About.Com
October 2004

About
Geology

In the Spotlight | More Topics

from **Andrew Alden**, your **Editor and Guide**
I spent six days on the road last week and took lots of photos. Two of them are in the Landform Gallery already, so I'll point you to them plus another related one.

Last week was Earth Science Week. If I hadn't been celebrating it my own way, I would have said more about it on the About Geology site. Hope you found ways to observe our planet and feel respect, awe and curiosity about its rocks, landforms and history. For me, every week is Earth Science Week. Maybe someone you know would also like this newsletter; I'd welcome more readers.

Danville Register and Bee
Danville, Virginia
September 23, 2004

Danville Science Center previews fall activities

Restless Earth — Field Trip — For ages 6 to adult. Celebrate the end of Earth Science Week with this Pittsylvania County field trip focusing on metamorphic events in the Piedmont, including a stop in the Triassic basin digging for fossils at Cascade Virginia. DCC geology instructor Joel Gregory will be our guide. Transportation provided from the parking lot of the Womack Museum on the Danville Community College Campus. Saturday, Oct. 16, 8 a.m. to 3 p.m., $2 per person. Pre-registration required by October 14. **Information:** (434) 797-8498.

Anchorage Daily News
Anchorage, Alaska
October 11-15, 2004

COMMUNITY DATEBOOK

TODAY

SCHOOL LUNCH

Anchorage: Elementary school -- Wonder Bites with corn or egg roll with Oriental rice or chicken burrito, celery sticks, pineapple tidbits, ranger cookie, milk. Middle school -- Nachos Supreme or Teriyaki Wonder Bites with Oriental rice, celery sticks with dip, orange wedges, ranger cookie, milk.

Mat-Su: Super Beef Nachos, corn, tortilla chips, apple, choice of milk.

al.com)

Earth Science Week: The U.S. Geological Survey Earth Science Information Center is celebrating Earth Science Week through Friday. All of the Boundary Series maps will be free to the public while supplies last. There also will be a sign-up list for free Earth Science Week teachers' packets. The ESIC office is open 8:30 a.m.-4:30 p.m. in Grace Hall at Alaska Pacific University. (786-7011)

El Paso Times
El Paso, Texas
October 8, 2004

LEARNABOUTIT

Learn about dinosaurs of area at UTEP events

UTEP geology students and teachers will have several events at the campus in conjuction with national Earth Science Week. Activities will include a one hour mini-lecture on the history of the Rio Grande and Cretaceous dinosaurs in El Paso. The events will be from 1 to 3:30 p.m. Sunday, 1 to 4 p.m. Wednesday and 9 a.m. to 1:30 p.m. Oct.15 in UTEP's geology building.

Information: 747-5501.

Daily Advertiser
Lafayette, Louisiana
October 15, 2004

MILTON ELEMENTARY FIRST-GRADERS

DIG GEOLOGY

Earth Science Week brings hands-on dinosaur lesson.

Sebreana Domingue
sdomingue@theadvertiser.com

MILTON — Digging around in the sand Thursday, Julia Towry, 6, didn't find gold — but she seemed pleased nonetheless.

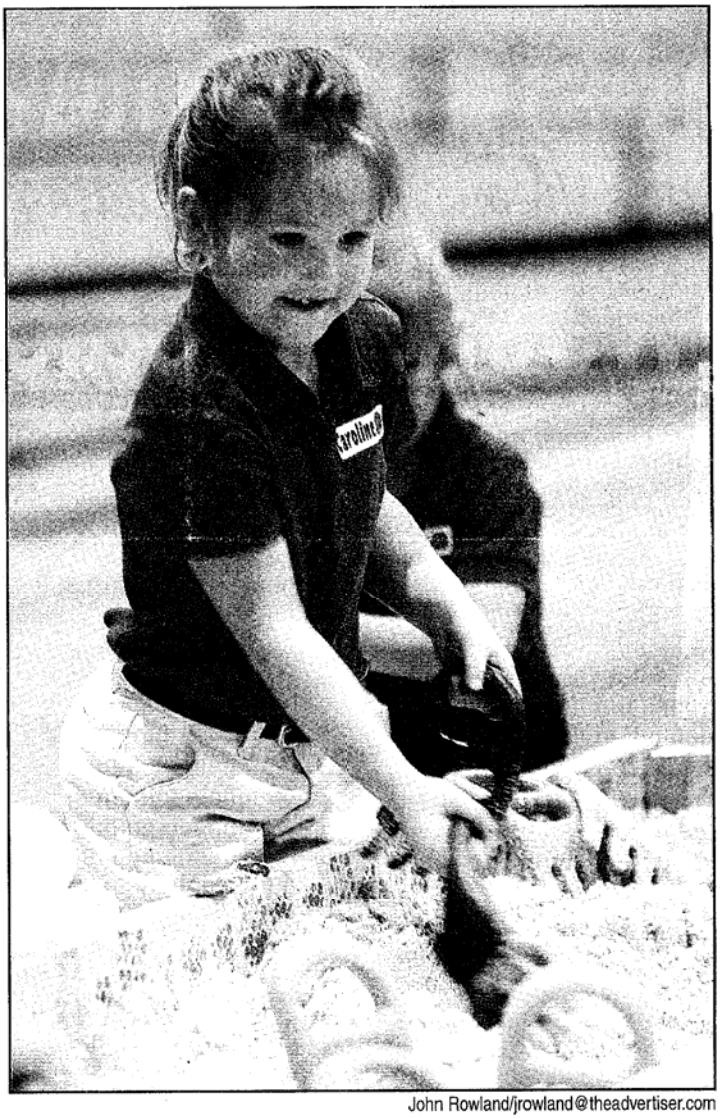
"I found this," Julia said, holding up a shiny rock. "I just got to keep two, but I like this one. It looks pretty. It is soft. I had fun digging in the sand."

One breath later, the Milton Elementary first-grader was off to learn more during the Lafayette Geological Society's Dino-Dig.

It is Earth Science Week around the nation and the Lafayette Geological Society brought in bones, fossils and model dinosaurs to help students at Milton and around Acadiana celebrate the event.

A total of 80 first-graders at Milton took part in the event, which featured a discussion of dinosaurs and a large sandbox where students could dig for minerals and fossils. They also got to see a museum exhibit and story zone, including a full-scale cast of an Allosaurus skull on loan from UL Lafayette, said Mary Broussard, a geological society representative.

Lafayette Geological Society members spent the week visiting classrooms to educate students about the earth sciences, Broussard said.



John Rowland/jrowland@theadvertiser.com

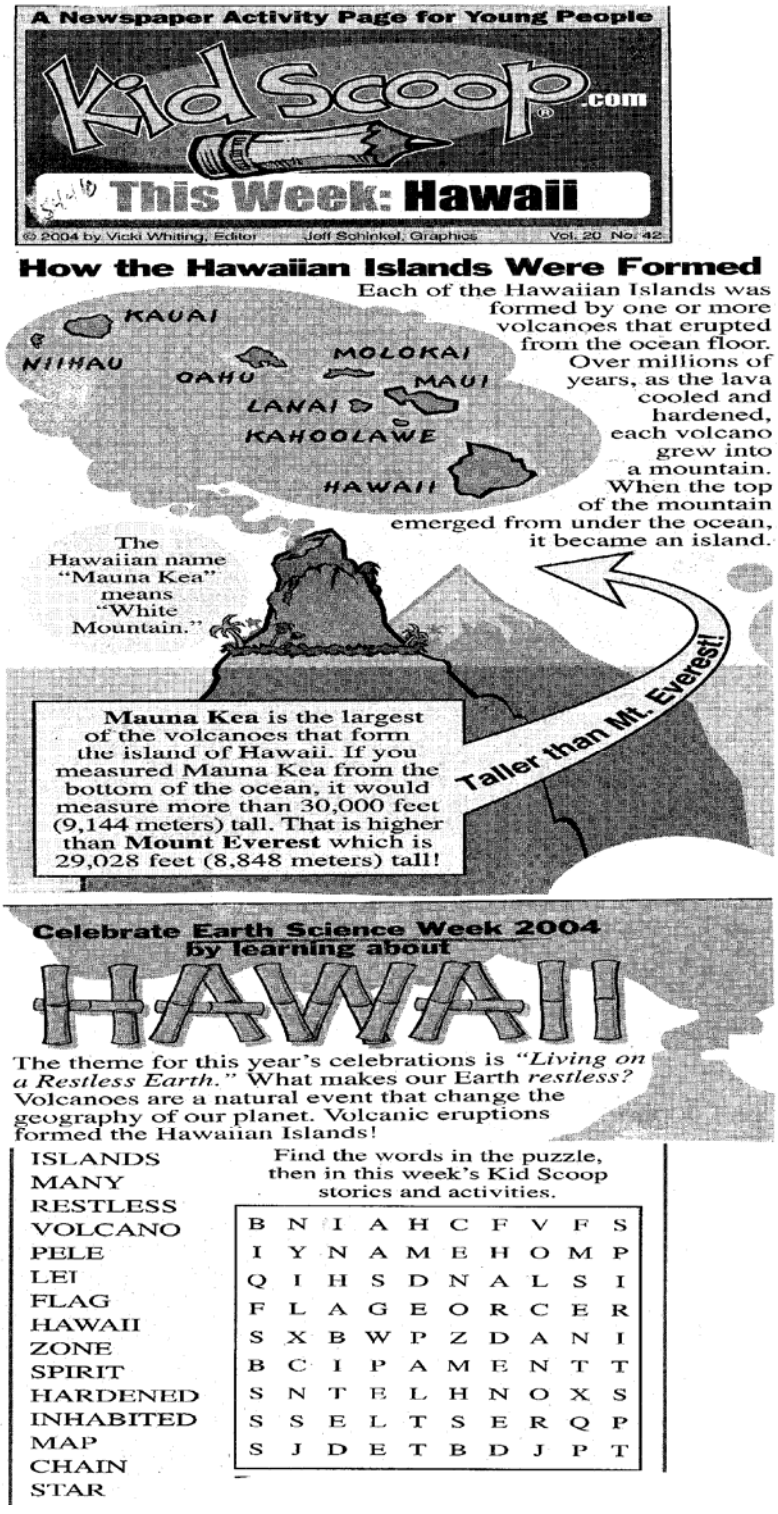
Caroline Schexnailder digs for fossils in the sand as Milton Elementary School first-graders learn about dinosaurs Thursday.

Northern Virginia Daily
Strasburg, Virginia
October 13, 2004

Advertiser News North
Vernon, New Jersey
October 14, 2004

Courier News
Bridgewater, New Jersey
October 14, 2004

Sparta Independent
Sparta, New Jersey
October 14, 2004



Index Journal
Greenwood, South Carolina
October 8, 2004

Earth Science Week noted

COLUMBIA — South Carolina Governor Mark Sanford has declared Oct. 10-16 as Earth Science Week in South Carolina.

Sanford's proclamation joins many other governors across the United States in helping the public gain abetter understanding of Earth Sciences and in encouraging stewardship of the Earth.

"Natural hazards such as earthquakes, hurricanes, tornados,volcanoes, floods, wild land fires and drought are a part of our everyday world," said Dr. Bill Clendenin, state geologist in the S. C.Department of Natural Resources' Land, Water and Conservation Division, Geological Survey in Columbia.

"This year, Earth Science Week will focus on Natural Hazards and the ways that Earth scientists study hazards in order to understand their causes and minimize their impact on society."

The mission of this national and international event, organized by The American Geological Institute in 1998, is to promote understanding and appreciation of the value of Earth science, and its applications and relevance to daily lives.

The objectives are to encourage students to discover the Earth sciences, to remind people that Earth science is all around us, and to encourage Earth stewardship through understanding, Clendenin said.

The American Geological Institute recognized that to continue to maintain a high quality of life, there was a need to develop a better understanding of the Earth — its processes, its resources, and its environment.

Only through understanding could the public come to appreciate the complex planet and how it uses its fragile, finite resources wisely. As the role of Earth science in today's society continues to grow, it is essential that everyone understand that earth science is an integral part of their lives and their children who will be the future stewards of this planet.

"Living on a restless Earth" was selected as this year's Earth Science Week theme because the dynamic processes of our planet affect our local and global communities everyday," Clendenin added.

"Hurricanes in Florida, tropical storms throughout the Southeast, floods in Pennsylvania, earthquakes in California and the eruption of Mount St. Helens volcano in Washington State are all part of those dynamic processes.

Because the Earth is made up of countless interconnected and dynamic processes, a diverse range of interrelated scientific disciplines, such as climatology, andrology, and geology, is needed to study these processes."

As part of Earth Science Week and to help encourage a better understanding of the Earth, the S. C. Department of Natural Resources' Geological Survey will offer an open house on Wednesday.

For information, contact Gary Taylor with the Department of Natural Resources' Geological Survey at (803) 896-7708 or visit the Earth Science Week Web site http://www.earthsciweek.org.

Record
Turon, Kansas
October 7, 2004

Celebrate Earth Science Week

Earth Science Week is October 10-16, 2004, with this year's theme,"Living on a Restless Earth." This week was established by the American Geological Institute to give students and citizens new opportunities to discover Earth science and to encourage stewardship of the Earth. The USGS, the nation's largest Earth science information agency, has served the nation for 125 years by providing reliable scientific information to describe and understand the Earth and enhance and protect our quality of life, and is a sponsor of Earth Science Week.

One of the most devastating events of a restless Earth are floods. In Kansas, the 1951 flood caused several deaths and billions of dollars in property damage.

Scholastic Instructor
New York, New York
October 2004

NEWS TO PERUSE

▲ Rumble and Shake
October 10–16, 2004, is Earth Science Week, an event organized by the American Geological Institute to help students and adults better understand and appreciate the earth sciences, and to encourage stewardship of our planet. This year's theme is "Living on a Restless Earth." Visit www.earthsciweek.org for more information.

Trick or Treat! ▼
A candy bar may only cost a buck, but that dollar can immunize one child in need against a deadly disease. This Halloween, encourage kids to tote a UNICEF box and collect coins along with candy. Boxes are free. Visit www.unicefusa.org, or call 1-800-4-UNICEF.

Mariposa Weekly Gazette
Mariposa, California
October 6, 2004

CSMMM celebrates Earth Science Week

In celebration of Earth Science Week, the California State Mining and Mineral Museum will host a book signing on Saturday, Oct. 9, from 2 to 4 p.m. Author Roger Freely will be signing copies of his book California's Golden Museums and Historical Places 2005-2007. Freely will also be available to answer questions about how to save California's history and help to increase travel to the state.

Freely has been interested in historical places ever since he was a young boy growing up in Southern California. During his research for the book it has came to his attention that some of museums have closed for various reasons. The book is to help people locate new and exciting places to go and learn about the history of California.

Earth Science Week celebrates the earth, the science of studying the earth and its processes, and the scientists that study the planet. Get in the Earth Science Week spirit with a visit to the earth's treasures at the Mining and Mineral Museum. The Mining and Mineral Museum State Park is located on the Mariposa County Fairgrounds, two miles south of Mariposa on Highway 49. The museum is open from 10 a.m. to 4 p.m., Wednesday through Monday, and is closed Tuesdays.

Mountain Times
Killington, Vermont
October 7, 2004

"Living on a Restless Earth" is Poster Contest Theme

Vermont students are invited to celebrate Earth Science Week, October 10-16, by participating in the 2004 Earth Science Week Poster Contest. The contest is designed help students explore this year's Earth Science Week theme of "Living on a Restless Earth."

Poster entries should reflect how our life in Vermont is affected by the restless nature of our planet every day. Suggestions for working with this theme include a study of natural disasters as they occur in Vermont-landslides, earthquakes, drought, and floods. Or, identify how the restless nature of our world here in Vermont has shaped our state from under the earth, past and present, through natural occurrences such as glaciers. Another is discussing the importance of the role minerals found in the state play in treating modern-day, man-made hazards - for example, using limestone (crushed marble) to treat the effects of acid rain.

The contest is open to all Vermont Students, grades K-12. The deadline for entry submission is October 6, 2004. Twelve winners will be chosen, plus a "People's Choice" winner and a teacher/coordinator prize. A 2005 calendar will be produced after the contest using the winning posters. Prizes will be awarded at a special ceremony on October 16, 2004, at OMYA's Middlebury Quarry Open House.

The contest is sponsored by OMYA Industries Inc., The Vermont Geological Society, and the Vermont Marble Museum. For poster contest guidelines and additional information, please contact Cathy Miglorie, OMYA Industries Inc. at (802) 770-7465 or cathy.miglorie@omya.com.

AAPG Explorer
Tulsa, Oklahoma
September 2004

Earth Science Week Set for Oct. 10-16

Earth Science Week 2004 will take place Oct. 10-16, celebrating the theme "Living on Restless Earth."

ESW, an annual event that spotlights the geosciences and their importance to the public, is organized each year by the American Geological Institute, with support from the U.S. Geological Survey and the AAPG Foundation.

This year, events will take place in all 50 states and in many countries worldwide. Many AAPG societies are planning local events. Students, educators, museums, national and state parks, and other geoscience groups will be focusing their attention on natural hazards as they participate in ESW.

AGI also is producing an Earth Science Week kit filled with materials about this year's theme for school or home use for students of all ages.

Posters, lithographs, fact sheets and activities are just some of the things that can be found in this year's kit. See www.earthsciweek.org for more information.

Moscow/Hamlin Villager
Moscow, Pennsylvania
October 13, 2004

Teachers And Studnts Participating In Earth Science Week

As teachers and students across the country celebrate this year's Earth Science Week from Oct. 10 to 16, the Department of Conservation and Natural Resources' is once again offering "Pennsylvania Rock Hound" kits for a nominal fee to schools and students across the Commonwealth.

"These kits help students discover Pennsylvania's geologic variety and its importance to discovering our history," said DCNR's Bureau of Topographic and Geologic Survey Director Jay Parrish. "They bring geology into the classroom and give teachers invaluable teaching tools and plans for expanding the understanding of earth sciences."

These kits include rocks and other educational materials designed specifically for the state. More than 300 kits already have been distributed to the Philadelphia School District through a partnership among DCNR, the Pennsylvania Department of Education and the Pennsylvania Aggregates and Concrete Association.

Kits are also being offered to teachers who attend workshops sponsored by the PDE and DCNR. Seventy-five teachers will participate in a seminar at DCNR's Middletown offices, Saturday, Oct. 16. Teachers will learn about the kits, develop lesson plans and take a local geological study field trip. In addition, they will be given materials to assemble 30 classroom boxes for students.

Parent Teacher Associations may purchase classroom kits, which require assembly, for $30. Complete, pre-made kits also are available to the public for $19.95 by mail.

For more information on DCNR's Bureau of Topographic and Geologic Survey, Earth Science Week or to inquire about a "Pennsylvania Rock Hound" kit, call (717) 702-2047, or visit www.dcnr.state.pa.us/topogeo.

NSTA Reports
Arlington, Virginia
July 2004

Plan Now for Your Earth Science Week Celebration

"Living on a Restless Earth," the theme of this year's Earth Science Week, offers an ideal teaching opportunity to get your students excited about dynamic processes that affect our Earth and that may even affect their community.

Taking place during October 10–16, Earth Science Week will focus on the science of natural hazards and mitigation of their effects on society. The global community is affected by the restless nature of the planet every day. What hazards could your area potentially face?

The American Geological Institute and the main Earth Science Week sponsor, the U.S. Geological Survey, are working with the American Association of Petroleum Geologists Foundation, the National Park Service, and such new partners to Earth Science Week as NASA, NOAA, and the National Weather Service to plan and produce materials and resources for teachers, geoscientists, and the public. 2004 Earth Science Week information kits, which cost $4.95, include posters, bookmarks, classroom activities, and interactive CDs—suitable for elementary through college—that can help you plan your own Earth Science Week celebration.

See www.earthsciweek.org for more information, to order a kit, and to subscribe to a free Earth Science Week newsletter. The website has been updated with new information and theme-based resources about natural hazards, including earthquakes, volcanoes, hurricanes, tornadoes, dust storms, floods, and forest fires. New classroom activities are added to the Teacher Resources every week.

Science and Children
Arlington, Virginia
September 2004

Earthquakes, volcanoes, and other natural disasters are fascinating and frightening, but they can also be valuable tools for teaching your students about Earth science. Earth Science Week 2004 (October 10–16) will focus on the science of natural hazards and their effects on society. This theme offers an opportunity to get your students excited about the dynamic processes that affect our Earth and that may even affect their community. Participating in Earth Science Week can also help promote a better understanding and appreciation for Earth science professions.

Act fast to order an Educators' kit containing a teachers' guide (with classroom activities and ideas for getting involved), an Earth Science Week poster and bookmark, a compact disk of North America data and accompanying classroom activities, and additional Earth science educational materials appropriate for classroom or home use. For more information, go to *www.earthsciweek.org*. You can also subscribe to a free newsletter, The Earth Science Week Update, by sending an e-mail to *info@earthsciweek.org* with the word "subscribe" in the subject line.

News
Kingstree, South Carolina
October 13, 2004

Gov. Sanford declares Oct. 10-16 Earth Science Week

South Carolina Gov. Mark Sanford had declared Oct. 10-16 as Earth Science Week in South Carolina.

Sanford's proclamation joins many other governors across the United States in helping the public gain a better understanding of Earth Sciences and encouraging stewardship of the Earth.

"Natural hazards such as earthquakes, hurricanes, tornados, volcanoes, floods, wild land fires and drought are a part of our everyday world," said Dr. Bill Clendenin, state geologist in the S.C. Department of Natural Resources (DNR) Land, Water and Conservation Division, Geological Survey in Columbia.

"This year, Earth Science Week will focus on Natural Hazards and the way that Earth Scientists study hazards in order to understand their causes and minimize their impact on society," Clendenin added.

As part of the celebration of Earth Science Week and to help encourage a better understanding of the Earth, the South Carolina Department of Natural Resources Geological Survey will be offering an open house on Wednesday, Oct. 13.

Individuals are encouraged to come by the Geological Survey offices at 5 Geology Road off Broad River Road in Columbia (turn off Broad River Road northwest of I-20, behind the South Carolina Criminal Justice Academy) and visit with a geologist.

Displays, posters and informational CDs will be available to help individuals and students better understand the Earth.

For more information, contact Gary Taylor with the South Carolina Department of Natural Resources' Geological Survey in Columbia at (803) 896-7708 or visit the Earth Science Week website at http://www.earthsciweek.org.

The mission of Earth Science Week, a national and international event organized by The American Geological Institute in 1998, is to promote understanding and appreciation of the values of Earth science and its applications and relevance to our daily lives. The objectives are to encourage students to discover the Earth sciences, to remind people that Earth science is all around us, and to encourage Earth stewardship through understanding, Clendenin said.

The American Geological Institute recognized that to continue to maintain a high quality of life, there was a need to develop a better understanding of the Earth – its processes, its resources and its environment. Only through understanding could the public come to understand and appreciate our complex planet and how it uses its fragile, finite resources wisely. As the role of earth science in today's society continues to grow, it is essential that everyone understand that Earth science is an integral part of their lives and their children who will be the future stewards of this planet.

"'Living on a restless Earth' was selected as this year's Earth Science Week theme because the dynamic processes of our planet affect our local and global communities everyday," Clendenin said. "Hurricanes in Florida, tropical storms throughout the Southeast, floods in Pennsylvania, earthquakes in California and the eruption of Mount St. Helens volcano in Washington State are all part of those dynamic processes. Because the Earth is made up of countless interconnected and dynamic processes, a diverse range of interrelated scientific disciplines, such as climatology, hydrology and geology, is needed to study these processes."

Masontown Sentinel
Masontown, Pennsylvania
October 14, 2004

DCNR Celebrates Earth Week With Pennsylvania Rockhound Kits

As teachers and students across the country celebrate this year's Earth Science Week from Oct. 10-16, the Department of Conservation and Natural Resources' is once again offering "Pennsylvania Rock Hound" kits for a nominal fee to schools and students across the Commonwealth.

"These kits help students discover Pennsylvania's geologic variety and its importance to discovering our history," said DCNR's Bureau of Topographic and Geologic Survey Director Jay Parrish. "They bring geology into the classroom and give teachers invaluable teaching tools and plans for expanding the understanding of earth sciences."

These kits include rocks and other educational materials designed specifically for the state. More than 300 kits already have been distributed to the Philadelphia School District through a partnership among DCNR, the Pennsylvania Department of Education and the Pennsylvania Aggregates and Concrete Association.

Kits are also being offered to teachers who attend workshops sponsored by the PDE and DCNR. Seventy-five teachers will participate in a seminar at DCNR's Middletown offices, Saturday, Oct. 16. Teachers will learn about the kits, develop lesson plans and take a local geological study field trip. In addition, they will be given materials to assemble 30 classroom boxes for students.

Parent Teacher Associations may purchase classroom kits, which require assembly, for $30. Complete, pre-made kits also are available to the public for $19.95 by mail.

This year's theme, 'Living on Restless Earth,' will focus on developing a new understanding of earth science and its impact on the state's economy and society. The week is part of the American Geological Institute's (AGI) yearly focus on geology and related subjects. National Earth Science Week is a national initiative.

For more information on DCNR's Bureau of Topographic and Geologic Survey, Earth Science Week or to inquire about a "Pennsylvania Rock Hound" kit, call (717) 702-2047, or visit www.dcnr.state.pa.us/topogeo.

Rolla Daily News
Rolla, Missouri
October 11, 2004

Steve Mahfood, Director of the Missouri Department of Natural Resources (MoDNR), and Mimi Garstang, State Geologist and Division Director of MoDNR's Geological Survey and Resource Assessment Division, hold Governor Holden's Proclamation proclaiming the week of Oct. 10-16th as Earth Science Week.

Governor proclaims this to be Earth Science Week

Gov. Bob Holden has declared the week of October 10, Earth Science Week to bring awareness to the fact that earth sciences are fundamental to the health, safety and welfare of all Missourians. The Missouri Department of Natural Resources notes how crucial earth sciences are to environmental and ecological issues, as well as, integral to finding, developing and conserving the energy, mineral and water resources needed for Missouri's continued prosperity.

Every October, states across the nation join forces to bring earth sciences to the forefront. The geologists, hydrologists, engineers and land surveyors with the department's Geological Survey and Resource Assessment Division (GSRAD) encourage schools to highlight earth science as a career choice and demonstrate the benefits earth sciences bring to the community.

For more information, GSRAD offers fact sheets, maps, trading cards, and a wide variety of publications on topics such as rocks, minerals, and fossils. The division's publications desk in Rolla can be reached by calling (573) 368-2125 or (800) 361-4827. Also visit GSRAD's Website at: www.dnr.mo.gov/geology.

For news releases on the Web, visit www.dnr.mo.gov/newsrel. For a complete listing of the department's upcoming meetings, hearings and events, visit the department's online calendar at www.dnr.mo.gov/oac/calendar.htm.

Post and Courrier
Charleston, South Carolina
October 7, 2004

Next week, Oct. 10-16, is Earth Sciences Week in South Carolina by proclamation of Gov. Mark Sanford.

This year, the week will focus on Natural Hazards... earthquakes, hurricanes, tornadoes, volcanoes, floods, wildfires and drought. Current reference points are Florida, still trying to reason with hurricane season, and Washington state, where Mount St. Helens has been blowing off steam.

GET OUT OF THE WAY! is not the only thing earth scientists have to say about these hazards.

The point of Earth Sciences Week, organized by The American Geological Institute in 1998 as a national and international event, is to remind people that earth science is all around us and to encourage them to live gently in stewardship of the Earth.

" 'Living on a restless Earth' was selected as this year's Earth Science Week theme because the dynamic processes of our planet affect our local and global communities every day," said Dr. Bill Clendenin, state geologist in the S.C. Department of Natural Resources' Land, Water and Conservation Division, Geological Survey in Columbia.

For more information, see **www.earthsciweek.org.**

Washington Post
Washington, DC
October 12, 2004

TODAY'S NEWS

Ah, Contrails!

This is Earth Science Week and the folks at NASA and GLOBE, an international student science program, have a project in mind.

The groups would like science teachers all over the country to take their students outside on Thursday and Friday to count contrails in the sky. Contrails are streams of water vapor that sometimes form behind airplanes.

Contrails increase cloudiness, which ultimately affects Earth's climate and natural resources. That's why the space agency and GLOBE want to study them.

For infomation on the contrail count, visit the Web site *www.globe.gov/earthsciweek2004*.

BY ANDY CLARK—REUTERS

Contrails from jets leave their mark over Mount St. Helens in Washington state.

Deadly News for Potter

Attention HP fans: Do you want the good news or the bad news?

We'll start with the good: "Harry Potter and the Half-Blood Prince" will be in bookstores next year (no word yet on which month, but we're betting on another summer release).

The bad news: J.K. Rowling said on her Web site (*www.jkrowling.com*) that she will kill off another character in Book 6 of her series about the young wizard. Of course, she didn't say who dies.

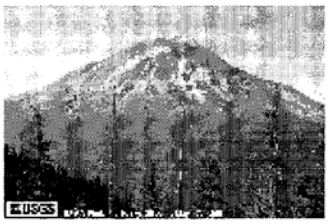
WRITE: KIDSPOST, THE WASHINGTON POST, 1150 15TH ST. NW, WASHINGTON, D.C. 20071. ■ E-MAIL US AT KIDSPOST@WASHPOST.COM ■ FAX US AT 202-496-3780. PLEASE INCLUDE YOUR NAME

The Sentinel (continued on next page)
Prince George's, Maryland
October 7, 2004

The Restless Earth -

Mount St. Helen's is about ready to blow it's top again!

Mount St. Helens is located in southwestern Washington State, about 50 miles northeast of Portland, Oregon. It is in the Cascade Range of mountain. It was named in 1792 in honor of the Baron St. Helens. American Indians of the Pacific Northwest called it "Louwala-Clough" or "smoking mountain." The volcano was active in the mid-1800s, but most people in this century did not see it as a menace. In fact, the mountain was snow-covered and very beautiful. The forest on it and around the base was filled with wildlife. At the base of the volcano was Spirit Lake, a clear mountain lake that was very good for fishing and boating.



BEFORE/AFTER #1 (top): Mount St. Helens on May 17, 1980, one day before the devastating eruption. The view is from Johnston's Ridge, six miles northwest of the volcano. BEFORE/AFTER #2 (below): Mount St. Helens four months after the eruption, as viewed from Johnston's Ridge. – USGS Photos by Harry Glicken

In the spring of 1980, everything changed. First, there was a series of earthquakes and then came one or maybe two thunderous explosions. Mount St. Helens began to spew forth ash and steam. Two craters formed on the volcano and there were avalanches of snow and ice, darkened by ash. Over the next two months, the volcano continued to be active, simmering almost like a pot boiling on a stove. Then on May 18, 1980, the volcano suddenly erupted. Part of the volcano collapsed and became a huge landslide that eventually covered an area of about 24 square miles. There was also a release of pent-up pressure form within the volcano. There was a huge blast of rock, ash and hot gases that devastated an area of about 230 square miles north of the volcano. To the south, the devastated area was much less. Scientists have calculated the blast started at about 220 miles per hour but increased to about 670 miles per hour. The blast was heard as far away as Montana, Idaho, Canada and California.

The eruption cost 57 lives and many injuries. Many buildings were buried and more than 200 houses and cabins were destroyed. Many tens of thousands of acres of prime forest, as well as recreational sites, roads and trails were destroyed or heavily damaged. More than 185 miles of highway and roads were destroyed or extensively damaged. Four billion board feet of timber was damaged or destroyed and many animals, including deer, elk and bear were killed. Many small animals, such as rodents, frogs and crawfish managed to survive because they were below ground level or water surface. While the ash destroyed many crops in the area, the ash may provide beneficial chemical nutrients to the soil in the future.

Activities

In 1980 the eruption at Mt. St. Helen's coated towns 250 miles away with ash. What major towns are within 250 miles of your school?

Make your own predictions about when the big eruption will occur. Maryland doesn't have a volcano to worry about. There are other natural disasters we are susceptible to from *Our Restless Earth*. List them.

Compare a soda bottle to a magma chamber. When soda is opened it fizzes because the gasses are escaping. Shake a soda bottle and open it (in a bowl or basin). The soda will "erupt" when the cap is suddenly removed. When the avalanche was triggered on Mount St. Helens the "cap" was taken off allowing the volcanic gasses to erupt.

Mount St. Helens information courtesy of
U.S. Geological Survey/Department of the Interior.

A volcano is a mountain that opens downward to a pool of molten rock below the surface of the earth. When pressure builds up, eruptions occur. Gases and rock shoot up through the opening and spill over or fill the air with lava fragments. Eruptions can cause lateral blasts, lava flows, hot ash flows, mudslides, avalanches, falling ash and floods. Volcano eruptions have been known to knock down entire forests. An erupting volcano can trigger tsunamis, flashfloods, earthquakes, mudflows and rockfalls.

Facts

More than 80 percent of the earth's surface is volcanic in origin. The sea floor and some mountains were formed by countless volcanic eruptions. Gaseous emissions from volcano formed the earth's atmosphere.

The May 18, 1980 eruption of Mount St. Helens in the Cascade Range of Washington State happened after more than 100 years of dormancy (a time when the volcano was "asleep.") When the volcano erupted, it took the lives of 58 people and caused $1.2 billion in damage.

There are more than 500 active volcanoes in the world. More than half of these volcanoes are part of the "Ring of Fire,"a region that encircles the Pacific Ocean.

Crater Lake in Oregon formed from a high volcano that lost its top after a series of tremendous explosions about 6,600 years ago.

Disaster Supply Kit

from the FEMA/American Red Cross
Disaster Preparedness Coloring Book

* A first aid kit
* Battery-operated radio
* Work gloves
* Flashlights
* Extra batteries
* Non-perishable food items; crackers, cookies, trail mix
* Plastic trash bags
* Other items as your school requires.
* One gallon of water per person per day
* Non-perishable food: ready-to-eat canned meats, fruits and vegetables; canned juices, milk and soup; sugar, salt and pepper; high energy foods such as peanut butter, jelly, crackers, nuts, health food bars, trail mix; comfort foods such as cookies, hard candy and sweetened cereal. Don't forget a non-electric can opener.
* A first aid kit that contains your family's prescription medications (ask your doctor about proper ways to store medicine)
* Emergency supplies and tools including a battery operated radio, flashlight and plenty of extra batteries
* One change of clothing and footwear per person, and one blanket or sleeping bag per person
* Sanitation supplies: toilet paper, soap, personal hygiene items
* Special items for infant, elderly or disabled family members
* An extra set of car keys and cash, traveler's checks and a credit card

Science Scope (Continued on following pages)
Arlington, Virginia
October 2004

NATURAL HAZARDS in Your Community:

Celebrating Earth Science Week

5440

by Cindy Martinez and Andrea Martin

The Earth is a powerful, active, and ever-changing planet. Earthquakes and volcanoes reshape the Earth's crust with sudden bursts of movement or with eruptions that last decades. Powerful storms develop in the swirling atmosphere, creating cumulonimbus thunderclouds, lightning storms, and even tornadoes or hurricanes. Geological features and moist air conspire to cause floods in one region, and drought in another. Full of drama and majesty, these events remind us of the extraordinary power of our changing Earth.

Thanks to the hard work of Earth scientists, we can forecast and prepare for natural hazards in order to minimize their effects on our daily lives. In celebration of the efforts of Earth scientists to help society understand the forces of nature that shape our planet, Earth Science Week will be held from October 10–16, 2004. The theme this year will be Living on a Restless Earth, focusing on natural hazards and mitigation of their effects.

Earth Science Week was established by the American Geological Institute in 1998 to raise awareness of the Earth sciences and their importance to society. During Earth Science Week, geoscientists work with students and the general public to help them discover the Earth sciences and become engaged in scientific exploration. Teachers and students explore Earth science with activities and experiments or by having scientists visit their classrooms. This year, people around the globe will be participating in Earth Science Week 2004 to learn more about natural hazards and what they can do to prepare for their effects.

The Earth Science Week poster included in this month's issue of *Science Scope* can get you started. The activity on the back of the poster explains how middle school students can explore natural hazards in their local communities. You can visit the Earth Science Week website (*www.earthsciweek.org*) for links to more classroom activities that are keyed to the *National Science Education Standards*, or for information about Earth Science Week events planned in your area.

***Cindy Martinez** is the Manager of Outreach Programs and **Andrea Martin** is the Outreach Programs Assistant at the American Geological Institute.*

The American Geological Institute, in cooperation with the U.S. Geological Survey, NASA, and local geological organizations, will also be distributing Earth Science Week information kits. The kits are full of fantastic resources for teachers, including classroom activities, informative posters, and stunning fact sheets and lithographs that relate to the theme, Living on a Restless Earth. The kits are available from the American Geological Institute for $4.95 to cover shipping and handling. For more information or to order a kit, please contact *pubs@agiweb.org*.

Hazards in brief

There are many types of natural hazards. Some hazards are caused by heat and motion in the interior of the Earth. Others are formed by movement of air and water in the atmosphere. Each type of hazard has different causes, and also different risks.

What hazards could affect your area? The types of hazards that could affect your community depend on your location and the geology where you live. For example, if you live near the coast, your community might have to worry about coastal hazards such as hurricanes and tsunamis. If you live near a river, you might be concerned about flooding. It is important to know what hazards may happen near you so that you can prepare for them and keep yourself and your home safe.

Hazards in the geosphere

Earthquakes

An earthquake is a sudden motion or shaking of the Earth caused by the abrupt release of slowly accumulating strain. The Earth's tectonic plates shift past, over, and under one another, sometimes getting "stuck" along their boundaries. An earthquake occurs as the two plates suddenly break free.

There are 500,000 detectable earthquakes in the world each year. Only 100,000 of these can be felt, and only about 100 cause damage. Many places in the world are prone to having earthquakes, such as southern California in the United States. To prepare for earthquakes, the residents of southern California design buildings that are strong enough to withstand shaking of the ground. They keep disaster preparation kits ready, including water and food, in case the shaking causes power and water lines to be disrupted.

Earth scientists use a machine called a seismograph to measure the size and location of earthquakes. The magnitude, or size of an earthquake, is usually reported on a scale called the "Richter scale." For example, the Northridge earthquake that shook the greater Los Angeles area in 1994 was a magnitude 6.7 on the Richter scale. The amount of damage to human property and life that can be caused by an earthquake depends not only on its size, but also on its location. Earthquakes cause much more damage when they occur in heavily populated and developed areas than when they occur far from cities.

Volcanoes

A volcano is a vent in the surface of the Earth through which magma and gases erupt. Volcanic eruptions are among the Earth's most powerful and destructive forces, but volcanoes are also creative forces. The Earth's first oceans and atmosphere formed from the gases given off by volcanoes. Volcanoes have also shaped the Earth's landscape, as many of our mountains, islands, and plains have been built by volcanic eruptions.

There are several different types of volcanoes. The three major categories of volcanoes are cinder cone, shield, and composite. Cinder cones are the most basic type of volcano. They are created by hardened lava being erupted from a single opening. The rock fragments that form during the eruption fall and create a cone-like structure. These volcanoes are rarely over 300 meters tall. Composite volcanoes are built by alternating layers of rock, ash, and lava flows. These steep-sided volcanoes can be over 2,400 meters tall. Composite volcanoes can be found in the Pacific Northwest region of the United States. Shield volcanoes, the type found in Hawaii, are formed mainly by lava flows. Layer after layer of lava creates a shallow-sided mound that forms a shield volcano.

The most important way to be prepared for a volcano eruption is to have an evacuation plan. Mud flows and volcanic ash are just two of the dangers that volcanoes pose to life and property. It is important to get out of the area as fast as possible to keep safe from these hazards. Scientists can predict within several weeks when a volcano will erupt. Small earthquakes or changes in the shape or temperature of a volcano may signal that an eruption will happen. This allows scientists to recommend that people evacuate the area threatened by a volcanic eruption.

Landslides

Landslides occur when rocks, soil, and debris slide or fall down a slope. They may move slowly, advancing only inches per day, or may move rapidly, destroying everything in their paths. Landslides may be caused by heavy rainfall or snow melt saturating the ground with water. They may be the result of over-steepening of a slope due to erosion, or of deforestation by wildfires causing the slope to become unstable. Earthquake shaking and volcanic eruptions can trigger landslides.

Landslides constitute a major geologic hazard because they are widespread, occurring in all 50 states, and because they cause $1–2 billion in damages and more than 25 fatalities on average each year. They pose serious threats to highways and structures that support fisheries,

snow storms are dangerous! All thunderstorms produce lightning, which kills more people than tornadoes do each year. Thunderstorms can also cause heavy rain, flash flooding, hail, strong winds and tornadoes.

In cold weather, blizzards and snowstorms cause accumulations of snow that can collapse rooftops, disrupt emergency and medical services, and immobilize communities. The strong winds often associated with a blizzard can create drifts that block access to roads and buildings. The wind combined with cold temperatures creates dangerous wind chill conditions that can lead to frostbite and hypothermia. In extremely flat areas, such as the Midwest, it is not uncommon to have wind chill temperatures in excess of –50° C. In the mountains, heavy snows can lead to avalanches.

Tornadoes

A tornado is a violently rotating column of air extending from a thunderstorm to the ground. The most violent tornadoes are capable of tremendous destruction, with wind speeds of 400 kph or more. Damage paths can be in excess of 1.6 km wide and 80 km long. In an average year, about 1,000 tornadoes are reported across the United States, resulting in 80 deaths and over 1,500 injuries.

Tornadoes can occur at any time of the year, but tornado season is considered to be March through May. Meteorologists can tell what areas are at risk by monitoring the atmosphere using tools such as Doppler radar and forecast models.

It is important to be informed of the weather to stay prepared for a tornado. Knowing that your area is at risk can keep you safe. Have a designated safe area to go to should a tornado warning be put into place. Other hazardous weather is often associated with tornadoes, including flash flooding and lightning.

Hurricanes

Hurricanes are tropical storms that have a sustained wind speed greater than 120 kph. They can deliver intense rainfall and record flooding. An average of 10 tropical storms develop in the Atlantic Ocean, Caribbean Sea, or Gulf of Mexico each year. Of these, an average of six become hurricanes. In the western North Pacific, hurricanes are called typhoons, and similar storms in the Indian Ocean are called cyclones.

When hurricanes come on to land, they can cause strong winds, heavy rain, and large waves, called "storm surge." The National Hurricane Center, which is part of the National Weather Service and the National Oceanic and Atmospheric Administration, tracks hurricanes. They issue warnings to coastal communities that hurricanes are on their way so that people can be evacuated and property can be protected.

Scientists study the strength and movement of hurricanes using satellite images, and measurements of wind, pressure, temperature and dew point taken by aircraft. Planes may also drop instrumented "sondes" that fall through the hurricane to the surface measuring atmospheric conditions. The data collected by the sondes is radioed back to the aircraft and used to evaluate the hurricane's strength.

Dust storms

Dust storms occur in arid or semi-arid environments, where poor soil conservation and drought conditions contribute to the wind erosion of topsoil. Thunderstorms and associated warm air lift the dust particles into the atmosphere. The accumulated dust cloud can be transported thousands of miles over oceans and across continents. For example, dust from the Asian continent can cause reduced visibility as far away as Death Valley, California.

Dust storms can cause reduced air quality and visibility. This can affect human health and transportation, both on land and in the air. Dust storms can also affect the ecology of areas far away from their source. For example, millions of tons of Saharan dust travel from the African continent towards North America annually. This dust contaminates the water of the western Atlantic Ocean, causing "red tide" algae growth. Red tides can affect fishing, aquaculture, and human health in coastal communities.

Hazards in the biosphere

Wildfires

Wildfires are uncontrolled fires that occur in forested or other vegetated areas. They are often caused by lightning strikes or by people. Fires pose great threat to human life and property, particularly when fires move into developed areas. Wildfires also leave the landscape vulnerable to other hazards such as landslides or flooding.

Wildfires are part of a natural process. There is evidence in the geologic record that they were occurring thousands of years ago. Suppressing wildfires is now recognized to have created a larger fire hazard than letting them burn, as live and dead vegetation accumulates in areas where fire has been prevented. Controlled burning of vegetated areas can reduce this risk.

To prevent the risk of wildfires, remember to always burn fires away from vegetation and to have a way to extinguish your fire rapidly. Never burn during dry seasons when the risk of rapid-fire growth is the highest. If a wildfire is approaching your area be prepared to evacuate. Fire moves very quickly so it is important to have an evacuation plan in place for you and your family. To help protect your property be sure to keep your lawn clear of all dead vegetation and prune your trees and shrubbery away from your home.