska State Board of Education.

National Science Standards

A site with pdfs of the national standards and an option to purchase a printed copy of the standards.

Sponsored by the Nebraska Earth Science Education Network (NESEN)

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Univ. of Nebraska-Lincoln

Lincoln, NE 68588-0513

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Additional presentations given at the Nebraska Association of Teachers of Science (NATS) help in October of each year. Go to NESEN @ NATS

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Nevada

You can find our educational resources on our home page at: <http://www.nbmj.unr.edu> and click on "K-12 Earth Science Educational Resources".

From our home page, you can also click on "Online Documents" for other free information on Nevada geology or "Links to Related Organizations".

Here are some other helpful sites for teachers and students. In the future, we may be adding links to these on our "K-12" section of our homepage:

- The Learning Web: K-12 Education (USGS)
<http://www.usgs.gov/education>
- The Science of the Comstock (with lesson plans)
<http://library.advanced.org/50041>
- Mineral Information Institute (A-Z common minerals alphabet)
<http://www.mii.org/commonminerals.html>
- Women in Mining
<http://www.womeninmining.org>
- McCaw School of Mines
<http://www.ccsd.k12.nv.us/schools/McCaw/index.html>
- Nevada Division of Minerals
<http://www.state.nv.us/minerals>
- National Energy Foundation
<http://www.nefl.org>
- National Mining Association
<http://www.nma.org>
- Smithsonian Gem & Mineral Collection
<http://galaxy.einet.net/images/gems/gems-icons.html>

and many other sites listed on:

- U.S. Geological Survey World Wide Web Information (USGS Fact Sheet 037-00, April 2000) and
- Internet Mining Sites (from NBMG)
- DD LaPointe is our Education Specialist and she offers many workshops and field trips for teachers and students every year.

DD LaPointe
phone (775) 784-6691 x134
dlapoint@unr.edu

New Hampshire

I will forward this request to my Outreach Coordinator and we will get back to you. Below is the up-to-date contact information for the NH Geological Survey for your records.

General geology information can be sent to: geology@des.state.nh.us

David R. Wunsch, Ph.D.
State Geologist and Director
New Hampshire Geological Survey
Department of Environmental Services
6 Hazen Drive
Concord, New Hampshire 03302
(voice) 603/271-6482
(fax) 603/271-8013
e-mail: dwunsch@des.state.nh.us

New Jersey

The New Jersey Geological Survey at the present time has available only the New Rocks and Sediments Kit Teaching Guide and Student Activities for Kindergarden through Grade 8; New Jersey Rocks and Sediments, with booklet and samples; and New Jersey Rocks and Sediments, booklet only. There are a series of Information Circulars which can be used in teaching, but were not designed as such. We also have a section on our home page for earth science education.

<http://www.state.nj.us/dep/njgs/index.html>

Richard Dalton
Chief, Bureau of Geology and Topography
New Jersey Geological Survey
PO Box 427
Trenton, NJ 08625

New Mexico

Contact information

New Mexico Bureau of Geology and Mineral Resources
801 Leroy
Socorro, NM 87801
505-835-5420 voice
505-835-6333 fax
Web site: <http://geoinfo.nmt.edu>

For Teachers:

Annual Summer Workshop on Geology and Mineral Resources "Rockin Around New Mexico" draws three to four dozen teacher participants from around the state and is located in a different area of New Mexico each year. With the common goal to support Earth science education, this event is supported by a consortium of state agencies and private industry. During the three-day workshop, teachers learn about rocks and minerals, earthquakes and faults, volcanoes, mining, maps, fossils and more. Each year, teachers who attend receive teaching tools, curricula, and other resource materials to support bringing the lessons back to the classrooms.

Resources for Teachers--In state teachers can get a free teacher's packet containing lesson plans, videos, etc. Also, the Mineral Museum offers a free Rock and Mineral ID kit for in-state teachers; out-of-state teachers can order one for \$5.00 plus shipping.

A few of the 15-minute topo maps discarded by the USGS are still available to teachers for free upon request. Our publications office sells maps and other geological publications of interest to secondary science teachers. Lite Geology is a fun-to-read publication tailored especially for teachers that is published once or twice a year and is free to in-state subscribers (\$4.00 for 4 issues for out-of-state readers).

Teachers can request a presentation by one of our geologists during a class visit to the Museum in Socorro. Topics range from rocks and minerals, to topo maps and geology. Group tours are also available with advance notice.

For Students:

The NMBGMR responds to many requests from school children for samples of New Mexico rocks and minerals. Free specimens are mailed to any student (in-state and out-of-state) who contacts NMBGMR.

Students are welcome in the Mineral Museum, along with either with parents or teachers. The sales case is regularly stocked with 50-cent "kid rocks" that are treasured by kids of every age.

New York

You should be made aware of an informal publication of the Association of American State Geologists titled something like "Catalogue of Earth Science Education Resources from State Geological Surveys" by me and Neil Suneson of the Oklahoma Geological Survey. We produced this when I was the Chair of the Earth-Science Education Committee of the Association of American State Geologists. It used to be possible to download it from the Kansas Geological Survey's Web page that linked the Association of American State Geologists Web page. I can send you a paper copy, and there may be a CD I could copy. I am contacting the Kansas Survey Webmaster to check into its availability. Neil Suneson is supposed to be looking into updating the publication, since its date is 1995 and a lot of new material has come available from the State Geological Surveys. Good luck in your endeavor.

Bob Fakundiny

They took it off the Web site because it is seven years old and they were getting complaints about it not being up-to-date. The book is 138 pages long with listings that are cross-referenced so that a school teacher can easily find, for example, all material on a particular geologic subject for grades 4-6, that is text-based and with a teacher manual supported by transparency slides and backup services from the Geological Survey. This catalogue took us months to prepare and we have not been able to find anyone since who can donate that kind of time to get it up-to-date. It is still useful because those pre 1996 materials are still available and valid. Since it is assembled by State Geological Survey, it has all of the addresses and contacts for those surveys. I'll send one out to you today.

North Carolina

Please see our Web page, <http://www.geology.enr.state.nc.us/> and check the publications and Project Earth links. We also conduct ad hoc programs for teachers on request. We have no budget for an official program but work to partner with the NC Dept. of Public Instruction, NC State University, and the Office of Environmental Education in the Dept. of Environment and Natural Resources to provide instruction at summer workshops.

North Dakota

- The NDGS and the ND Geological Society have a lending library with more than 60 video cassette tapes.
- To date the NDGS has published 29 pieces in its Educational Series (guide books, road logs, texts on local and general geology, etc.), which is written primarily for lay persons, K-12 educators and school students.
- The NDGS Newsletter is a semi-annual publication for the general public and includes "Teaching Tools" and "Surfing Safari" columns for K-12 educators. The Teaching Tools column covers materials, curricula, workshops, meetings, audio-visual materials, or items of interest to earth science educators. The Surfing Safari column examines those Web sites with outstanding resources for K-16 educators.
- The NDGS Web site (<http://state.nd.us/ndgs/>) contains a section entitled "North Dakota Geology" that presently contains 17 short articles ("North Dakota Notes") on various aspects of ND geology. New articles are continuously added to this Web site.

- Members of the ND Geological Society, in collaboration with Gateway to Science, a non-profit educational center in Bismarck, is in the process of compiling a traveling "Geology Trunk", with the aim of providing all ND school districts with access to an affordable earth science curriculum based on national standards, but tailored to ND geology. Two identical trunks are being assembled and will be available to grade 7 and 8 teachers by the start of the 2002/3 school year.
- At the request of K-12 educators we visit schools and youth groups to deliver presentations on various aspects of ND and general geology.
- The NDGS paleontology Web site (state.nd.us/ndfossils/) is a popular site for teachers and students and has been presented with a national award for excellence.
- We have, in cooperation with the State Historical Society, provided continuing education classes for teachers in paleontology.
- We have generated numerous paleontology activity and fossil information sheets in cooperation with the State Historical Society, and posters of North Dakota fossils.
- One day a month we have tour day for teachers and their classes for tours of the ND State Fossil Collection.
- We often provide tours to the Stumpf dinosaur site for teachers and classes.
- We can arrange tours of active fossil excavations for teachers' continuing education courses.
- We provide fossil specimens and paleontology activities for teachers.
- We have available an educational trunk entitled "Geology and Paleontology of the Rendezvous Region"
- We have in the past done programs and activities at the ND Heritage Center in Bismarck for Earth Day.
- We also have provided fossil exhibits in local museums that are used by teachers.

I hope this is what you are looking for. If I can be of further assistance, please let me know.

Sincerely,

Lorraine Manz
 North Dakota Geological Survey
 600 East Boulevard
 Bismarck, ND 50505-0840
 Tel: (701) 328 8000
 Fax: (701) 328 8010
 E-mail: lmanz@state.nd.us

Ohio

I am mailing to you our Educational Materials List. This lists free items and items with a nominal cost available from the Ohio Geological Survey. This list also gives contact information for other Ohio Department of Natural Resources Divisions as well as other science-related organizations in Ohio. It also gives other contact information for science associations and organizations.

If you have additional questions please contact me at any time.

Madge
 Ohio Division of Geological Survey
 Geologic Records Center
 4383 Fountain Square Drive
 Columbus OH 43224
 e-mail: madge.fitak@dnr.state.oh.us
 Web site: www.ohiodnr.com/geosurvey/

Pennsylvania

Pennsylvania Geological Survey
 Information and programs provided for K-12 teachers:

Publications:

Educational Series E1-E11

- E1: Rocks and Minerals of Pennsylvania (out of print)
- E2: Common fossils of Pennsylvania

- E3: Groundwater in Pennsylvania
- E4: The geological story of Pennsylvania
- E5: Geology and the Gettysburg Campaign
- E6: Pennsylvania and the Ice Age
- E7: Coal in Pennsylvania
- E8: Geology of Pennsylvania's oil and gas
- E9: Landslides in Pennsylvania
- E10: Earthquake Hazard in Pennsylvania (out of print)
- E11: Sinkholes in Pennsylvania

All educational publications are available online (pdf format) additional online publication:

- EG-2: Environmental geology for land use planning

Maps:

8 1/2 x 11 (available in hardcopy or online (pdf))

- #7 Geologic map of Pennsylvania
- #10 Oil and gas fields of Pennsylvania
- #11 Distribution of Pennsylvania coals
- #14 Physiographic provinces of Pennsylvania
- #38 Base Map of Pennsylvania (19" x 24")
- #59 Glacial deposits of Pennsylvania
- #64 Surficial materials of Pennsylvania
- #15 Limestone and dolomite distribution in Pennsylvania

Maps 1:500,000 (hardcopy)

- Pennsylvania's shaded relief
- Pennsylvania's land cover

All above publications are free

Additional opportunities for teachers:

- Post teacher derived lesson plans with the Department of Ed
- Hold various summer workshops for teachers ranging from Mapping GIS to one week Geology Camp

Let me know if I can provide anymore info.

Jaime Kostelnik
 DCNR, Bureau of Topographic and Geologic Survey
 Local Government Outreach Services
 400 Waterfront Drive
 Pittsburgh, PA 15222
 tel: 412.442.5828
 fax: (412) 442-4298
 e-mail: <mailto:jkostelnik@state.pa.us> <mailto:usjkostelnik@state.pa.us>

South Dakota

The South Dakota Geological Survey does not have a specific series of publications that were prepared for K-12 teachers and students. We provide information to teachers and students on a request basis and tailor our response to the specific need expressed by the teacher or student.

All of our publications can be ordered through our Web site (<http://www.sdgs.usd.edu> <http://www.sdgs.usd.edu>). Some of the maps prepared by the Geological Survey can be viewed at the Web site and downloaded in pdf format. Two of our databases (lithologic logs and water quality) can currently be searched through the Web site. We are working toward making more of our information accessible through the Internet.

Staff from the Geological Survey participate in Water Festivals in South Dakota where 3rd and 4th grade students are exposed to the many uses and functions of water in our everyday lives. Staff also make presentations to local middle school classes on the subjects of geology and hydrology.

Tennessee

The Tennessee Division of Geology makes available to all educators in the state all of the information it generates, plus audio/visual presentations about the general geology of Tennessee.

Initial copies of publications and maps are supplied without charge to schools as well as the above-mentioned slide and sample presentation. The slide and sample show is presented by division personnel and must be pre-arranged.

These services are a part of the Division's outreach program and are implemented by approximately half of our staff.

If I can be of further assistance, please let me know.

Marvin Berwind
13th floor, L&C Tower
401 Church St.
Nashville, TN 37243-0445

Texas

Here is a list of K-12 materials and activities that the Bureau of Economic Geology provides to teachers and students:

1. "Geoscience Publications of Special Interest to Teachers and Students of Earth Sciences in Texas" <http://www.beg.utexas.edu/education/pubsforteach.htm>. This 4-page list includes the Bureau's series of page-sized maps plus other selected maps, guidebooks, and our rock kit.
2. "The Texas High School Beach Monitoring Program" <http://inet1.beg.utexas.edu/thscmp/>. This program takes Bureau coastal researchers to local Texas Gulf Coast high schools where teachers and students learn how to conduct beach profiles in their area and gain a better understanding of beach and dune dynamics on the Texas coast.
3. EarthView Texas http://www.beg.utexas.edu/education/nw_evt.htm. This laboratory uses active stereo goggles to make a projected object on a screen look three-dimensional. The Bureau has many 3-D models that we have developed to demonstrate this technology to the general public along with teachers and students.
4. On-line Modules (classroom activities) include "Aquifer in a Tank" "Is Dirt Just Dirt?" "Adventures in Virtual Reality" "Rocks from Space" "Texas Rock Cycle" "Flood!" "Virtual Oil Game" http://www.beg.utexas.edu/education/nw_online-mod.htm
5. A list of partnerships with Austin Earth Science Week, Austin Science Fun Day, CAST (science teachers state conference), UT Geoscience Alliance, and others at http://www.beg.utexas.edu/education/nw_partnr.htm
6. Teacher Training opportunities at http://www.beg.utexas.edu/education/nw_tchtr01.htm. We work with many teachers each year to increase teacher experience with scientific inquiry and current applied science content.
7. Information on how to work with the Bureau at http://www.beg.utexas.edu/education/nw_outrch01.htm. We organize visits at our facilities for teachers and students, Bureau researchers visit the classroom, and staff members are involved in various organizations that promote informal science education.

Please don't hesitate to contact me if you need additional information.

Best regards.

Ms. Sigrid Clift
Public Information Geologist
Bureau of Economic Geology
John A. and Katherine G. Jackson School of Geosciences
The University of Texas at Austin
University Station, Box X
Austin, TX 78713
512-471-0320
512-471-0140 (fax)
sigrid.clift@beg.utexas.edu
www.beg.utexas.edu

Vermont

We receive many requests for information from K-12 students and teachers. We fill these requests on a regular basis including geologic maps and reports for specific areas. We also have general publications such as "Gold in Vermont" that are free that cover topics of wide interest for a public audience. The VGS is very active in doing outreach to schools and conducting field trips. We have a booth every year at the Vermont Science Teachers Association meeting and coordinate with other education initiatives in K-12 education. During Earth Science Week we sponsor a program known as "Geologists in the Parks" and have geologists stationed in selected parks to lead school groups on field trips. As State Geologist and Chair of AASG Education Committee, I have organized a state-based alliance to advance K-12 earth science education. The goal is to bring earth science education in line with the new State K-12 education standards. The initial thrust will focus on teacher training.

Laurence R. Becker, State Geologist
Vermont Geological Survey
103 South Main Street
Waterbury, VT 05671-0301
Phone - 802-241-3496
Fax - 802-241-3273
e-mail larryb@dec.anr.state.vt.us
<http://www.anr.state.vt.us/geology/vgshmpg.htm>

Virginia

Educational Materials Available from the Virginia Division of Mineral Resources

3" x 5" Mineral Sample Cards (Subject to availability)

- amazonite, muscovite, calcite, milky quartz, coal, quartzite, granite, slate, kyanite, soapstone, limestone, marble

Brochures

- *Caves and Caving in Virginia*
- *Coal and Virginia*
- *Earthquakes*
- *Geology of Virginia*
- *Gold In Virginia*
- *Mineral Collecting in Virginia*
- *Oil and Gas in Virginia*
- *Sinkholes*
- *Virginia Diamonds*

Maps

- *11" by 17" Geologic Map of Virginia, (Generalized geologic map that shows major physiographic provinces and their ages)
- *8 1/2" by 11" Virginia's Geologic Regions
- *8 1/2" by 11" Geologic Provinces of Virginia

Fact Sheets

- *A Briefing on Virginia Geology and Mineral Resources*
- *Virginia Mining and Mineral Facts*
- *Geologic Time Scale and the Geologic History of Virginia*
- *Geologic Regions of Virginia*
- *Virginia's State Fossil*

Educational CD-ROMS with Teacher Workbooks

Available through the Sales Office (434-951-6341)

- | | |
|----------|---|
| CD-ROM-1 | Introduction to Virginia Geology |
| CD-ROM-2 | Geology of the Coastal Plain |
| CD-ROM-3 | Geology of the Piedmont and Blue Ridge |
| CD-ROM-4 | Valley and Ridge and Appalachian Plateaus |

Tours

Washington

We have a teacher's packet that we send when requested. It contains references where teachers can find materials, activities, some information on fossils and other geologic information. We have students write to us and we send them rock samples. We also have a great library that has tons of information. Our librarians are happy to help teachers find what they need.

Wisconsin

Publications Supplement is available for Educators is available. Besides this brochure, which is a much shortened list from the list of Publications. They also give formal and informal tours of their building and map and publications areas. They meet any request for 'school talks'. They provide material for teacher's conventions.

Wyoming

All of our publications are available to educators for their use. Some are suitable for educational use, some are not, but that is up to each teacher to decide. Our publications list is available at www.wsgsWeb.uwyo.edu, and is literally hundreds of documents long. Rather than reprint the document for you, I am sending you this Web location.

Lance Cook
Wyoming State Geologist