USGS
science for a changing world

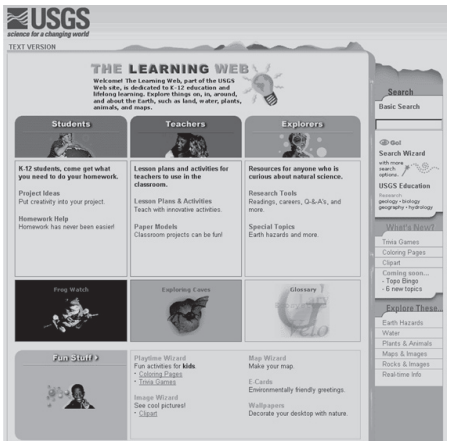
Educational Materials from the U.S. Geological Survey

As the Nation's largest water, earth, and biological science and civilian mapping agency, the U.S. Geological Survey (USGS) provides some of this science information as educational material. The product line includes a variety of teaching packets, booklets, posters, fact sheets, CD-ROMs, and Web sites. Described below are products designed for K-12 teachers. This list starts with a review of two main USGS education sites followed by products grouped according to thematic topics. At the end of each product description, information is provided for ordering the product or accessing it on the Web.

Some of the publications are currently out of print. Such publications will be noted as "WEB ONLY."

USGS Learning Web

The USGS Learning Web, *www.usgs.gov/education*, is dedicated to K-12 education and life-long learning. Students can find handy research tools, such as glossaries covering volcanoes, mapping, hydrologic terms, and plant species; they can also find help with homework assignments. Teachers and homeschoolers can find lesson plans with innovative activities covering caves, environmental and global change concerns, and interpretation of maps. "Explorers" can find their own areas of special interest, such as understanding natural hazards, investigating careers in earth science, and connecting to real-time information on earthquakes, volcanic activities, and water. Additional trivia, games, paper models and animations, and coloring pages are also available on the Learning Web.



Two of the online teaching packets, Volcanoes! and Exploring Caves, have posters that you can purchase.

Map Adventures—This packet is appropriate for grades K-3. Students will learn basic concepts for visualizing objects from different perspectives and how to understand and use maps. The packet includes a two-sided color poster, teacher information, seven lesson plans, and two activity sheets.
interactive2.usgs.gov/learningweb/teachers/mapadv.htm
WEB ONLY

Exploring Caves—This K-3 teaching packet covers the related subjects of geology, cartography, and hydrology in a lighthearted story about Bat, who finds two lost children in a cave and teaches them various lessons as he guides them to safety. The packet includes a large, colorful poster and an instructional book for teachers that contains the read-aloud story, lesson plans, and student activity sheets.
interactive2.usgs.gov/learningweb/teachers/explorecaves.htm
WEB ONLY
Exploring Caves poster. *16634**

What Do Maps Show?—This packet for middle school includes a two-sided color poster with four accompanying lesson plans for learning geography and developing mapreading skills. It also includes three maps and four activity sheets.
interactive2.usgs.gov/learningweb/teachers/mapsshow.htm
WEB ONLY

Global Change—This packet is appropriate for grades 4-6. It covers four themes: time, change, natural cycles, and the Earth as home. It includes a two-sided color poster, a teacher's guide, and three activities. Each activity includes background material, an experiment, three lesson plans, and suggestions for further reading.
interactive2.usgs.gov/learningweb/teachers/globalchange.htm
WEB ONLY

Volcanoes!—This teaching packet for grades 4-8 answers fundamental questions about volcanoes through the story of the 1980 eruption of Mount St. Helens. Included are a two-sided color poster, a teaching guide with glossary and bibliography, and six lesson plans with timed activities and activity sheets.
interactive2.usgs.gov/learningweb/teachers/volcanoes.htm
WEB ONLY
Volcanoes! poster. *112440**

Exploring Maps—This interdisciplinary set of materials on mapping for grades 7-12 is designed to aid in teaching basic mapmaking and mapreading skills. It includes a teaching guide, four activity sheets, and two double-sided posters.
interactive2.usgs.gov/learningweb/teachers/exploremaps.htm
WEB ONLY

*Sales item. Items with no asterisk are either free print or Web publications.

Land and People: Finding a Balance— This teaching packet for high school challenges students to examine current environmental issues in three different regions and helps them prepare to find a balance between humans and the environment in the future. It contains a teaching guide, a colorful poster, and separate activities. The student materials include a reading about each region, a focus question that leads to role-playing activities, and scientific data about the region.
16632
interactive2.usgs.gov/learningweb/teachers/landpeople.htm

Scientists in Action—Newsletter for middle and high school students on careers in the natural sciences. Describes careers by providing narratives of professional scientists at work. From mapping the planets to sampling the ocean floor, from protecting wildlife to forecasting volcanic eruptions, budding scientists can explore these unique career opportunities.
16643
erg.usgs.gov/isb/pubs/booklets/scientists/

National Atlas

Another Web site of great interest to teachers is the National Atlas of the United States® at **nationalatlas.gov®**. The USGS and its partners are cooperatively producing an Atlas that is intended as an essential reference for all computer users. In addition to providing high-quality small-scale maps, the Atlas includes national geospatial and geostatistical data sets, such as soils, county boundaries, and watersheds. Crime patterns, population distribution, and incidence of disease are examples of geostatistical data. The Atlas includes easy-to- use online interactive maps, multimedia maps, and printable maps. The **nationalatlas.gov®** Web site is a wonderful instrument of education and a research tool with accurate and reliable Government information.

nationalatlas.gov™ where we are

Earth Hazards

Earthquakes—This 20-page booklet explains the nature and causes of earthquakes. It describes techniques used to detect, record, measure, and forecast seismic disturbances.
pubs.usgs.gov/gip/earthq1/
WEB ONLY

The Severity of an Earthquake—This 15-page leaflet discusses the Richter Magnitude Scale and the Modified Mercalli Intensity Scale.
16475
pubs.usgs.gov/gip/earthq4/severitygip.html

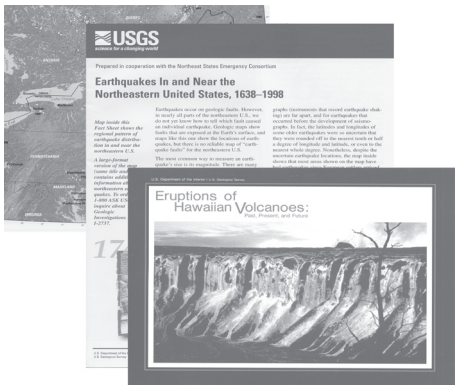
Earthquakes for Kids & Grownups— Includes information on Earth structure, plate tectonics, and earthquake preparedness through pictures, animations, and online interactive puzzles for teachers and K-12 students.
earthquake.usgs.gov/4kids/

Earthquakes In and Near the Northeastern United States, 1638-1998 (I-2737)—This thematic map was produced by the USGS National Earthquake Information Center and shows earthquake activity in the northeastern United States since the arrival of the early settlers in that region. Eyewitness accounts, photographs of damage, and newspaper headlines are included. A companion fact sheet with the same title can also be requested.
28898 (map)*
16713 (fact sheet)
pubs.usgs.gov/imap/i-2737/ (map)
pubs.usgs.gov/fs/fs-0006-01/ (fact sheet)

Earthquakes in the Central United States – 1699-2002—Prepared in cooperation with the Central United States Earthquake Consortium (CUSEC) and the Association of CUSEC State Geologists, this earthquake map, Geologic Investigations Series I-2812, shows the distribution of earthquakes in the most seismically active region of the central United States. The region includes all of Illinois, parts of Iowa, Missouri, Arkansas, Tennessee, Mississippi, Alabama, Kentucky, Indiana and Michigan. More than 800 earthquakes are shown on this map along with explanatory text, newspaper headlines, and illustrative graphics.
*115886**
pubs.usgs.gov/imap/i-2812/

Eruptions of Mount St. Helens: Past, Present, and Future—This 56-page booklet highlights the eruptive history of this composite volcano, reviews its activity since its awakening in 1980, and speculates about its behavior in the future.
*16383**
pubs.usgs.gov/publications/msh/

The San Andreas Fault—This 17-page booklet defines the San Andreas Fault and also discusses earthquake magnitude and intensity.
pubs.usgs.gov/gip/earthq3/
WEB ONLY



Future Quakes-Unlocking the Mysteries of Bay Area Earthquake Faults—This half-hour video features USGS coastal and marine geology earthquake-hazard research in the San Francisco Bay area. It describes how scientists conducted seismic studies to determine whether the San Andreas and Hayward faults are connected, as well as other studies including a project designed to make shaking-intensity maps available to emergency personnel within 2 minutes of a Bay Area earthquake.
*Open-File Report 99-519**

Volcanoes of the United States—This 44-page booklet describes the principal volcanoes that have erupted during the last few hundred years in Hawaii, Alaska, and the Cascades Mountain Range. It also summarizes recent events at active

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calderas in California and Wyoming.
pubs.usgs.gov/gip/volcus/
WEB ONLY

Volcanoes—This 45-page booklet presents a summary of the nature of the Earth processes that create common types of volcanoes around the world, along with an introduction to the techniques of volcano-monitoring research.
pubs.usgs.gov/gip/volc/
WEB ONLY

Volcano Resources for Educators—This Web site gives a variety of information on volcano publications, videos, and raw footage of volcanic eruptions.
volcanoes.usgs.gov/educators.html

Eruptions of Hawaiian Volcanoes: Past, Present, and Future—This 54-page booklet focuses on the volcanic history of the Hawaiian Islands with dramatic color photographs and diagrams and informative text on Hawaii's active shield volcanoes, Mauna Loa and Kilauea.
*16366**
pubs.usgs.gov/gip/hawaii/

Mount Rainier – Learning to Live with Volcanic Risk—This 4-page fact sheet focuses on volcanic mudflows or lahars, the greatest possible hazard produced by a potential eruption of Mount Rainier. USGS scientists are working with the local communities to help people live more safely with the volcano through monitoring of the volcano and emergency planning.
115771
geopubs.wr.usgs.gov/fact-sheet/fs034-02/

Perilous Beauty – The Hidden Dangers of Mount Rainier—This 29-minute video was produced by the USGS. It uses computer animation, eruption footage, interviews with scientists, and vivid aerial and ground shots of the mountain to show how lahars can affect communities in Western Washington. This video is available from: Northwest Interpretive Association @ MSH Warehouse, 3029 Spirit Lake Hwy., Castle Rock, WA 98611 (360) 274-2125/2127.

USGS Geologic Hazards: Landslides—National Landslide Information Center, recent landslide events, landslide publications, and more.
landslides.usgs.gov/

At Ocean's Edge: Coastal Change in Southwest Washington—This 20-minute video presents coastal erosion hot spots along Washington's southwest coast and the work being conducted through the Southwest Washington Coastal Erosion Study.
*OF 98-491**

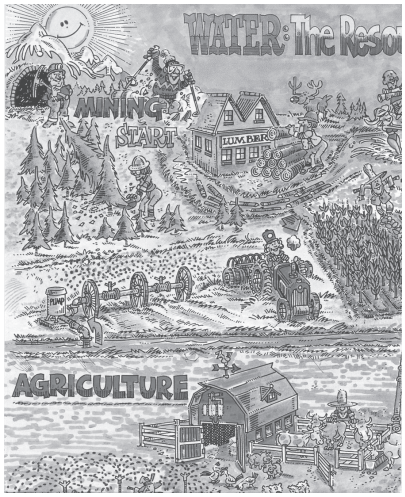
Water

In the past, the USGS originally published a set of nine very popular water posters in two versions – grade school and middle school. All are out-of-print except the middle-school version of "Water: The Resource That Gets Used and Used and Used For Everything!". Six of the posters, however, can be viewed at Web site: *water.usgs.gov/public/outreach/OutReach.html*. The front side of the posters has a colorful cartoon graphic depicting the topic of the poster. The back side of the posters contain educational activities, definitions, and interpretive questions concerning the poster topics. The educational materials on the back is geared to the different grade levels.

The negatives for those posters that are out of print may be borrowed for duplicating. The duplicate negatives would then be used for printing. The posters may be joined to create a wall mural. Please contact the USGS office in Madison, Wisconsin at (608) 238-9333, ext. 120 for further information. The actual duplication has to be done by a professional printing contractor.

The National Science Teachers Association has these water posters available in "Water Matters," a three-volume set. Volume 1 (wetlands, water use, and wastewater) and Volume 2, (navigation, groundwater, and water quality) are available for a nominal cost. Each volume comes with six posters, three with text geared for elementary students and three for middle school, plus teacher's guides with activities. Volume 3 (oceans, hazardous waste, and watersheds) unfortunately, is no longer available. More information on purchasing "Water Matters" can be found at *store.nsta.org* or by calling 1-800-277-5300.

Water: The Resource That Gets Used and Used and Used For Everything!—Shows 12 uses of water, from mining to transportation. The flow of water is depicted from the mountains, through a reservoir, and past urban, rural, and industrial settings where various uses are featured.
16600 (middle school)



How Do We Treat our Wastewater?—Illustrates the process by which wastewater is treated in cities, small towns, and rural areas.

Wetlands: Water, Wildlife, Plants, and People!—Defines general types of wetlands, demonstrates how wetlands are depicted, and teaches how wetlands are beneficial. The diversity of plants and animals in wetlands is also shown.

Ground Water: The Hidden Resource!—Displays the movement of water in a ground-water system.

Water Quality . . . Potential Sources of Pollution—Features human activities associated with different sources of water pollution. It also shows the movement of waters between surface- and groundwater systems.

Navigation: Traveling the Water Highways!—Highlights the different kinds of vessels, port facilities,

*Sales item. Items with no asterisk are either free print or Web publications.

structures, and equipment needed for commercial operations on rivers and in coastal harbors. It was designed to introduce students to the many aspects of navigation.

Hazardous Waste: Cleanup and Prevention—Shows various hazardous waste sites, different types of cleanup methods used on these sites, and how hazardous waste moves once it is released into the environment.

Watersheds: Where We Live—Depicts three watersheds, identifying different physical features and management options within each watershed. The poster also depicts flooding and the importance of flood plains.

Oceans-Coastal Hazards: Hurricanes, Tsunamis, Coastal Erosion—Describes several natural processes or events that can change the shape of the coast and affect nearby environments. Designed as a contribution to the Year of the Ocean.

Water Science for Schools—
Information is given at this Web site on the many aspects of water, along with pictures, data, maps, and an interactive center where students can express opinions and test their water knowledge.
ga.water.usgs.gov/edu/
water.usgs.gov/gotita (Spanish translation)

The Water Cycle—This web site includes a diagram of the natural water cycle with labels in over thirty languages, including Chinese, German and Russian.
ga.water.usgs.gov/edu/watercycle.html

Water Jeopardy—A water twist version of the popular television game show perfect for 4th through 6th graders. Request a copy from info_ne@usgs.gov, 402-437-5082.
ne.water.usgs.gov/html/jeopardy/intro.htm

Willie Takes a Field Trip—This 40-page coloring book follows Willie, and his Uncle Bill, a hydrographer with the USGS, as he learns about stream gaging stations and more.
in.water.usgs.gov/willie/

A Journey With H2O—A 7-page coloring book that describes the water cycle and is geared towards pre-school and early elementary children. Available free (limit 3) from the USGS Nebraska Water Resources Discipline District office at info_ne@usgs.gov (402) 437-5082.

A Primer on Water Quality—This two-sided color fact sheet discusses how water quality is measured, why we have water quality standards, and how human activities affect water quality.
16820
water.usgs.gov/pubs/fs/fs-027-01/

What is Ground Water?—Explains how water gets into the ground. Illustrates and explains associated terms, such as water table, aquifer, permeability, and porosity.
water.usgs.gov/pubs/FS/OFR93-643/ WEB ONLY

Ground Water—This 17-page booklet describes ground water, how it occurs, and its quality.
16433
capp.water.usgs.gov/GIP/gw_gip/

Ground Water and the Rural Homeowner—This 36-page booklet provides the rural homeowner with a basic description of ground water and problems one may expect to encounter when building, such as contamination from septic systems and lowered well-water levels.
16509
water.usgs.gov/pubs/gip/gw_ruralhomeowner/

Science in Your Watershed—USGS. This Web site helps you find scientific information organized on a watershed basis. It provides a foundation for characterizing, assessing, analyzing, and maintaining the status and health of a watershed.
water.usgs.gov/wsc/

Floods and Flood Plains—Describes flood plains, factors that influence when or where floods occur, and how flood damage can be reduced.
water.usgs.gov/pubs/FS/OFR93-641/ WEB ONLY

Drought—Provides information on what droughts are, where they usually occur in the United States, and what can be done to solve water problems during periods of drought.
water.usgs.gov/pubs/FS/OFR93-642/ WEB ONLY

USGS Tracks Acid Rain—Explains what acid rain is, how it is formed, and what its effects are. Also gives some information on what can be done to help control acid rain.
17526
bqs.usgs.gov/precip/reports/arfs.htm

Acid Rain and Our Nation's Capital: A Guide to Effects on Buildings and Monuments—This 35-page booklet focuses on acid rain and its impact on our Nation's capital. The booklet defines acid rain, explains what effects it has on marble and limestone buildings, and shows, through a walking tour, some of the places in Washington where you can see the impact of acid precipitation.
16506
pubs.usgs.gov/gip/acidrain/

Plants and Animals

USGS Biology Kid's Corner—USGS. This Web site includes games, coloring pages, stories, and fun projects on living things for preschoolers on up.
biology.usgs.gov/features/kidscorner/ kidscrnr.html

National Biological Information Infrastructure (NBII) Teacher Resources—USGS NBII. This Web site provides educators, parents, and students of all ages with access to online resources that emphasize the teaching of biology, biodiversity, and ecology. Topics include reptiles and amphibians, botany, and activities in your State.
www.nbii.gov/education/

Status and Trends Publications of the Department of the Interior—This CD-ROM contains two publications: "The Status and Trends of the Nation's Biological Resources" and "Our Living Resources." The first publication, written in nontechnical language and

*Sales item. Items with no asterisk are either free print or Web publications.

released in 1999, synthesizes current information on the status and trends of our biological resources with a historical perspective of ecosystems across the country to assess how the Nation's resources are changing. The second publication, published in 1995, contains almost 200 articles describing inventory and monitoring efforts that measure the distribution, abundance, and health of the Nation's plants, animals, and ecosystems.
*18905**
biology.usgs.gov/s+t/SNT/index.htm
biology.usgs.gov/s+t/index.htm

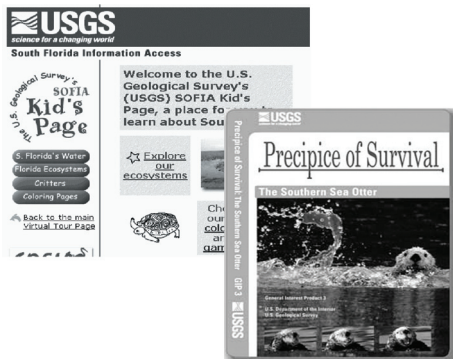
FrogWeb—This Web site focuses on the recent amphibian declines and deformities. Students are encouraged to adopt a frog pond and join the Frog Force to help monitor frog populations.
www.frogweb.gov/

The Children's Boreal Toad Site—This Web site provides information, photographs, and illustrations of the life history of the boreal toad, an endangered species in the State of Colorado.
www.mesc.usgs.gov/resources/education/borealtoad/borealtoad.asp

A Field Guide to the Reptiles and Amphibians of Coastal Southern California—This Web site includes information on several species of salamanders, lizards, turtles, snakes, and frogs and toads in Southern California, with photographs, descriptions, and a glossary.
www.werc.usgs.gov/fieldguide/

USGS South Florida Information Access (SOFIA) Kid's Page—Learn about South Florida at this Web site. Explore its ecosystems and check out the critter coloring pages while learning about South Florida's water and the unique animals and insects that make their homes there.
sofia.usgs.gov/virtual_tour/kids/

South Florida Ecosystem History Project Kid's Corner—This Web site helps children learn about how scientists are helping to preserve the South Florida environment. Join Sam the Starfish and his friends to solve trivia questions, look at photographs, and use a special dictionary while learning about southern Florida and the Everglades.
sofia.usgs.gov/flaecohist/kidscorner/



The Children's Butterfly Site—This Web site was developed for grades 4-6. Information is given on moths and butterflies, along with a coloring page, frequently asked questions and answers, a gallery of butterfly photographs, and links to other sites.
www.mesc.usgs.gov/resources/education/butterfly/bfly_intro.asp

The Whooping Crane Report Site Map—This Web site includes general information and cool facts on the tallest bird in North America, and links to other sites, such as Operation Migration where USGS-raised Whooping cranes wing their way from Wisconsin to Florida following an ultralight aircraft.
www.pwrc.usgs.gov/whoopers/whoopersitemap.htm

Precipice of Survival—This video stream traces the history of California's sea otters from the onset of the Pacific maritime fur trade to the present and focuses in depth on the broad collaborative research effort to better understand these charismatic creatures.
online.wr.usgs.gov/outreach/GIP3video.html

LAcoast Kids' Corner—This Web site features online coloring books and bird and animal identification games featuring Louisiana coastal creatures.
lacoast.gov/kids/

The Fragile Fringe—This Web site features the "Fragile Fringe: A Guide for Teaching About Coastal Wetlands." An introduction is given on wetlands, along with several activities and additional resource lists.
www.nwrc.gov/fringe/ff_index.html

Botany for Kids—Learn about plants at this Web site and have fun doing science projects using lichens, fungi, and more.
www.nbii.gov/disciplines/botany/kids.html

Tree Rings Record 100 Years of Hydrologic Change Within a Wetland—This four-page fact sheet explores the relevance of examining the annual growth of tree rings in determining what conditions were like in the past decades or even centuries. A study area in New York State is highlighted.
ny.usgs.gov/pubs/fs/fs05797/html2/FS057-97.html
WEB ONLY

Maps and Images

USGS Maps—This 28-page booklet illustrates and describes types of USGS maps and gives ordering information.
16486
erg.usgs.gov/isb/pubs/booklets/usgsmaps/usgsmaps.html

Map Scales—This fact sheet explains map scales and includes a table comparing the scales of various USGS map series.
112719
erg.usgs.gov/isb/pubs/factsheets/fs01502.pdf

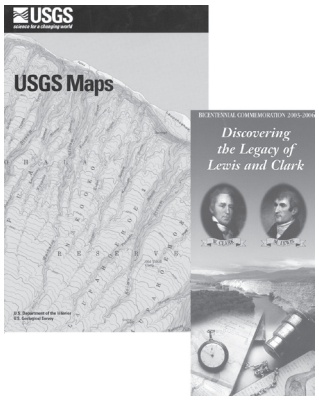
Topographic Map Symbols—A topographic map shows more than contours. It also includes symbols that represent such features as streets, buildings, streams, and vegetation. This leaflet gives examples of many of the symbols used on USGS topographic maps.
100799
erg.usgs.gov/isb/pubs/booklets/symbols/

Map Projections—A two-sided poster showing the frontispiece to Gerardus Mercator's *Atlas sive Cosmographicae* on one side and the properties, characteristics, and preferred uses of many histori-

*Sales item. Items with no asterisk are either free print or Web publications.

cally important projections and of those frequently used today on the reverse side.
16573 (folded)
erg.usgs.gov/isb/pubs/MapProjections/projections.html

Map Projection Publications—This fact sheet describes nine USGS publications about map projections.
erg.usgs.gov/isb/pubs/factsheets/fs08799.pdf
WEB ONLY



Elevations and Distances—This 15-page booklet provides tables of information covering elevations of features and distances between points in the United States.
16419
erg.usgs.gov/isb/pubs/booklets/elvadist/elvadist.html

Topographic Salad-Tray Model—Use a plastic take-out container and a topographic map (Angel Island map included) to create a topographic model.
geography.wr.usgs.gov/outreach/topo_instructions.html

National Atlas of the United States Maps—This fact sheet presents a selection of maps originally published in the National Atlas of the United States of America by the USGS in 1970.
erg.usgs.gov/isb/pubs/factsheets/fs08601.pdf
WEB ONLY

Historic Map of Colorado - 1894—Reproduced by the USGS in cooperation with the Library of Congress, this map, scaled at approximately 1:500,000, was originally published in 1894 by James McConnell School Supplies of Denver, Colo. This unique bird's-eye view map has incredible detail, and features include relief shading, counties, cities, towns, roads, rivers, valleys, railroads, and elevations of some mountain peaks.
*112161**
rockyweb.cr.usgs.gov/historicmaps/historicmapsfromlca.html

Landforms of the Conterminous United States—A Digital Shaded-Relief Portrayal—A large, digitally produced map illustrating geomorphic and tectonic phenomena of the United States in vivid detail. A 16-page booklet describing the map accompanies it.
28394 (map)*
28395 (booklet)

Digital Shaded-Relief Image of Alaska—A large map illustrating the physiographic features of Alaska from the artificial rendering of a digital elevation model. An 11-page booklet describing the map accompanies it.
28760 (map)*
28761 (booklet)

Topographic Field Trip of Washington, D.C.—This CD-ROM was designed for middle school students to travel through Washington, D.C. It uses hypermedia to navigate through layers of information and link sounds, graphics, text, animation, and interactivity in a game-like adventure. Students learn how to measure distance and direction, determine latitude and longitude, identify map features, understand digital orthophotos, determine elevations, and examine historical maps.
18909 (Macintosh and Windows 3.1x, 95 or higher)*

Finding Your Way with Map and Compass—This fact sheet explains how topographic maps show distance and direction and how to use a compass.
erg.usgs.gov/isb/pubs/factsheets/fs03501.pdf
WEB ONLY

Rocky Mountain Mapping Center Education Site—This Web site includes a wide variety of educational lessons (including a USA geography quiz, geocaching, and a remote-sensing quiz), an online GIS course, and guidelines on how to use GPS with maps.
rockyweb.cr.usgs.gov/public/outreach/

Recreation.Gov—This Web site offers one-stop shopping for information on recreational opportunities on Federal lands. Allows searching by State, activity, or agency.
www.recreation.gov

USGS TerraWeb for KIDS—This Web site was designed to help children (K-12) learn about the processes, tools, terminology, and uses of remote sensing.
terraweb.wr.usgs.gov/kids/

Mapping the Solar System—A two-sided poster with colorful airbrush illustrations of the planets and their satellites on one side and statistical information and geographic feature information on the reverse side.
*28635**

Aerial Photographs and Satellite Images—This 21-page booklet illustrates various USGS aerial photographs and remotely sensed products.
erg.usgs.gov/isb/pubs/booklets/aerial/aerial.html
WEB ONLY

How to Obtain Aerial Photographs—This fact sheet includes general information on ordering aerial photographs from the USGS and a checklist to use when ordering.
erg.usgs.gov/isb/pubs/factsheets/fs08199.html
WEB ONLY

Looking for an Old Aerial Photograph—This fact sheet lists sources for obtaining historical aerial photographs, including the USGS, the National Archives and Records Administration, and the Library of Congress.
erg.usgs.gov/isb/pubs/factsheets/fs12796.pdf
WEB ONLY

Helping Your Child Learn Geography—This 32-page booklet, published in cooperation with the U.S. Department of Education and the National Geographic Society, is designed

*Sales item. Items with no asterisk are either free print or Web publications.

to help parents stir children's curiosity about geography. The activities can also be used in the classroom and are designed for children 5-10 years of age.
ed.gov/pubs/parents/Geography/
WEB ONLY

USGS Resources for Teaching About the Lewis and Clark Expedition —The USGS publishes nearly 100,000 different maps, aerial photographs, books, booklets, posters, CDs, digital data, and satellite imagery, many of which are useful for teaching about the Lewis and Clark expedition, Native Americans, and the cultural and physical geography of the United States, past and present. In addition, the USGS hosts Internet-based resources that can be used for teaching about the expedition. This Web site includes links to USGS products, highlights that show links between the USGS and the scientific goals of the Expedition, and lesson plans by National Geographic and others. These resources can be used in an inquiry-based setting in a variety of courses and projects at the elementary, secondary, and university levels.
rockyweb.cr.usgs.gov/public/outreach/lewisclark/lc_usgseducation.html

Discovering the Legacy of Lewis and Clark—This folded pamphlet maps the route of the Corps of Discovery on one side and gives additional information on the sites they passed through on the other.
114892
corpslakes.usace.army.mil/employees/lewisandclark/pdfs/02jul-brochure-fr.pdf

Lewis and Clark's Observations and Measurements of Geomorphology And Hydrology, and Changes with Time—USGS Circular 1246 contains Meriwether Lewis and William Clark's descriptions of hydrology and geomorphology -- two sciences that had yet to be named 200 years ago. These descriptions are accompanied by commentary and data analyses made by present and past senior research hydrologists from the U.S. Geological Survey. In addition, this publication contains a section with "repeat photography" which uses1830s landscape paintings done along the Missouri River by Carl Bodmer and modern photographs of the same landscapes taken. Circular 1246 is a good read for Lewis and Clark buffs, armchair scientists, and educators.
115752

Lewis and Clark: A Legacy of Science—This USGS poster commemorates the 200th anniversary of the Lewis and Clark Track. The poster features two maps in parallel view: the top is a beautiful reproduction of Lewis and Clark's Track Across the Western Portion of North America from the Mississippi River to the Pacific Ocean, published by Samuel Lewis in 1814; the bottom is the same geographic area depicted with current remote sensing technology in a colorful image of the American landscape. The parallel map construction illustrates how difficult Lewis and Clark's expedition was, how well they mapped the terrain, and how far cartographic techniques have advanced in 200 years.
*113605**
rockyweb.cr.usgs.gov/historicmaps/historicmapsfromlca.html

The USGS and its partners began work on *The National Atlas of the United States of America*® in 1997. The National Atlas is designed to promote greater geographic awareness through products that provide easy-to-use, map-like views of our natural and sociocultural landscapes. It includes products designed to stimulate children and adults to visualize, comprehend, and even marvel at the complex relationships among environments, places, and people. Seven published maps are now available. The published maps, as well as interactive and multimedia maps, can be viewed at *nationalatlas.gov/*.

The Library of Congress has digitized and republished all the maps from the original 1970 National Atlas of the United States. The entire collection of high-quality, full-color atlas maps can be viewed at memory.loc.gov/ammem/gmdhtml/census3.html.

Presidential Elections 1789-2000—Fifty-four election results are depicted from 1789 to 2000. The map shows the electoral votes by political party and State for all the elections, and a more detailed map at 1:11,000,000-scale for the 2000 election shows the winner of the popular vote at the county level.
*112283**

General Reference Map of the United States—Two versions of this map are available. One measures 42-by 46-inches and shows all 50 states at a common scale of 1:5,000,000. You can appreciate Alaska's tremendous size with this map. The previous version of the map measures 42-by 30-inches, and was also published at 1:5,000,000-scale with Alaska and Hawaii insets. Both maps show the names of populated places, transportation features, water bodies, forested and urban areas in full color.
111264 42- by 46-inches*
101517 42- by 30-inches*

Forest Cover Types—Published at a scale of 1:7,500,000 and prepared in cooperation with the U.S. Forest Service, this map depicts major forest cover types overlaid on a shaded-relief map of the United States.
*100615**

Shaded Relief—This map, published at 1:10,000,000 scale, covers all of North America. Digital elevation data and computer software were used to render this terrain image with 23 distinct color tones depicting broad elevation ranges. The terrain is "illuminated" from the northwest with a simulated sun angle of 45 degrees.
*112733**

Hydrologic Units—This map, published at a scale of 1:3,500,000, depicts a hydrologic system that divides and subdivides the United States into successively smaller river basin units. These subdivisions, or hydrologic units, are used for collecting and organizing hydrologic data. They represent natural and man-made stream-drainage areas.
*101515**

Federal and Indian Lands—This map, published at a scale of 1:7,500,000, is color coded to represent the lands of the Bureau of Indian Affairs, Bureau of Land Management, Bureau of

*Sales item. Items with no asterisk are either free print or Web publications.

Reclamation, Department of Defense, Fish and Wildlife Service, Forest Service, National Park Service, Tennessee Valley Authority, Agricultural Research Service, Department of Energy, and Department of Transportation in the United States and Puerto Rico.
*100854**

Principal Aquifers of the United States—This map, published at a scale of 1:5,000,000, shows the distribution of the major aquifers that supply ground water to the United States, Puerto Rico, and the U.S. Virgin Islands. Each aquifer is classified as one of six types of permeable geologic material.
*101514**

National Wilderness Preservation System—This map published at a scale of 1:5,000,000, shows all designated Wilderness areas in the United States. The color of each area depicts which of the four Federal agencies administers the Wilderness. Insets show wilderness photos on the front side and the back side provides information about the wilderness system in text, images, and sketches.
*101414**

National Wildlife Refuge System—Published at a scale of 1:7,500,000 and prepared in cooperation with the U.S. Fish and Wildlife Service this map shows the National Wildlife Refuge System for the U.S. The System contains more than 540 wildlife refuges. The refuges offer the public opportunities for wildlife watching and photography, hunting and fishing, and education and interpretation.
*113787**

The USGS has published ecoregion maps of areas of the United States. On one side, these colorful maps show levels II and IV ecoregions of a specific area and provide descriptions and photographs of each ecoregion. The reverse side contains a summary table of the characteristics of the ecoregions and a bibliography. Ecoregions denote areas of general similarity in ecosystems and in the type, quality, and quantity of environmental resources. The following 11 ecoregion maps have been published so far.

Ecoregions of North Dakota and South Dakota
*21629**
www.npwrc.usgs.gov/resource/1998/ndsdeco/ndsdeco.htm

Ecoregions of Western Washington and Oregon
*21630**
Ecoregions of Indiana and Ohio
*21631**

Ecoregions of Tennessee
*21632**

Ecoregions of Montana
21633, 21634**

Ecoregions of Nebraska and Kansas
*21635**

Ecoregions of Utah
*112579**

Ecoregions of Alabama and Georgia—
*112766**

Ecoregions of Idaho
*112767**

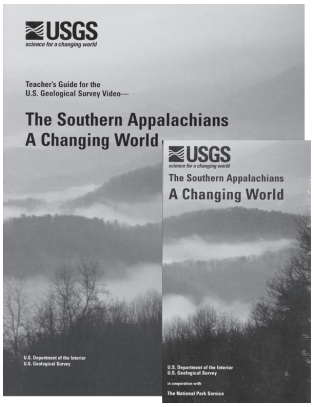
Ecoregions of Kentucky
*113780**

Ecoregions of Mississippi
*116220**

Landsat Mosaics Education CD-ROM—This CD-ROM set of satellite images provides a record of land surface conditions of the U.S. in the early 1990's. Over 500 Landsat 4 and Landsat 5 scenes were mosaicked to create the views of the U.S. Thematic Mapper sensors aboard the satellites collected the data for the moasaics. For more information contact the USGS EROS Data Center at 800-252-4547.
edcsgs16.cr.usgs.gov/landdaac/nsdp/form.html

Geology

The Southern Appalachians: A Changing World—This 25-minute video describes the Southern Appalachian Mountains and how the geologic events that took place millions of years ago influenced the landscape, climate, soils, and living things that can be seen there today. Spanning a vast area from Virginia to Georgia, the Southern Appalachians are some of the oldest mountains on Earth. Molded and shaped over eons by volcanism, erosion, glaciation, and other geologic forces, these mountains are known worldwide for their unusual beauty and rich biological diversity. The 16-page teacher's guide summarizes the video and includes 17 suggested activities and discussion topics to enhance viewing.
112293 (video)*
112294 (teacher's guide)
pubs.usgs.gov/gip/so_app/guide.pdf (teacher's guide)



Birth of the Mountains: The Geologic Story of the Southern Appalachian Mountains—This 23-page booklet begins with the earliest history recorded in the rocks and looks at the major stages in the development of the mountains and landscape. It shows where evidence can be seen today for each stage and gives examples of how the past affects human history and our lives today. This story is based on what geologists have discovered by mapping, measuring, and sampling rocks of this region. A companion video, "The Southern Appalachians: A Changing World," and a teacher's guide are also available.
112296
pubs.usgs.gov/gip/birth/birth.pdf

Geologic Time—This 20-page booklet explains relative and radiometric time scales and how geologists measure the age of the Earth. It illustrates the scientific processes that are used to interpret

*Sales item. Items with no asterisk are either free print or Web publications.

the Earth's geologic history.
pubs.usgs.gov/gip/geotime/
WEB ONLY

This Dynamic Earth: The Story of Plate Tectonics—This colorfully illustrated 77-page booklet complements the poster entitled "This Dynamic Planet" and describes in detail the various aspects of plate tectonics.
*16398**
pubs.usgs.gov/publications/text/dynamic.html

This Dynamic Planet—A world map of volcanoes, earthquakes, and plate tectonics. Complements "This Dynamic Earth: The Story of Plate Tectonics" booklet.
pubs.usgs.gov/pdf/planet.html
WEB ONLY

Interior of the Earth—This leaflet gives explanations of the Earth's crust, mantle, and core with text and illustrations.
16438
pubs.usgs.gov/gip/interior/

Fossils, Rocks, and Time—This 24-page booklet explains the basics of how fossils are used in establishing time sequence in geology. Accompanies the poster, "Fossils Through Time."
16508
pubs.usgs.gov/gip/fossils/

Fossils Through Time—This poster depicts the diversity and evolution of life on Earth during the last 600 million years, with photographs of fossils and corresponding explanations. Accompanies the booklet, "Fossils, Rocks, and Time."
*16564**

The Geology of Radon—This 28-page booklet presents geologic information about radon, including how it forms, the kinds of rocks and soils it comes from, and how it moves through the ground or is carried by water. Geologists also explain in the booklet how they estimate the radon potential of an area.
16518
energy.cr.usgs.gov/radon/georadon.html

Collecting Rocks—Rocks tell the story of the Earth. Rocks are classified by what Earth processes formed them Starting a collection of rocks and identifying them can be a great hobby.
pubs.usgs.gov/gip/collect1/collectgip.html
WEB ONLY

Coasts in Crisis—USGS Circular 1075 briefly explains coasts-the types of coasts, the natural processes that create and modify them, and the human activities that affect them. It gives specific examples of coasts that are dramatically changing as a result of, or in conflict with, human interests and actions. It documents the critical need for a better understanding of our coasts.
14980
pubs.usgs.gov/circ/c1075/

Deserts: Geology and Resources—This 60-page booklet describes various types of deserts (including extraterrestrial deserts), illustrates various desert features and eolian (wind) processes, and discusses the use of remote sensing in studying deserts and the process of desertification.
16504
pubs.usgs.gov/gip/deserts/

Building Stones of Our Nation's Capital—This 36-page booklet describes the source and appearance of many of the stones used in building Washington, D.C. A map and a walking guide are included.
16501
pubs.usgs.gov/gip/stones/

Gold—This 23-page booklet gives a brief history of gold mining through the ages around the world.
16431
pubs.usgs.gov/gip/gold

Natural Gemstones—This 16-page booklet describes mineral and organic gemstones. It gives values of U.S. production of natural and synthetic minerals versus imports, as well as gemstone chemical formulas. Selected references are also supplied.
pubs.usgs.gov/gip/gemstones/
WEB ONLY

A Tapestry of Time and Terrain—A composite of the topography and the geology of the United States using a digital shaded-relief image showing the land surface by variations in brightness and the geologic map of P.B. King and H.M. Beikman. The 52 colors used show the geologic ages of rocks and surficial deposits at the Earth's surface. Accompanied by a pamphlet, which explains how the map was made and describes 48 physiographic features shown on the map.
28887 (map)*
28888 (pamphlet)
pubs.usgs.gov/imap/i2720/

The North America Tapestry of Time and Terrain—Prepared in collaboration with the Geological Survey of Canada and the Mexican Consejo Resursos de Minerales, this 1:8,000,000-scale map appears as woven from a geologic map and a shaded relief image. This digital combination reveals the geologic history of North America through the interrelation of rock type, topography and time. The large map shows the varying age of bedrock underlying North America, while four smaller maps show the distribution of four principal types of rock: sedimentary, volcanic, plutonic and metamorphic.
*114767**
pubs.usgs.gov/imap/i2781/

Geology of the Solar System—A two-sided poster with colorful geologic mapping and low-resolution, shaded-relief airbrush mapping of the terrestrial planets and outer satellites shown on one side and textual geologic information given on the reverse side.
*28779**

Dinosaurs: Facts and Fiction—This 10-page leaflet answers a series of basic questions on dinosaurs, such as "Where did dinosaurs live?" and "Why did dinosaurs grow so big?" References are also included.
pubs.usgs.gov/gip/dinosaurs/
WEB ONLY

Teaching Earth Science—This CD-ROM contains 17 animated teaching tools separated into three categories: Geologic Processes; Earthquakes and Faulting; and Map Projections and Globes. The tools include an Earth and Tectonic Globes

*Sales item. Items with no asterisk are either free print or Web publications.

file, which is provided as a printable model. The minimum system requirements include a Macintosh or compatible computer with 68020 or higher processor, 8 Mb of RAM, Apple System Software version 7.0 or later, 13-inch color monitor, CD-ROM drive, and HyperCard Player 2.2 or higher viewing software.
*18583**

Astro Kids—USGS Astrogeology Web site for kids. Take Flat Stanley's Virtual Trip to the Moon, Map a Planet, download planet pictures, and more.
astrogeology.usgs.gov/Kids/

Geology of the Conterminous United States at 1:2,500,000 Scale—A digital representation of the 1974 P.B. King and H.M. Beikman Map.
*18549**
pubs.usgs.gov/dds/dds11/

Real-Time Information

Real-Time Water Data—This Web site provides real-time hydrologic data from USGS gaging stations across the United States.
water.usgs.gov/nwis/rt

Near Real Time Earthquake List—This Web site gives the location, depth, and magnitude of recent earthquake activity around the world.
neic.usgs.gov/neis/bulletin/bulletin.html

USGS Research Site for SFPORTS—This Web site provides real-time observations for San Francisco Bay currents, tides, wind, and air temperature.
sfports.wr.usgs.gov/sfports.html

Information

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Fax: (303) 202-4693
infoservices@usgs.gov

When ordering, please include the title of the publication and the stock number that follows each publication description.

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