



Deserts: Geology and Resources

ONLINE EDITION



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FIRST ROW: Granite Mountain in the Great Basin Desert (photograph by Terrence Moore).

SECOND ROW: Zabriskie Point in Death Valley, California; Sonoran Desert (photographs by Peter Kresan).

THIRD ROW: Artists Point in Monument Valley (photograph by Peter Kresan); Death



Valley, California (photograph by Cecil Stoughton).

FOURTH ROW: Cacti in the Sonoran Desert (photograph by John Olsen).

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M 6.3, 262km ESE of Sola, Vanuatu Wednesday, March 05, 2014 09:56:58 UTC

M 6.5, 110km NW of Nago, Japan Sunday, March 02, 2014 20:11:22 UTC

M 6.2, 23km WSW of Jiquilillo, Nicaragua Sunday, March 02, 2014 09:37:56 UTC

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Videographer: Don Becker
(12/17/2013 | Length: 7:33)

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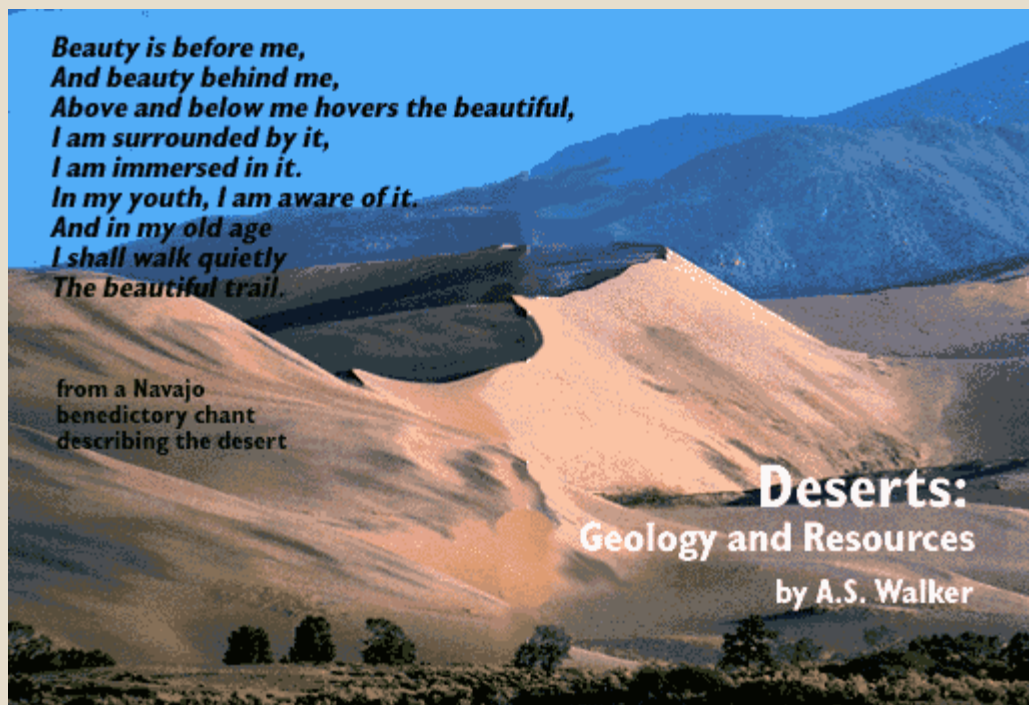
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[Photograph by John Keith]

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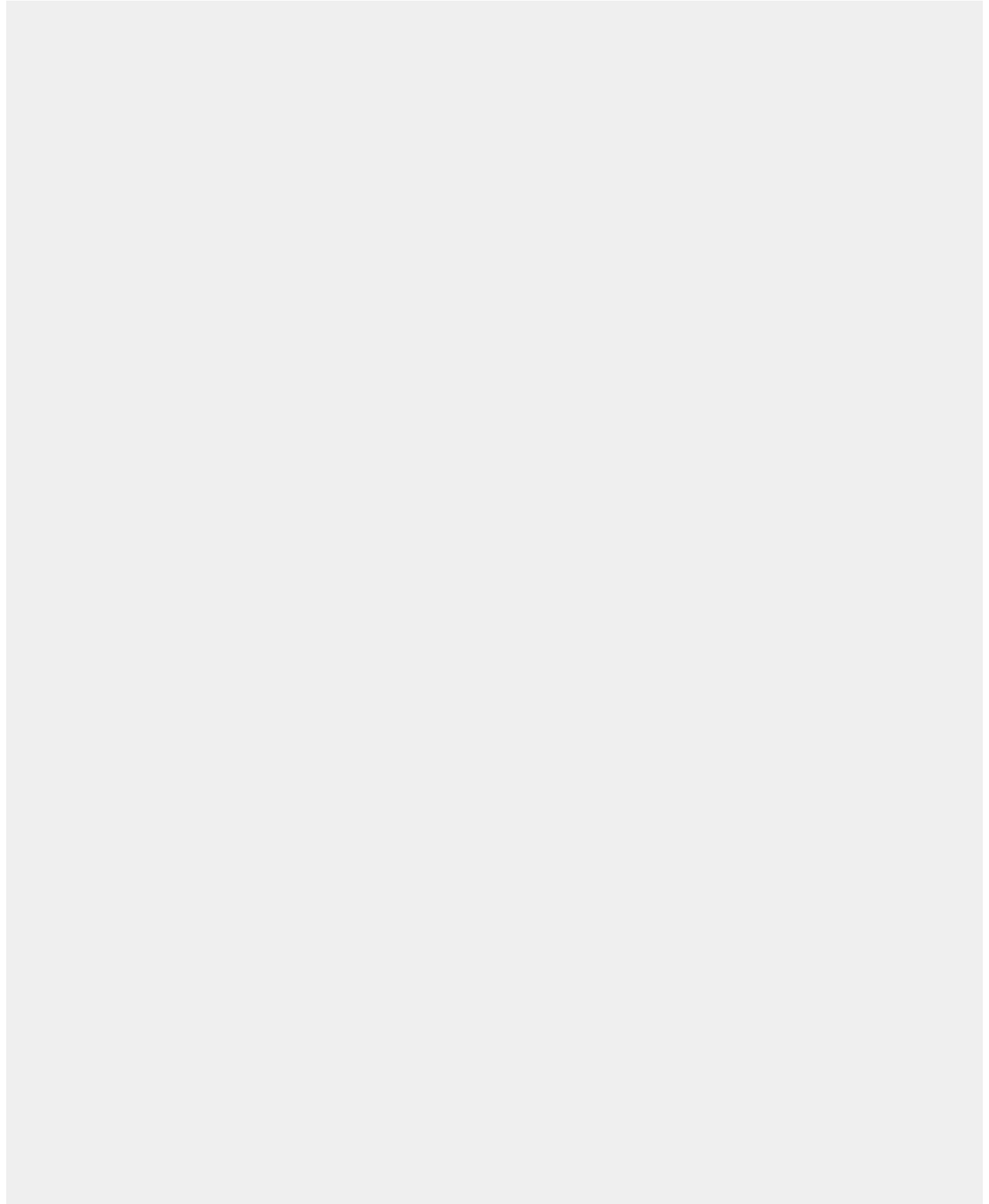
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Measuring Snow Water Content



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Title: Measuring Snow Water Content

Description:

USGS hydrologic technician Jim Caldwell uses an aluminum tube and scale to measure snow depth, snow water content and snow density as part of the Maine Cooperative Snow Survey. This survey is conducted throughout Maine in the spring to aid in the evaluation of flood potential by the Maine River Flow Advisory Commission.

Location: ME, USA

Date Taken: March 2014

Photographer: [Charlie Culbertson](#), USGS

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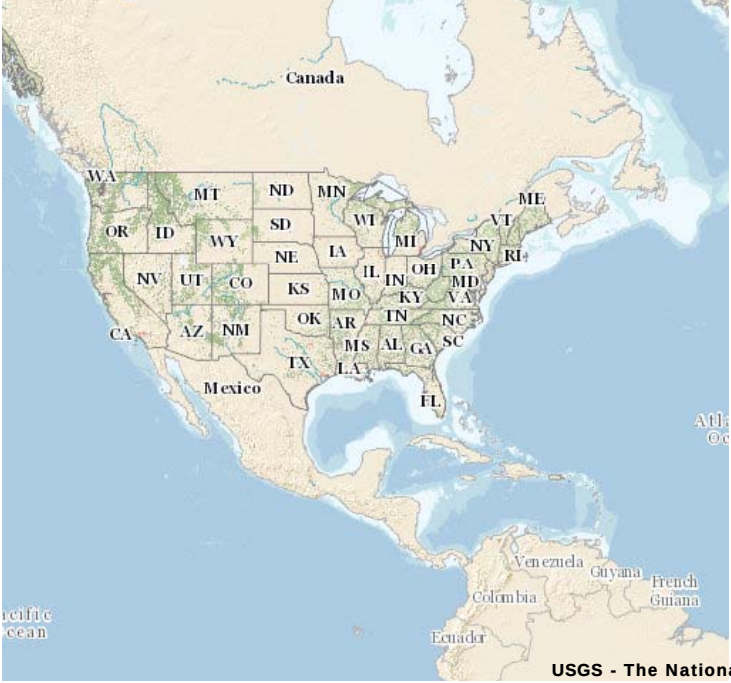
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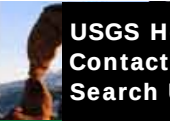
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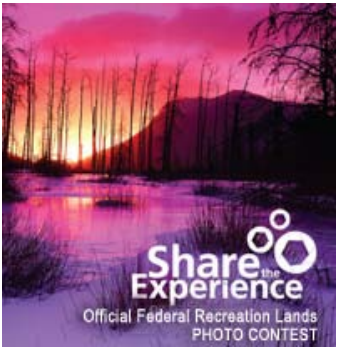
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About your Annual Pass

- Valid for one full year from month of purchase (through last day of that month).
- Allows pass owner and accompanying passengers in a single, private, non-commercial vehicle to enter Federally operated recreation sites across the country.
- Covers the pass owner and three (3) accompanying adults age 16 and older at sites where per person entrance fees are charged. No entry fee charged for children 15 and under.
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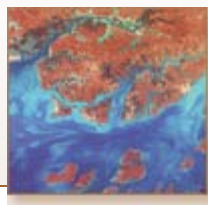
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Natural Hazards Mission Programs & Activities

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Natural Hazards

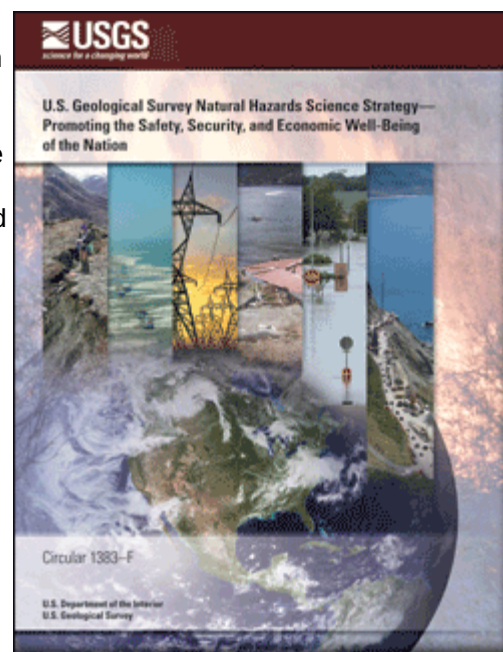
Every year in the United States, natural hazard events threaten lives and livelihoods, resulting in deaths and billions of dollars in damage. The USGS works with many partners to monitor, assess, and conduct targeted research on a wide range of natural hazards so that policymakers and the public have the understanding they need to enhance preparedness, response and resilience.

In 2010, the USGS realigned its organizational structure around the missions identified in the [USGS Science Strategy](#). The Natural Hazards Mission Area includes six science programs: [Coastal & Marine Geology](#), [Earthquake Hazards](#), [Geomagnetism](#), [Global Seismographic Network](#), [Landslide Hazards](#), and [Volcano Hazards](#).

Through these programs, the USGS provides alerts and warnings of geologic hazards and supports the warning responsibilities of the National Oceanic and Atmospheric Administration (NOAA) for geomagnetic storms and tsunamis. The Coastal and Marine Geology Program supports all the missions of the USGS, characterizing and assessing coastal and marine processes, conditions, change and vulnerability.

The Natural Hazards Mission Area is responsible for coordinating USGS response following disasters and overseeing the bureau's [emergency management](#) activities. The mission area coordinates long-term planning across the full USGS hazards science portfolio, including activities funded through many other programs across the bureau, including floods, hurricanes and severe storms, and wildfires.

The future direction of the USGS hazards mission is guided by the recently released [USGS Natural Hazards Science Strategy](#), which was developed by a team of USGS scientists with considerable input from partners and the public. This document is part of a broader USGS [science strategy](#) planning process across all our missions.



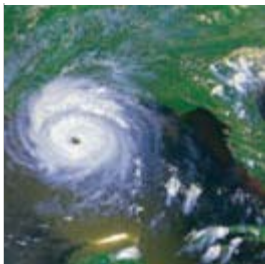
Natural Hazards Mission Area Programs & Activities

[Coastal and Marine Geology](#)

CMGP conducts research on the changes to the coastal and marine environment that

[Earthquake Hazards](#)

The Earthquake Hazards Program is part of the National Earthquake Hazards Reduction Program

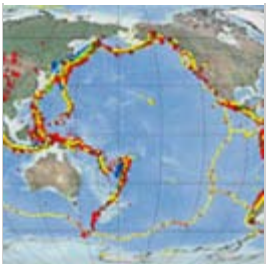


impact lands, lives and livelihoods, and vulnerable ecosystems;

providing science to inform decisions that ensure safe and resilient coastal communities and sustainable use and protection of marine resources. Supporting the Natural Hazards mission, CMGP conducts research on marine geohazards including earthquakes, tsunami, and submarine landslides and on coastal change hazards from erosion, hurricanes and other extreme storms, and sea-level rise.

- [Coastal Change](#)
- [Tsunamis](#)

[Monthly Newsletter - Soundwaves](#)



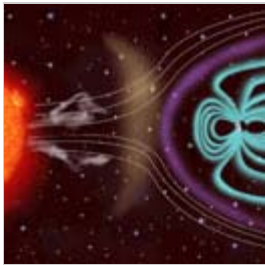
(NEHRP), a four-agency partnership led by the National Institute of

Standards and Technology (NIST). Earthquakes pose significant risk to 75 million Americans in 39 States. The USGS provides research and information products for earthquake loss reduction, including hazard and risk assessments, comprehensive real-time earthquake monitoring, and public outreach.

- [Earthquake Map](#)
- [Real-time RSS Feeds](#)
- [Earthquake Notification Service](#)
- [Did You Feel It?](#)

["Earthquake Hazards – A National Threat" Fact Sheet](#)

[**Geomagnetism**](#)



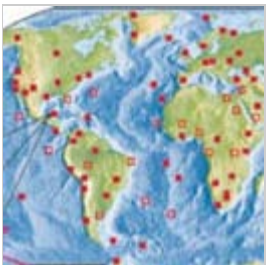
The mission of the Geomagnetism Program is to monitor the Earth's magnetic field. Using ground-based observatories, the Program provides continuous records of

magnetic field variations covering long timescales; disseminates magnetic data to various governmental, academic, and private institutions; and conducts research into the nature of geomagnetic variations for purposes of scientific understanding and hazard mitigation.

- [Real-time Data](#)

["Monitoring the Earth's Magnetic Field" Fact Sheet](#)

[**Global Seismographic Network**](#)



The Global Seismographic Network (GSN) is a permanent digital network of state-of-the-art seismological and geophysical sensors connected by a

telecommunications network. The GSN provides near-uniform, worldwide monitoring of the Earth, with over 150 modern seismic stations distributed globally. The GSN was formed in partnership among the USGS, the National Science Foundation (NSF) and the Incorporated Research Institutions for Seismology (IRIS).

- [Station Status](#)

[The Global Seismographic Network Fact Sheet](#)

[**Landslide Hazards**](#)

The mission of the Landslide Hazards Program is to

[**Volcano Hazards**](#)

The Volcano Hazards Program advances the scientific



provide information that leads to the reduction of losses from landslides and increase in public safety through improved understanding of landslide hazards and strategies for hazard mitigation. The USGS conducts landslide hazard assessments, pursues landslide investigations and forecasts, provides technical assistance to respond to landslide emergencies, and engages in outreach activities.

- [Advisories](#)
- [Real-time Monitoring](#)

["Landslide Hazards – A National Threat" Fact Sheet](#)
["Wildfire Hazards – A National Threat" Fact Sheet](#)



understanding of volcanic processes in order to lessen the harmful impacts of volcanic activity. The USGS monitors active and potentially active volcanoes, assesses their hazards, responds to volcanic crises, and conducts research on how volcanoes work. The USGS also issues warnings of potential volcanic hazards to responsible emergency-management authorities and to the populace affected.

- [Current Alerts for U.S. Volcanoes](#)

["Volcano Hazards – A National Threat" Fact Sheet](#)

[Science Applications for Risk Reductions \(SAFRR\) Project](#)



The SAFRR project focuses on building partnerships to improve the use of natural hazards information from the USGS, to identify needs and gaps, and to develop new products that increase the use of USGS science by emergency managers and community decisionmakers in order to promote greater resilience to natural hazards. SAFRR evolved from the Multi-Hazards Demonstration Project in Southern California, which has developed interdisciplinary, science-based products that deliver information that starts with the hazard and carries through to impacts on the community.

- [USGS Natural Hazards Risk Reduction Project Goes National](#)

[USGS Emergency Management](#)



The USGS Natural Hazards Mission Area has been given responsibility for overseeing the bureau's emergency management activities. This function includes the USGS Hazard Response Executive Committee, which provides executive direction, oversight, and support to USGS managers in responding to major hazard events. During incidents of national significance, the USGS provides support to certain National Response Framework emergency support functions.

- [USGS Emergency Management](#)

Additional USGS Hazards Science Activities

[Astrogeology](#)



The Astrogeology Science Center serves the nation, the international science community, and the general public in the pursuit of new knowledge about our Solar

System. The program has participated in analyzing data from numerous missions to planetary bodies, assisting in finding potential landing sites for exploration vehicles, mapping our neighboring planets, moons, and asteroids, and conducting research to better understand the geologic processes operating on these bodies.

- [Gazetteer of Planetary Nomenclature](#)
- [PILOT - Planetary Image Locator Tool](#)

[Floods and Droughts](#)



The USGS is the Nation's primary provider of information on water. The bulk of the USGS activities related to floods and droughts are carried out through

programs within the Water Mission Area. Web portals make it possible to view current water conditions and where floods and droughts are occurring.

- [USGS Flood Information](#)
- [Current Conditions](#)
- [FloodWatch](#) | [DroughtWatch](#)
- [Interactive Flood Map](#)

["Flood Hazards – A National Threat" Fact Sheet](#)

[Wildfire Hazards](#)



The USGS carries out a wide range of wildfire-related science activities that span multiple USGS mission areas, including landscape ecology studies, geospatial support

for fire response, burned area hydrology, and post-fire debris flow warnings.

- [GEOMAC](#)
- [EROS Fire Science Activities](#)
- [Satellite Data Applications for Fire Science](#)
- [LANDFIRE](#)
- [Post-wildfire Debris Flow Hazards](#)
- [Fire Ecology](#)
- [Ash Contamination from Wildland-Urban Interface](#)
- [Wildfire and changing vegetation dynamics](#)

["Wildfire Hazards – A National Threat" Fact Sheet](#)

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2011 Oklahoma Induced Earthquake May Have Triggered Larger Quake

Released: 3/6/2014 5:00:00 PM

In a new study involving researchers at the U.S. Geological Survey, scientists observed that a human-induced magnitude 5.0 earthquake near Prague, Oklahoma in November 2011 may have triggered the larger M5.7 earthquake less than a day later.

Global Undiscovered Copper Resources Estimated at 3.5 Billion Metric Tons

Released: 3/6/2014 11:30:00 AM

The first-ever, geologically-based global assessment of undiscovered copper resources estimates that 3.5 billion metric tons of copper may exist worldwide.

President's 2015 Budget Proposes \$1.1 Billion for the USGS

Released: 3/4/2014 3:21:16 PM

The President's fiscal year (FY) 2015 budget request for the U.S. Geological Survey is \$1.1 billion, an increase of \$41.3 million above the FY 2014 enacted level. The FY 2015 Budget reflects the President's ongoing commitment to scientific discovery and innovation to support decision making in addressing critical societal needs and to support a robust economy, while protecting the health and environment of the Nation.

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[Pumping May Cause Some Groundwater Decrease in Edwards-Trinity Aquifer in Texas](#)

Released: 2/25/2014 1:02:30 PM

[Changes in Stream-Water Quality Attributed to Coalbed Methane Development](#)

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[Female Coyotes Can Have Mixed Wolf-Coyote Pups](#)

Released: 2/26/2014 6:25:57 PM

[Assessing Nutrient Inputs to the Nation's Estuaries and Great Lakes](#)

Released: 2/25/2014 12:58:44 PM

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[Salmon Conservation Efforts Honored](#)

Released: 1/16/2014 3:00:00 PM

[USGS Researcher Honored for Helping Managers Save Desert Fish from Extinction](#)

Released: 1/16/2014 3:00:00 PM

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25 Years After the Exxon Valdez, Sea Otter Population at Pre-Spill Levels

Released: 2/28/2014 11:00:00 AM

Nearly 25 years after the Exxon Valdez oil spill injured wildlife off the coast of Alaska, a new report issued today by the U.S. Geological Survey indicates that sea otters have returned to pre-spill numbers within the most heavily oiled areas of Prince William Sound.

The National Map and National Atlas Merge

Released: 2/28/2014 11:00:00 AM

During this year, National Atlas of the United States and The National Map will transition into a combined single source for geospatial and cartographic information.

Burmese Pythons Pose Little Risk to People in Everglades

Released: 2/27/2014 2:30:00 PM

The estimated tens of thousands of Burmese pythons now populating the Everglades present a low risk to people in the park, according to a new assessment by U.S. Geological Survey and National Park Service scientists.

Pollutants Pose Threat to Mekong River Residents

Released: 2/27/2014 11:30:00 AM

Portions of the Mekong River Basin contain hotspots of persistent organic pollutants that pose a significant threat to the residents and wildlife of the Mekong Basin, according to a new U.S. Geological Survey study.

Barred Owls Ousting Spotted Owls in the Pacific Northwest

Released: 2/24/2014 11:25:09 AM

An increase in the barred owl population is contributing to the decline of threatened Northern spotted owls, according to models developed by U.S. Geological Survey and U.S. Forest Service scientists.

Media Advisory: USGS to Host Congressional Briefing: Earthquake Science and Remaining Mysteries

Released: 2/20/2014 11:20:00 AM

Come learn about the great leaps in research over the last 50 years, and the research still underway to understand the remaining mysteries of earthquake hazards.

Linking U.S. and Canadian Border Waters

Released: 2/19/2014 9:00:00 AM

Clearer views of waters along the U.S. and Canadian border are now possible with new seamless digital maps. These maps make it easier to solve complex water issues that require a thorough understanding of drainage systems on both sides of the International

Boundary.

First Global Geologic Map of Largest Moon in the Solar System Details an Icy World

Released: 2/12/2014 12:00:00 PM

More than 400 years after its discovery by Galileo, the largest moon in the Solar System – Ganymede – has finally claimed a spot on the map.

Identifying Bats By Sound

Released: 2/12/2014 9:30:00 AM

Recording bats' echolocation "calls" is the most efficient and least intrusive way of identifying different species of bats in a given area, providing insight into some populations that have been decimated by white-nose syndrome.

National Scenic Trails Added to Washington State Maps

Released: 2/12/2014 9:00:00 AM

Newly released US Topo maps for Washington now feature segments of the Pacific Crest and Pacific Northwest National Scenic Trails. Several of the 1,446 new US Topo quadrangles for the state now display parts of the Trails along with other improved layers.

New Tool Available to Help Track Spilled Oil

Released: 2/6/2014 1:30:10 PM

A newly developed computer model holds the promise of helping scientists track and predict where oil will go after a spill, sometimes years later.

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Featured Topic

Online Lecture: The 1964 Great Alaska Earthquake



March 27 marks the the 50th anniversary of the magnitude 9.2 Great Alaska Earthquake and Tsunami. Watch a new, [online public lecture](#) about the major effects of the earthquake, which provided a key that helped unlock one of the critical mysteries of plate tectonics. A new [fact sheet](#) about the earthquake and a [11-minute video](#) are excellent supplements.

More resources, including photographs and additional videos, are on [our website](#) for the earthquake.

[Featured Topics Archive](#)

What's New and Interesting

Land Subsidence and Sea-Level Rise in Chesapeake Bay

A [new publication](#) written for a general audience explains why the southern Chesapeake Bay region has the

Education Resources

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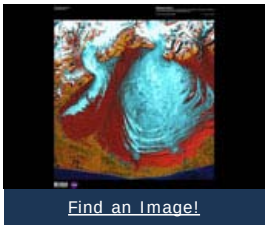
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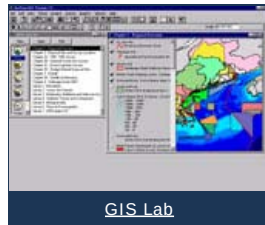
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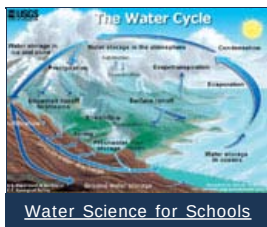
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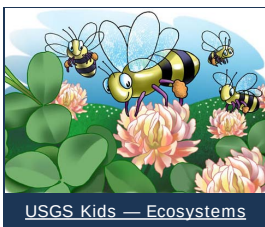
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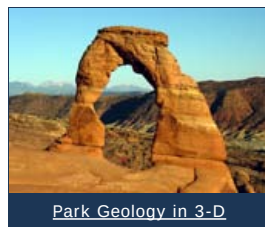
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highest rates of
sea-level rise on
the Atlantic Coast.





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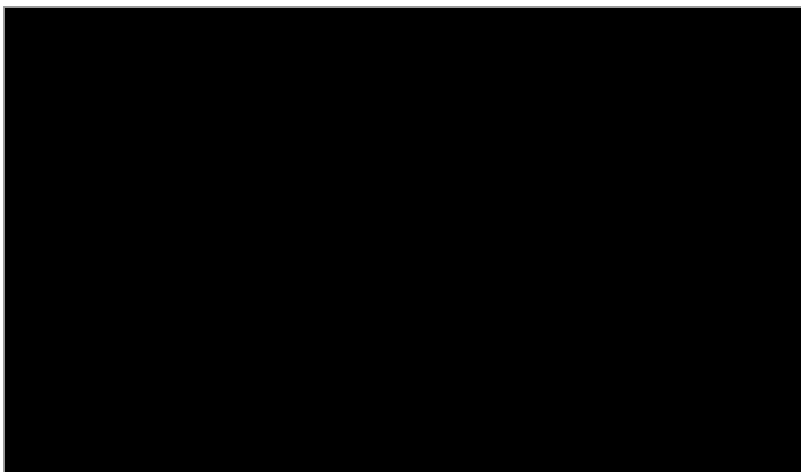
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Jobs at the USGS



[Travis Gibson](#)

Hydrological Technician

“Working as a student for the USGS is an excellent way for anybody interested in working in a science field to “get their foot in the door”

Be our future...join the USGS

* Video above: [DOI](#) and [USGS](#) link policies apply.

Be a Part of the USGS

[Volunteer Jobs](#)

Get your toes wet at the USGS by becoming a volunteer. ([Volunteer.gov](#))

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Current [student job openings](#) at the USGS. ([USAJobs.gov](#))

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Looking for a postdoctoral fellowship? Take a look at our postdoctoral research options.

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Pay, Leave, Calculators, Insurance, Retirement, Worklife Benefits, and more.

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[Organizational Development](#)

Improving the overall organization through strategic planning and teambuilding.

Visit the [USGS Human Capital site](#) for more information related to USGS human resources.

Building a Diverse Workforce and Inclusive Work Environment

USGS Non-Discrimination Policy

The U.S. Geological Survey (USGS) is committed to the principles of Equal Employment Opportunity (EEO). All employees, former employees, applicants for employment, and members of the public who seek to participate in USGS programs, activities, and services will not be discriminated against.

USGS Diversity Statement

U.S. Geological Survey (USGS) recognizes its talented and diverse workforce as a key asset. Our success as an agency is a reflection of the quality and skill of our people. The USGS is committed to seeking out and retaining a highly skilled and diverse workforce to ensure we accomplish our mission in the most effective, efficient, and robust way possible.

USGS Anti-Harassment Policy

The U.S. Geological Survey (USGS) is committed to creating and maintaining a work environment where all employees have a fair and equitable opportunity to succeed.

USGS Diversity and Inclusion Plan

Leveraging diversity makes the USGS a more effective organization by helping us attract and retain a highly skilled workforce. The USGS Diversity Statement also recognizes the importance of the "people" aspect of diversity—"All employees bring their own unique capabilities, experiences, and characteristics to their work."

Diversity Council Fact Sheet

The Diversity Council strives to achieve a USGS workforce that reflects the demographics of our Nation, and an environment which is open and accepting of individual differences.

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Science Partnerships and Opportunities

Welcome to the USGS Partnerships Portal of the U.S. Geological Survey, a Federal bureau located within the Department of the Interior. The USGS serves the Nation as an independent fact-finding agency that collects, monitors, analyzes, and provides scientific understanding about natural resource conditions, issues, and problems. The USGS leverages its resources and expertise in partnership with more than 2,000 agencies of State, local and tribal government, the academic community, other Federal allies, non-governmental organizations, and the private sector.

- [Biology Partnerships](#)
- [Connections: Partnerships in Science](#)
- [Contract and Grants Information](#)
- [Partnerships - Working Together to Build the National Map](#)
- [Domestic Memorandums of Understanding with other Federal Agencies or Entities](#)
- [Technology Transfer Information](#)
- [USGS Activities Related to American Indians and Alaska Natives](#)

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USGS Libraries

Welcome to the largest earth science library in the world! Established in 1879 to build and organize a collection of scientific materials in the earth sciences, the U.S. Geological Survey Library is now the largest library for earth sciences in the world. The Libraries Program includes four central libraries and is part of Core Science Systems within the USGS.

Featured Stories



[Research Services at the USGS Denver Library](#)
By Emily C. Wild and Keith J. Van Cleave The U.S. Geological Survey (USGS) was established March 3, 1879, by the Organic Act (20 Stat. 394; 43 U.S.C. 31), which included creation of a USGS Library. In 1946, the USGS ... [Continue reading →](#)

New USGS Publications



Evaluation of the expected moments algorithm and a multiple low-outlier test for flood frequency analysis at streamgaging stations in Arizona

Development and evaluation of a blocking enzyme-linked immunosorbent assay and virus neutralization assay to detect antibodies to viral hemorrhagic septicemia virus

Wetland Reserve Program enhances site occupancy and species richness in assemblages of anuran amphibians in the Mississippi Alluvial Valley, USA

Atrazine reduces reproduction in fathead minnow

(*Pimephales
promelas*): raw
data report

Quality of
surface water
in Missouri,
water year
2012

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About USGS

The USGS is a science organization that provides impartial information on the health of our ecosystems and environment, the natural hazards that threaten us, the natural resources we rely on, the impacts of climate and land-use change, and the core science systems that help us provide timely, relevant, and useable information.

Highlights

- [Directory of Key Officials](#)
- [Employee Directory](#) 
- [Professional Pages](#)
- [USGS Science Strategy](#)
- [Visitors Center](#)
- [USGS Museum](#)
- [Budget Information](#)
- [USGS IT Strategic Plan](#)
- [DOI Strategic Plan](#)
- [USGS Library](#)
- [Customer Listening Sessions](#)

Mission

The USGS serves the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life.

Who We Are

The USGS employs the best and the brightest experts who bring a range of earth and life science disciplines to bear on problems. By integrating our diverse scientific expertise, the USGS is able to understand complex natural science phenomena and provide scientific products that lead to solutions. Every day the 10,000 scientists, technicians, and support staff of the USGS are working for you in more than [400 locations throughout the United States](#).

What We Do

As the Nation's largest water, earth, and biological science and civilian mapping agency, the U.S. Geological Survey (USGS) collects, monitors, analyzes, and provides scientific understanding about natural resource conditions, issues, and problems. The diversity of our scientific expertise enables us to carry out large-scale, multi-disciplinary investigations and provide impartial scientific information to resource managers, planners,



and other customers.

- [Our Programs](#) and [Science Topics](#)
- [Strategic Plan](#)
- [Laws, Policies & Guidelines governing USGS activities](#)

How We Are Organized

The USGS is organized with a Headquarters in Reston, Virginia. Thousands of USGS employees are working in every State in the Nation, with Regional Executives located in the Southeast, South Central region, Northeast, Midwest, Rocky Mountains, Northwest, Southwest and Alaska.



The following links provide information about our senior leadership, how we are structured, where we are located, and how to contact USGS employees:

- [Acting Director, Suzette Kimball](#)
- [Directory of Key Officials](#)
- [Organization Chart](#)
- [USGS State Offices](#)
- [Directory of USGS Employees](#) (Electronic Phonebook)
- [Professional Pages](#)

Our Budget and Performance

Access primary [budget](#) documents, information about performance measures, and other various management reports.

Working With Us

There are a variety of ways to interact with the USGS and its science. We invite you to explore the following information about doing business with us, partnering with our science programs, and being part of the USGS workforce.

Business Opportunities: The USGS is interested in forming cooperative partnerships with organizations from all levels of government and industry. The following links provide information about doing business and partnering with USGS.

- [Contracts and Grants Information](#)



Science Partnerships and Opportunities: Explore the collaborative work the USGS is doing with other Federal agencies, non-government organizations, State/local and tribal governments and the private sector as well as additional opportunities to partner with us and further our science mission. [Learn more.](#)

Cooperative Agreements: The USGS works with many other Federal agencies and the private sector to accomplish its science mission through formal memorandums of understanding and memorandums of agreement. [Learn more.](#)

International Activities: The USGS carries out international activities as a complement to its domestic programs. Learn more about the scientific and technical assistance being provided in more than 100 countries. [Learn more.](#)

Activities Related to Native Americans: Learn more about the work USGS does in cooperation with American Indian and Alaska Native governments—including research on water and mineral resources; animals and plants important to subsistence the environment, or the economy; natural hazards; and geologic resources. [Learn more.](#)

Employment Opportunities: Your one source for information on job openings, including senior management positions, student employment, Postdoctoral and Upward Mobility Programs, and volunteering.

- [Careers](#)
- [Volunteer](#)

News & Events

USGS uses a variety of traditional and new media tools, including social media, to share information and help the public understand how science addresses some of our Nation's most pressing issues. We invite you to stay up-to-date with events and news using our [Newsroom](#) and various [social media tools](#), and to join our community, tell us what you think, and let us know how we can better serve you!



Our History

The United States Geological Survey was established on March 3, 1879, just a few hours before the mandatory close of the final session of the 45th Congress, when President Rutherford B. Hayes signed the bill appropriating money for sundry civil expenses of the Federal Government for the fiscal year beginning July 1, 1879. [Learn more.](#)





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Social Media at the USGS

The USGS has several social media presences*. The sites listed below are those that are considered official USGS presences. Any site found that is not listed is considered a non-USGS presence.

- [DOI Social Media Policy](#)
- [USGS Easy Guidelines for Employee Use of Social Media](#) (March 2013) 
- [GSA's Social Media Registry](#)

Bureau-Level									
USGS									
USGS Science In Action Public Flickr Group for anyone to contribute their fantastic photos to related to USGS science.									
USGS News: Everything We've Got This is every single news item we post. If you want it all, here it is. One-way only.									
USGS News: Biology News about ecosystems, plants, animals, and wildlife health. One-way only.									
USGS News: Climate Change News about global warming, carbon storage, and sea level rise. One-way only.									
USGS News: Data, Tools and Technology News about new data sets, websites, hardware and software advancements, etc. One-way only.									
USGS News: Energy News about energy. One-way only.									
USGS News: Environmental Health News about contaminants, and toxics. One-way only.									
USGS News: Mapping News about topographic maps, The National Map, remote sensing, geography, and GIS. One-way only.									
USGS News: Minerals News about minerals. One-way only.									
USGS News: Natural Hazards News about earthquakes, landslides, volcanoes, etc. One-way only.									
USGS News: Planetary Science News about astrogeology, geomagnetism, etc. One-way only.									

USGS News: Water News about floods, droughts, water quality, and oceans. One-way only.	  
USGS Live Live-tweeting only	
USGS Store Products created and distributed by USGS Store to promote natural sciences and outdoorsmanship.	
Libraries Provides support for scientific research in earth and natural sciences.	
USGS Ethics	
USGS Podcasts	
Climate Change and Land Use	
Land Cover Institute The USGS Land Cover Institute (LCI) is a focal point for advancing the science, knowledge, and application of land use and land cover information.	
Land Cover Analysis Tool Updates made to the Land Cover Analysis Tool (LCAT) which is used to access the USGS's National Land Cover Database.	
Arctic This feed follows the USGS scientific team on the USCG Healy in the Arctic Ocean from Aug 15 to Sept 28, 2011.	
Ecosystems	
Aquatic Life Explore the science of aquatic life without getting your feet wet. USGS research findings, news, and the general science of life in the nation's waterscapes.	
Nonindigenous Aquatic Species A central repository for spatially referenced biogeographic accounts of introduced aquatic species .	
Wetlands Follow USGS as we explore the science of wetlands: the unsung heroes of the world's ecosystems!	
Wildlife Advancing wildlife and ecosystems health.	
DISCOVRE Researching the biology, ecology, and connectivity of deep-sea coral environments to provide the science necessary for their effective conservation and management.	
Bee Inventory and Monitoring Laboratory Designs and develops large and small scale surveys for native bees. Identifies tools and keys for native bee species.	 
Energy and Minerals	

Energy News and information related to energy resources (coal, oil, natural gas, geothermal) and assessments from the USGS		
Minerals Information on mineral resource potential, production, consumption, and the environment.		
Mining USGS mining-related science and activities.		
Environmental Health		
Mercury in the Environment		
Silverlake Nutrient Study Information, news, and observations from the USGS Silver Lake nutrient study.		
Maps, Products, and Services		
The National Map News and information related to The National Map , the National Geospatial Program and general geospatial issues.		
The National Map Research Project A research project about the usability of geographic information in support of USGS's The National Map		
National Hydrography Dataset The National Hydrography Dataset (NHD) is the surface water component of The National Map.		
National Atlas Delivers products and services that make it easier to find, get, and use authoritative maps, geographic information, and data about America.		
Landsat The Landsat operational mission, future missions, and the Landsat Science Team are co-managed by USGS and NASA.		
Publications The Publications Warehouse provides access to recent and historic publications written by USGS scientists.		
Hydrologic Instrumentation Services Providing hydrologic instrumentation support to the USGS.		
Hydrologic Instrumentation Services — Local Internal HIF account for communication among HIF Employees Only.		
Natural Hazards		
Big Quakes USGS earthquake alerts for M 5.5 and higher.		
Tweet Earthquake Dispatch USGS Twitter Earthquake Dispatch (TED): Distributes notifications for earthquakes worldwide with magnitudes of 5.5 and above.		

Coastal and Marine Geology			
Hazards Data Distribution Hazards Data Distribution System (HDDS) provides access to aerial and satellite imagery for emergency response.			
Scientific Advancement			
Powell Center The Powell Center supports collaborative research to explore complex earth system and natural resource questions.			
ScienceBase An open-source project creating data and information cataloging capabilities for scientists.			
Geo Data Portal Product updates related to the Geo Data Portal data mapping application.			
Location-Specific			
California			
Colorado USGS sciences related events happening in Colorado. A forum for sharing outdoor experiences in Colorado and learning about our world!			
Idaho			
Illinois			
Indiana			
Iowa			
Kentucky			
Maine			
Minnesota			
Montana			
Nevada			
Oregon			

Nebraska		
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North Dakota		
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RSS and Data Feeds

The USGS provides a variety of [RSS](#), [CAP](#), [MediaRSS](#), [KMZ](#), and other feeds and data content.

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News Releases (summary only)	
State Releases	Get local news
Technical Announcements	
Frequently Asked Questions	
Latest FAQs	
Multimedia Gallery	
Latest 50 Photography and Images	 
Latest 50 Videos and Animations	 
Latest 50 Audio and Podcasts	 
Earthquakes	
Hazards Data Distribution System (HDDS)	
Remote Sensing	
Remote Sensing news items	

Featured Image gallery	
Landsat	
Latest Headline	
Recent Imagery	
Landsat Imagery (GeoRSS) - Recent Terrain-Corrected Images	
Landsat 7 Scenes (GeoRSS) - Newest available Landsat 7 scenes	
Landslides	
Landslides	
Mineral Resources	
Minerals Periodicals	
National Cooperative Geologic Mapping Program (NCGMP)	
Latest Program News	
National Wildlife Health Center (NWHC)	
Avian Influenza Updates	
Publications Warehouse	
Latest publications (last 7 days)	
Volcano Hazards Program	
Last 7 days—Volcano Updates (includes Mariana Islands)	
Water Related	
Groundwater Software Updates	
Project Alerts — USGS field activities in response to floods, droughts, chemical spills, and hurricanes.	

[View USGS catalogs on Data.gov](#) 

	Latest Earthquakes: Feeds & Data Include items such as: Google Earth KML, RSS, CSV, Cube catalogs, ShakeMaps, 1906 virtual tour, weekly seismic reports, and much more.
	WaterWatch Site includes Google Earth (KMZ), real-time streamflow, and regional streamflow data all in KML format.

Start with Science

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How do we make smart decisions
about a changing world?

Start with Science

There are 7 billion people on Earth, and that number is increasing every day — human influence on our planet is ever more apparent. Changes to the natural world combined with growing human demands threaten our health and safety, our national security, our economy, and our quality of life.



**Thank you to those that participated in helping
us shape the future of USGS science!**

Click on the mission areas to the right to read the strategies

The USGS is focused on some of the most significant issues society faces, in which natural science can make a substantial contribution to the well-being of the Nation and the world. The USGS Science Strategy outlines the major societal issues that USGS science is poised to address. We've also created specific strategies for each of those areas to expand and advance the actions we can take in the next decade. *Thank you to all who offered input!* 

Core Science Systems

[Climate and
Land Use Change](#)

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[Water](#)

Learn more about what we are doing.

[The Science Strategy Planning Process](#)

[Our Science Strategy](#)

[Our Mission Areas](#)

In 2010, the USGS aligned itself with the broad science themes outlined in our 10-year Bureau-level Science Strategy. *Teams of USGS scientists* also led the creation of 10-year science strategies for each of the USGS Mission Areas:

- [Climate and Land Use Change](#)
- [Core Science Systems](#)
- [Ecosystems](#)
- [Energy and Minerals](#)
- [Environmental Health](#)

Send other questions, comments, or ideas to sciencestrategy@usgs.gov.

Natural Hazards

- Water

USGS employees, external partners and stakeholders, Indian Tribes, and the public are being asked to weigh in on these strategies and major questions informing their creation.

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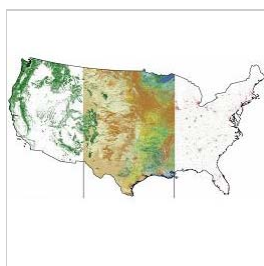
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Climate and Land Use Change

The USGS undertakes scientific research, monitoring, remote sensing, modeling, synthesis, and forecasting to address the effects of climate and land use change on the Nation's resources. The resulting research and products are provided as the scientific foundation upon which policymakers, natural resource managers, and the public make informed decisions about the management of natural resources on which they and others depend.

Climate and Land Use Change Programs

[Land Change Science \(LCS\)](#)



The goal of the USGS Land Change Science (LCS) Program, formerly Geographic Analysis and Monitoring, is to understand the patterns, processes, and consequences of

changes in land use, land condition, and land cover at multiple spatial and temporal scales, resulting from the interactions between human activities and natural systems.

[Land Remote Sensing \(LRS\)](#)



The Land Remote Sensing Program operates the Landsat satellites and provides the Nation's portal to the largest archive of remotely sensed land data in the world, supplying

access to current and historical images. These images serve many purposes from assessing the impact of natural disasters to monitoring global agricultural production.

[National Climate Change and Wildlife Science Center \(NCCWSC\)](#)



The National Climate Change and Wildlife Science Center responds to the research and management needs of partners and provides science and technical support

regarding the impacts of climate change on fish, wildlife and ecological process. The Center is taking the lead on establishing the Department of the Interior regional Climate Science Centers.

[Research and Development Program \(R&D\)](#)



The USGS Climate and Land Use Change Research and Development Program supports fundamental scientific research to: 1) understand processes controlling

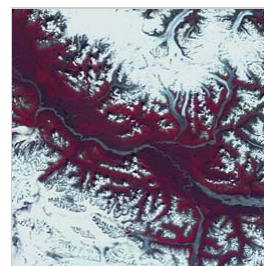
Earth system responses to global change over broad temporal and spatial scales; and 2) understand and model impacts of climate and land-cover change on ecosystems and other natural resources.

[Carbon Sequestration](#)



Scientists at the U.S. Geological Survey (USGS) are working to assess both the potential capacities and the potential limitations of the various forms of carbon sequestration and to evaluate their geologic, hydrologic, and ecological consequences. In accordance with the Energy Independence and Security Act of 2007, the USGS has developed scientifically based methods for assessment of biologic and geologic carbon sequestration.

[Earth Resources Observation and Science Center \(EROS\)](#)



The USGS Earth Resources Observation and Science Center (EROS) contributes to the Climate and Land Use Change Mission Area through research and operational activities that enable the understanding of local to global land change. The EROS multidisciplinary staff uses their unique expertise in remote sensing-based science and technologies to carry out basic and applied research, data acquisition, systems engineering, information access and management, and archive preservation to address the Nation's most critical needs.

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[U.S. Department of the Interior](#) | [U.S. Geological Survey](#)

URL: http://www.usgs.gov/climate_landuse/default.asp

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Core Science Systems

Data about Earth and its resources are only useful if available in a format that is understandable and accessible. The U.S. Geological Survey (USGS) provides the Nation with ready access to natural science information that supports smart decisions about how to respond to natural risks and manage natural resources. Core Science Systems includes the following programs: [Core Science Analytics and Synthesis](#), [National Geospatial Program](#), [Libraries](#), [National Cooperative Geologic Mapping Program](#), and [National Geological and Geophysical Data Preservation Program](#).

- [Mission Overview](#) (Fact Sheet 2012-3009)
- [CSS Access Newsletter](#)
- [USGS Core Science Systems Strategy—Characterizing, Synthesizing, and Understanding the Critical Zone through a Modular Science Framework](#)

Core Science Systems

[Core Science Analytics and Synthesis](#)



With expertise in technology, informatics, and science, CSAS leads the management and delivery of scientific data and information for the USGS. CSAS

implements and promotes standards and best practices to enable efficient, data-driven science for decision making at multiple scales. Critical relationships are established and fostered to identify and access data, and to develop and deploy appropriate technological solutions that support rapid response to emerging natural resource issues. CSAS facilitates the [USGS Community for Data Integration](#) (CDI) and supports the [John Wesley Powell Center for Analysis and Synthesis](#), which allows USGS researchers and their colleagues to address complex earth system and natural resource questions in intensive, short-term research focus groups.

[National Geospatial Program](#)



The National Geospatial Program (NGP) organizes, maintains, and publishes the geospatial baseline of the Nation's topography, natural landscape, and built

environment. The baseline is [The National Map](#), a set of databases of map data and information from which customers can download data and derived map products and use web-based map services. Through the [Geospatial Liaison Network](#), the NGP works with cooperators to share the costs of acquiring and maintaining these geospatial data. [The National Atlas of the United States of America®](#), the small-scale component of *The National Map*, fosters an understanding of broad geographic patterns, trends, and conditions useful for national assessments. The [Federal Geographic Data Committee](#) promotes consistent data and metadata standards, system

National Cooperative Geologic Mapping Program

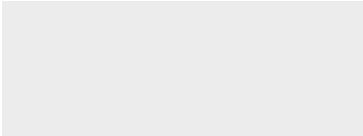


The National Cooperative Geologic Mapping Program (NCGMP) produces accurate geologic maps and 3-D geologic frameworks that provide critical data for sustaining

and improving the quality of life and economic vitality of the Nation. [Geologic maps](#) are indispensable to understanding earth surface processes and ground-water availability and quality, supporting DOI land management decisions, mitigating hazards, assisting in ecological and climatic monitoring and modeling, and understanding onshore-offshore sediment processes. NCGMP is unique in the Federal Government as it supports the production of most geologic maps in the United States through a successful [Federal-State-university](#) partnership.

the following goals:

- Archive geological, geophysical, and engineering data, maps, well logs, and samples
- Provide a national catalog of archived materials
- Provide technical and financial assistance to State geological



surveys and relevant Department of the Interior bureaus for archived materials

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URL: http://www.usgs.gov/core_science_systems/default.asp
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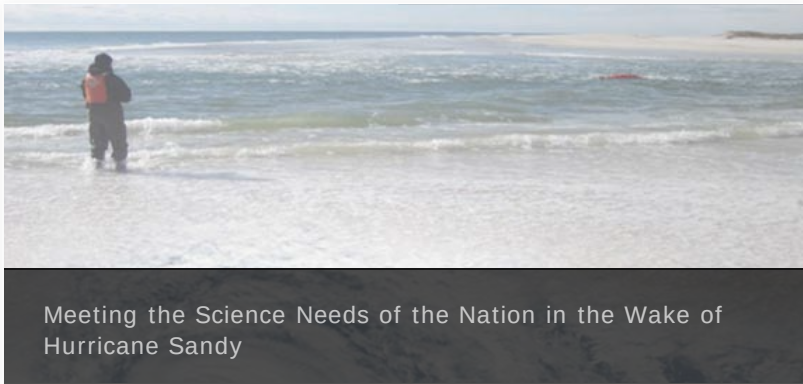
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Ecosystems Mission Area



Meeting the Science Needs of the Nation in the Wake of Hurricane Sandy



Ecosystems Science

Invasive Species Program



Provides methodologies and information to reduce threats from invasive species.

Cooperative Research Units



Supports natural resource management decisions through research, education and technical assistance.

Fisheries Program



Supports management, conservation, and restoration of the Nation's fish and aquatic resources.

Environments Program



Conducts ecosystem science and develops models for restoration and adaptive management.

[Priority Ecosystem Science](#)

Status & Trends Program



Monitors the Nation's living resources and their habitats.

Wildlife Program



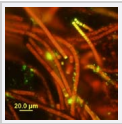
Conducts research on wildlife and their habitats.

Genetics & Genomics



Applies genetics and genomics to answer questions of endangered species, wildlife populations, captive breeding and reintroductions, sources of nonnative species introductions and hybridization and functional genomics.

Microbiology



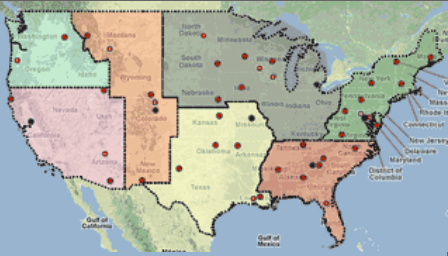
Research in fish and wildlife health and disease, geomicrobiology, ecosystem function, climate change, water quality for drinking and in recreation, bioremediation, nanotechnology, energy and geographic patterns of microbial distribution.

International

Facilitates synergistic

USA National Phenology Network

Browse by Location



Science Feature: When Floods Hit, the USGS is There



Photo: USGS crews install a rapid deployment streamgage on the Boise River near Parma, Idaho, in 2012. Credit: Tim Merrick, USGS.

As soon as water starts to rise, specially trained USGS scientists and hydrologic technicians measure water levels, streamflows, and high water marks using state-of-the-art instrumentation. All of this information is crucial for National Weather Service (NWS) flood forecasts, for decisions by the U.S. Army Corps of Engineers (USACE) to operate spillways and levees, and for the planning of Federal, state, and local emergency managers, first responders, and many other groups.

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News & Highlights

[President's 2015 Budget Proposes \\$1.1 Billion for the USGS](#)

[Burmese Pythons Pose Little Risk to People in Everglades](#)

[Female Coyotes Can Have Mixed Wolf-Coyote Pups](#)

[Assessing Nutrient Inputs to the Nation's Estuaries and Great Lakes](#)

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Products & Resources

- [SAGEMAP](#)
- [Raptor Information System \(RIS\)](#)
- [Integrated Taxonomic Information System](#)
- [Fisheries and Aquatic Resources Data Access Wizard](#)

[More...](#)

What We Do

The USGS Ecosystem Mission Area serves our Department of the Interior partners and other resource managers by conducting research and monitoring to understand freshwater, terrestrial and marine ecosystems and the fish and wildlife within them.

[More...](#)



international collaboration because ecoregions and species span and cross boundaries.



Organizes and centralizes monitoring and scientific information to document changing seasonal patterns.

Science and Decisions Center



An interdisciplinary organization advancing the use of science in natural resource decision making. SDC focuses on research and applications in three science areas: decision science (adaptive management and structured decision making), ecosystem services, and resilience/sustainability.

Energy and Wildlife



USGS science can help allow for renewable energy growth while lessening conflicts between renewable energy, ecosystems and wildlife.





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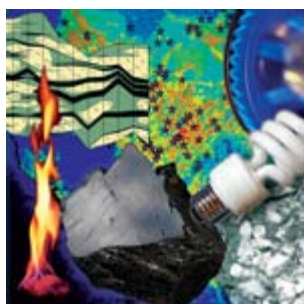
Energy and Minerals

The Energy and Minerals Mission Area conducts research and assessments on the location, quantity, and quality of mineral and energy resources, including the economic and environmental effects of resource extraction and use.

Find out how we make smart decisions about a changing world in the "[U.S. Geological Survey Energy and Minerals Science Strategy—A Resource Lifecycle Approach](#)".

Energy and Minerals Programs

Energy Resources



The mission of the USGS Energy Resources Program is to understand the processes critical to the formation, accumulation, occurrence, and

alteration of geologically based energy resources; to conduct scientifically robust assessments of those resources; and to study the impact of energy resource occurrence and/or production and use on both environmental and human health.

Mineral Resources



The USGS Mineral Resources Program (MRP) provides scientific information for objective resource assessments and unbiased

research results on mineral potential, production, consumption, and environmental effects. The MRP is the sole Federal source for this information.

USGS Science and Decisions Center



The Science and Decisions Center is a multidisciplinary and open architecture focal point for advancing science-based resource management

decisions through the use of USGS

National Laboratories



The USGS maintains a variety of high quality, state-of-the-art scientific facilities that provide analytical capabilities, scientific

support functions, experimental and modeling expertise, and field capabilities.

scientific information and tools such as ecosystem services, adaptive management, and resilience.

Two of these facilities along with scientific staff are housed in Denver, Colorado at the Federal Center and at Stanford University near the Menlo Park USGS campus. Detailed information on these facilities is available at:

[SHRIMP-RG](#) (Sensitive High-Resolution Ion Microprobe with Reverse Geometry)

[TRIGA](#) (reactor facility)





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Environmental Health

U.S. Geological Survey environmental health science focuses on the interface between health and the environment, where interactions among people, the environment, and other living organisms affect the risk of toxicologic and infectious disease.

Headlines



Pesticides Common in California Estuary

[More ...](#)

Environmental Health Programs



Contaminant Biology

The USGS Contaminant Biology Program investigates the effects and exposure of environmental contaminants to the Nation's living resources, particularly those under the stewardship of the Department of the Interior.



Toxic Substances Hydrology

The USGS Toxic Substances Hydrology Program provides objective scientific information on environmental contamination to improve characterization and management of contaminated sites, to protect human and

Environmental Health Information

[USGS Environmental Health Science Strategy](#)



[U.S. Geological Survey Environmental Health Science Strategy--Providing Environmental Health Science for a Changing World](#)

[Environmental Health Science at the U.S. Geological Survey](#)

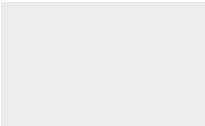
[The USGS Environmental Health Newsletter](#)



[USGS Human Health Related Activities](#)



http://www.usgs.gov/envirohealth/[3/7/2014 4:13:36 PM]



environmental health, and to reduce potential future contamination problems.



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 Use a map:

WaterWatch: Surface Water
Groundwater | Water Quality

 **Discover** more USGS water data.

Have USGS send water data to you

- ◆ **WaterAlert** automatic alerts
- ◆ **WaterNow** water data query

Automated data access (Web services)

- Water Data Web services
- GIS: National Hydrography Dataset

Science to observe, analyze, and understand the movement and condition of surface water.

- ◆ USGS Surface Water Information
- ◆ USGS Flood Information
- ◆ Flood inundation mapping
- ◆ Estimating streamflow statistics
- ◆ Suspended sediment
- ◆ Watershed modeling

Science to discover and describe the location, condition, and behavior of water in the ground.

- ◆ USGS Groundwater information
- ◆ What is groundwater?
- ◆ Groundwater and drought
- ◆ How do I find USGS groundwater information?
- ◆ Selected USGS groundwater publications

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President's 2015 Budget Proposes \$1.1 Billion for the USGS

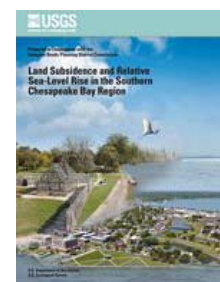
The National Map and the National Atlas Merge

Linking U.S. and Canadian Border Waters

Drought Affects Streamflow Across California

Growing Science in Agricultural Wetlands

1 2 3 4 5



Circular 1392

Land Subsidence and Relative Sea-Level Rise in the Southern Chesapeake Bay Region

Learn About Water

- USGS Water Science School
- USGS water education
- Water education posters
- Photos, videos, and podcasts
- Water-resources glossaries



Science to monitor and evaluate biological, chemical, and environmental factors affecting water quality.

- ◆ [USGS Water Quality information](#)
- ◆ [What is water quality?](#)
- ◆ [Popular water-quality topics and issues](#)
- ◆ [Selected water-quality publications](#)



Information about how water is used now and in the past.

- ◆ [National Water Use home page](#)
- ◆ [2005 National water-use publication](#)
- ◆ [Download water-use data](#)
- ◆ [Publications](#)
- ◆ [Water-Science School: Water use](#)





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Office of Science Quality and Integrity

The Office of Science Quality and Integrity monitors and enhances the integrity, quality, and health of USGS science. The office is subdivided into six components: 1. Education and Development, 2. The Office of Tribal Relations, 3. Evaluation, Review, and Recognition, 4. Fundamental Science Practices, 5. Youth Program and 6. Ethics.

Announcements:

- 2013 version of the Ethics Guide for DOI Employees can be downloaded at [http://www.usgs.gov/quality_integrity/downloads/Ethics_Guide_for_DOI_Employees_\(2013\).docx](http://www.usgs.gov/quality_integrity/downloads/Ethics_Guide_for_DOI_Employees_(2013).docx).
- [Archive](#)

Office of Science Quality and Integrity

Education and Development



This unit is devoted to

strengthening the earth- and biological-science communities through educational outreach, internships, postdoctoral fellowships, scientist emeritus, and youth programs.

- [Education](#)
- [Mendenhall Research Fellowship \(Postdoctoral\) Program](#)
- [Scientist Emeritus](#)
- [Student employment](#)

Evaluation, Review, and Recognition



This unit administers the evaluation processes for USGS research, development, and senior scientists. It provides monitoring and oversight of internal and external review of USGS science programs. This unit also supports administration of USGS quality and honor

award programs, as well as participation in external award programs.

The Office of Tribal Relations

Fundamental Science Practices (FSP)



This unit

facilitates USGS activities with Native American governments, organizations, and people. The USGS recognizes the importance of Native sciences knowledge and living in harmony with nature as complements to the USGS mission to better understand the Earth. The bureau provides information to tribes as part of our basic mission to provide unbiased scientific information to the Nation, and as part of the Federal Trust Responsibility to tribes.

- [U.S. Geological Survey Native American Tribal Liaison Team](#)



This unit houses USGS scientific integrity activities. FSP clarifies how USGS science is carried out and how the resulting information products are developed, reviewed, approved, and released. FSP oversees the USGS Peer Review Process; implementation of publication, data, laboratory policy and practices; and allegations of scientific misconduct.

- [Fundamental Science Practices](#) (FSP)
 - [U.S. Geological Survey Fundamental Science Practices. Circular 1367](#) (<http://pubs.usgs.gov/circ/1367/>)
- [U.S. Geological Survey Information Quality Guidelines](#)
- [Information Quality - Peer Review Agenda](#)
- [USGS policy on scientific integrity](#)
 - Allegations of scientific misconduct may be submitted following the guidelines in the USGS policy on scientific integrity using the following e-mail address: gs_science_integrity@usgs.gov
- Department of the Interior policy on integrity of scientific and scholarly activities (http://elips.doi.gov/app_dm/act_getfiles.cfm?relnum=3889)
- [Bureau Approving Officials \(BAOs\) for USGS Information Products](#)

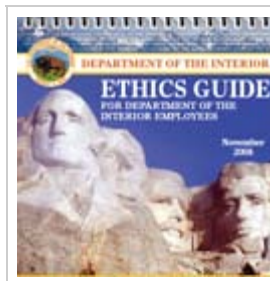
USGS Youth Program



The U.S.

Geological Survey (USGS) has a proud history of mentoring and engaging the youth of our country. The USGS provides a broad array of research and learning experiences to young people in the geosciences, aimed at inspiring them to pursue a scientific career and increase science literacy. we have expanded our Youth programs and made exciting progress in engaging youth in science, technology,

Ethics Office



The U.S. Geological Survey (USGS) has a historical commitment to provide the Nation with impartial, objective earth and natural science information. A tradition of responsible, ethical conduct underlies all USGS activities. Continuing this tradition is of paramount

importance to the continued relevance of the USGS and to maintaining our long, honored reputation. All USGS employees and volunteers are expected to maintain high standards of honesty, integrity, impartiality, and conduct to ensure the proper performance of USGS business and to enhance the trust and confidence of citizens in their Government. USGS employees and volunteers are expected to comply with all Federal statutes, regulations, Executive Orders, and Departmental and Survey Manual chapters.

- [Ethics Guide for DOI Employees \(2013\)](#)

engineering, and mathematics (STEM) activities and the natural resources.

[.docx, 100 KB]

- [USGS Ethics Office contact and specialization chart \(Nov 2010\)](#) [.doc, 14 KB]
- [Financial Guide for USGS Employees #34 \(Dec 01, 2013\)](#) [.doc, 157 KB]

2013 Annual Ethics Training

[2013 USGS Annual Ethics Training](#) [.pptx, 196 KB]

This presentation references the criminal ethics statutes, the Standards of Ethical Conduct for Employees of the Executive Branch, DOI-specific supplemental ethics regulations, the 14 general principles of ethical conduct, and provides contact information for the USGS Ethics Office. It also contains information on the requirement to obtain an authorization of assignment to serve as an officer, board member or similar position of a professional scientific organization in official USGS capacity, acceptance of travel expenses from non-Federal sources, contributions of travel expenses to conduct field work or research, gifts from outside sources and between employees, the requirement to obtain Ethics Office approval to engage in outside work or activities (paid or unpaid) that are related to USGS job duties or the mission of the USGS, selling and soliciting on Government owned or leased property, restrictions on natural gas leases, and seeking employment/post-Government employment restrictions.

2012 Annual Ethics Training

[2012 USGS Annual Ethics Training](#) [.doc, 119 KB]

In accordance with Office of Government Ethics (OGE) regulations, all annual ethics training must include the 14 Principles of Ethical Conduct; the Standards of Ethical Conduct for Employees of the Executive Branch (5 C.F.R. 2635); criminal ethics statutes (18 U.S. Code §§ 201, 203, 205, 207, 208, 209, and 1913); agency-specific supplemental regulations; and contact information for the Ethics Office. It also addresses the requirement to obtain a 18 U.S.C. § 208(b)(1) conflict of interest waiver to serve as an officer or member of the board of directors of a professional scientific organization in official USGS capacity; the Financial Guide for USGS Employees # 33; Guidance from the Ethics Office and the Congressional Affairs Office on the Anti-Lobbying Statute; Federal Acquisition Regulation (FAR) 3.101-1; restrictions on endorsements and selling and soliciting on DOI-owned or -leased property; as well as important "seeking employment" and post-Government employment restrictions.

2011 Annual Ethics Training

[2011 USGS Annual Ethics Training](#) [.pdf, 121 KB]

This document discusses the 14 Principles of Ethical Conduct; the Standards of Ethical Conduct for Employees of the Executive Branch; criminal ethics statutes; agency-specific supplemental regulations; and provides contact information for the Ethics Office. It also contains the "Hatch Act Restrictions on Political Activity by USGS Employees," USGS Ethics Office Memorandum (August 12, 2011), "Restrictions on Holding Oil, Gas and Mineral Leases and Receipt of Royalties," USGS Ethics Office Memorandum (September 1, 2011), the Employee Financial Interests Certification Form 9-1909, and a link to the most recent Financial Guide for USGS Employees, Version #32 (December 1, 2011). Additionally, it provides information on a change in interpretation of sector mutual fund investment restrictions; reports of acceptance of travel expenses from non-Federal entities; outside work and activities; procurement integrity; and scientific integrity.

2010 Annual Ethics Training

[2010 USGS annual ethics training \(Nov 2010\)](#) [ppt, 921 KB]

This training contains an overview of the Federal criminal ethics statutes (18 U.S.C. §§ 201 to 209), the Standards of Ethical Conduct for Employees of the Executive Branch (5 C.F.R. 2635), the 14 Principles of Ethical Conduct, and DOI supplemental ethics regulations (5 C.F.R. 3501). Information is also provided on how to access ethics resources — the USGS Ethics Office webpage, the Financial Guide for USGS Employees, the Departmental Ethics Office website, and the Office of Government Ethics (OGE) website and the Ethics Guide for DOI Employees. Annual ethics training is required for all financial disclosure report filers and encouraged for all USGS employees.

- [Seeking Employment and Post-Government Employment Restrictions](#) [.docx, 21 KB]
- [Ethics Approval of Outside Work or Activities](#) [.docx, 16 KB]
- [Acceptance of Travel Expenses from Non-Federal entities](#) [.docx, 14 KB]
- [USGS Gift Acceptance Authority](#) [.docx, 15 KB]

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API Documentation
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Real-time Feeds & Notifications



Tweet Earthquake Dispatch
Tweet Earthquake Dispatch (TED) offers two Twitter accounts. On average, each account will produce about one tweet per day.



Earthquake Notification Service
The Earthquake Notification Service (ENS) is a free service that sends you automated notifications to your email or cell phone when earthquakes happen.



Atom Syndication
A basic syndication format supported by a variety of feed readers. This is a good option for casually subscribing to earthquake information.



Google Earth KML
This feed format is suitable for loading into applications that understand Keyhole Markup Language (KML) such as Google Earth™.



Spreadsheet Applications
A simple text format suitable for loading data into spreadsheet applications like Microsoft Excel™. This is a good option for manual scientific analysis.



Programmatic Access
A well-structured format readily parsed by most programming languages. This is a good option for software developers wishing to use earthquake data.



QuakeML
A flexible, extensible and modular XML representation of seismological data which is intended to cover a broad range of fields of application in modern seismology.

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MMI	Mag	Location	Event Time	Event ID	Response
I	3.1	PUERTO RICO REGION 19.00°N -65.30°W 66Km Deep	2014-03-07 22:43:18 UTC 2014-03-07 18:43:18 LOCAL	PR14066009	0
I	3.3	PUERTO RICO REGION 18.91°N -65.32°W 72Km Deep	2014-03-07 22:28:20 UTC 2014-03-07 18:28:20 LOCAL	PR14066008	0
IV	2.8	SAN FRANCISCO BAY AREA, CALIFORNIA 37.60°N -122.01°W 6Km Deep	2014-03-07 21:38:23 UTC 2014-03-07 13:38:23 LOCAL	NC72180656	268
I	5.3	EASTERN NEW GUINEA REG. PAPUA NEW GUINEA 6.31°S 147.87°E 45Km Deep	2014-03-07 21:23:23 UTC 2014-03-08 07:23:23 LOCAL	USC000N55V	0
III	2.4	OREGON 45.89°N -122.90°W 0Km Deep	2014-03-07 19:22:18 UTC 2014-03-07 11:22:18 LOCAL	UW60713641	1
I	2.9	PUERTO RICO REGION 19.15°N -67.20°W 6Km Deep	2014-03-07 19:11:05 UTC 2014-03-07 15:11:05 LOCAL	PR14066006	0
I	4.8	NEAR THE EAST COAST OF HONSHU, JAPAN 35.67°N 140.59°E 33Km Deep	2014-03-07 18:34:22 UTC 2014-03-08 03:34:22 LOCAL	USC000N524	0
I	3.0	PUERTO RICO REGION 19.14°N -67.33°W 35Km Deep	2014-03-07 18:20:12 UTC 2014-03-07 14:20:12 LOCAL	PR14066007	0
II	3.1	CENTRAL CALIFORNIA 35.95°N -117.30°W 7Km Deep	2014-03-07 17:58:31 UTC 2014-03-07 09:58:31 LOCAL	CI15473569	1
I	4.6	SOUTHERN GREECE 36.87°N 21.55°E 56Km Deep	2014-03-07 17:44:00 UTC 2014-03-07 19:44:00 LOCAL	USC000N504	0
III	3.1	OKLAHOMA 36.70°N -97.55°W 5Km Deep	2014-03-07 16:20:11 UTC 2014-03-07 10:20:11 LOCAL	USC000N4WH	4
I	5.3	SOUTHERN SUMATRA, INDONESIA 4.61°S 103.77°E 117Km Deep	2014-03-07 16:14:53 UTC 2014-03-07 23:14:53 LOCAL	USC000N4W6	0
II	2.7	OFFSHORE NORTHERN CALIFORNIA 40.32°N -124.54°W 21Km Deep	2014-03-07 11:25:53 UTC 2014-03-07 03:25:53 LOCAL	NC72180476	1
II	2.8	SOUTHERN CALIFORNIA 32.87°N -116.23°W 4Km Deep	2014-03-07 00:58:35 UTC 2014-03-06 16:58:35 LOCAL	CI15473361	3

Found 32 matching results Felt Events - Last 7 Days

MMI	Mag	Location	Event Time	Event ID	Response
IV	4.6	DOMINICAN REPUBLIC REGION	2014-03-06 21:56:45 UTC	PR14065002	29

		19.47°N -67.92°W 52Km Deep	2014-03-06 17:56:45 LOCAL		
II	2.6	EASTERN TENNESSEE 35.68°N -84.26°W 21Km Deep	2014-03-06 08:29:37 UTC 2014-03-06 03:29:37 LOCAL	SE030614A	9
VI	5.3	VALPARAISO, CHILE 33.33°S -71.37°W 58Km Deep	2014-03-06 04:37:06 UTC 2014-03-06 01:37:06 LOCAL	USC000N3W0	396
III	3.1	CENTRAL CALIFORNIA 35.71°N -121.06°W 9Km Deep	2014-03-06 00:55:55 UTC 2014-03-05 16:55:55 LOCAL	NC72179616	17
IV	4.7	COSTA RICA 10.21°N -85.35°W 34Km Deep	2014-03-05 21:15:53 UTC 2014-03-05 15:15:53 LOCAL	USC000N3LW	5
IV	3.3	OKLAHOMA 35.64°N -97.37°W 6Km Deep	2014-03-05 14:17:06 UTC 2014-03-05 08:17:06 LOCAL	USB000N1IM	72
IV	3.1	SOUTHERN CALIFORNIA 33.93°N -116.35°W 6Km Deep	2014-03-05 09:17:01 UTC 2014-03-05 01:17:01 LOCAL	CI15472609	26
IV	4.4	CENTRAL ALASKA 62.08°N -149.46°W 38Km Deep	2014-03-05 03:13:19 UTC 2014-03-04 18:13:19 LOCAL	AK11176369	61
III	5.0	OFF THE WEST COAST OF BAJA CALIFORNIA 31.38°N -119.36°W 2Km Deep	2014-03-05 02:24:23 UTC 2014-03-04 18:24:23 LOCAL	USB000N1B3	7
II	2.1	OKLAHOMA 36.15°N -96.96°W 3Km Deep	2014-03-05 02:02:57 UTC 2014-03-04 20:02:57 LOCAL	USB000N1DN	5
III	2.4	OKLAHOMA 36.15°N -96.97°W 5Km Deep	2014-03-05 01:53:01 UTC 2014-03-04 19:53:01 LOCAL	USB000N1DL	11
IV	2.9	OKLAHOMA 35.80°N -96.98°W 4Km Deep	2014-03-04 17:44:10 UTC 2014-03-04 11:44:10 LOCAL	USB000N1DG	6
III	2.6	OKLAHOMA 35.80°N -96.97°W 5Km Deep	2014-03-04 16:39:38 UTC 2014-03-04 10:39:38 LOCAL	USB000N0WW	6
IV	5.7	OFFSHORE VALPARAISO, CHILE 33.57°S -72.06°W 9Km Deep	2014-03-04 10:51:13 UTC 2014-03-04 07:51:13 LOCAL	USB000N0MP	77
IV	2.6	GREATER LOS ANGELES AREA, CALIFORNIA 34.12°N -117.42°W 4Km Deep	2014-03-04 06:48:00 UTC 2014-03-03 22:48:00 LOCAL	CI15471937	46
IV	2.6	GREATER LOS ANGELES AREA, CALIFORNIA 34.11°N -117.41°W 4Km Deep	2014-03-04 05:59:46 UTC 2014-03-03 21:59:46 LOCAL	CI15471921	185
IV	2.6	NORTHERN CALIFORNIA 39.00°N -123.39°W 6Km Deep	2014-03-04 00:48:30 UTC 2014-03-03 16:48:30 LOCAL	NC72178631	7
IV	5.1	OFFSHORE VALPARAISO, CHILE 33.10°S -71.93°W 10Km Deep	2014-03-03 03:17:46 UTC 2014-03-03 00:17:46 LOCAL	USB000MZZ	29
III	2.8	OKLAHOMA 35.79°N -97.47°W 6Km Deep	2014-03-03 02:53:19 UTC 2014-03-02 20:53:19 LOCAL	USB000MZZU	21
IV	5.2	RYUKYU ISLANDS, JAPAN 26.28°N 127.33°E 56Km Deep	2014-03-03 02:27:31 UTC 2014-03-03 11:27:31 LOCAL	USB000MZZM	30
III	2.6	OKLAHOMA 36.16°N -96.96°W 5Km Deep	2014-03-03 01:54:22 UTC 2014-03-02 19:54:22 LOCAL	USB000MZZ9	14
IV	2.7	GREATER LOS ANGELES AREA, CALIFORNIA 34.29°N -118.54°W 7Km Deep	2014-03-03 00:12:09 UTC 2014-03-02 16:12:09 LOCAL	CI15471641	166
III	5.8	OFFSHORE CHIAPAS, MEXICO 14.30°N -92.92°W 35Km Deep	2014-03-02 22:17:17 UTC 2014-03-02 16:17:17 LOCAL	USB000MZZN	7
V	6.5	RYUKYU ISLANDS, JAPAN 27.41°N 127.33°E 111Km Deep	2014-03-02 20:11:22 UTC 2014-03-03 05:11:22 LOCAL	USB000MZZM	106
II	2.9	OKLAHOMA 36.68°N -98.47°W 5Km Deep	2014-03-02 16:51:25 UTC 2014-03-02 10:51:25 LOCAL	USB000MZZ9	7
III	3.2	OKLAHOMA 36.48°N -97.08°W 2Km Deep	2014-03-02 14:55:47 UTC 2014-03-02 08:55:47 LOCAL	USB000MZZP	8
IV	2.5	OKLAHOMA 35.50°N -97.25°W 7Km Deep	2014-03-02 12:15:40 UTC 2014-03-02 06:15:40 LOCAL	USB000MZZR	8
VI	6.2	NEAR THE COAST OF NICARAGUA 12.63°N -87.64°W 72Km Deep	2014-03-02 09:37:56 UTC 2014-03-02 03:37:56 LOCAL	USB000MZZF	94
III	2.6	NORTHERN CALIFORNIA 36.92°N -121.67°W 10Km Deep	2014-03-02 08:20:56 UTC 2014-03-02 00:20:56 LOCAL	NC72177791	9
		OKLAHOMA	2014-03-02 04:21:46 UTC		

IV	3.2	35.61°N -97.08°W 8Km Deep	2014-03-01 22:21:46 LOCAL	USB000MZBR	27
III	2.5	SAN FRANCISCO BAY AREA, CALIFORNIA 37.86°N -122.25°W 9Km Deep	2014-03-01 07:00:12 UTC 2014-02-28 23:00:12 LOCAL	NC72177126	84
III	2.1	OKLAHOMA 35.78°N -97.46°W 5Km Deep	2014-02-28 05:46:05 UTC 2014-02-27 23:46:05 LOCAL	USB000MY0T	7

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M5.3 - 31km S of Villa Alemana, Chile

2014-03-06 04:37:06 UTC

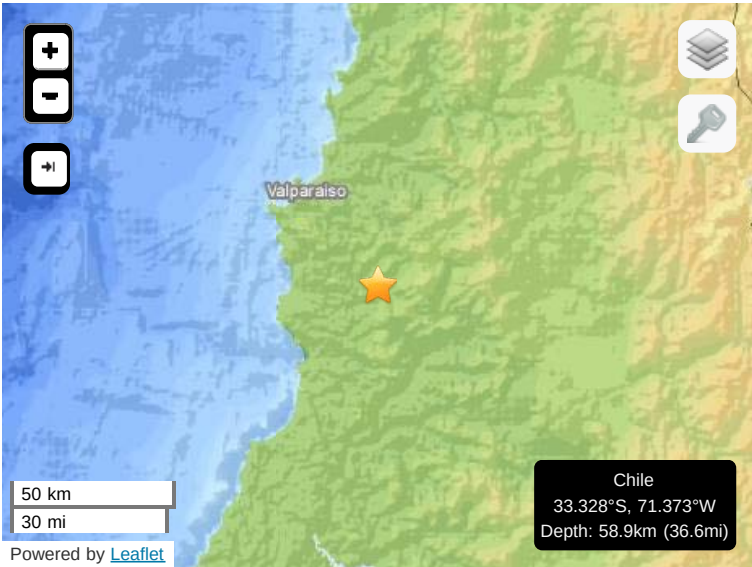
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Event Time

2014-03-06 04:37:06 UTC
2014-03-06 01:37:06 UTC-03:00 at epicenter
2014-03-05 21:37:06 UTC-07:00 system time

Location

33.328°S 71.373°W depth=58.9km (36.6mi)

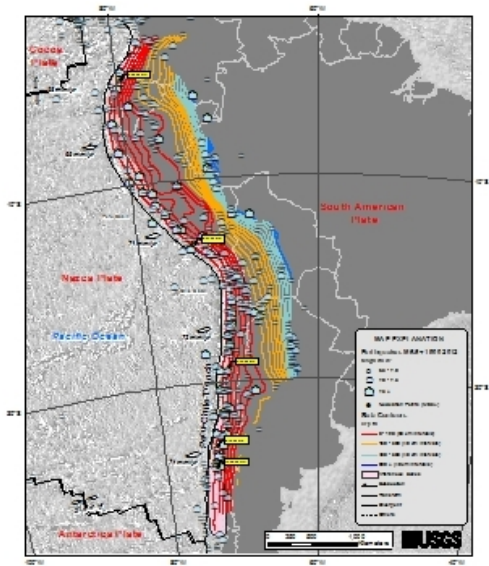
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Tectonic Summary

Seismotectonics of South America (Nazca Plate Region)



The South American arc extends over 7,000 km, from the Chilean margin triple junction offshore of southern Chile to its intersection with the Panama fracture zone, offshore of the southern coast of Panama in Central America. It marks the plate boundary between the subducting Nazca plate and the South America plate, where the oceanic crust and lithosphere of the Nazca plate begin their descent into the mantle beneath South America. The convergence associated with this subduction process is responsible for the uplift of the Andes Mountains, and for the active volcanic chain present along much of this deformation front. Relative to a fixed South America plate, the Nazca plate moves slightly north of eastwards at a rate varying from approximately 80 mm/yr in the south to approximately 65 mm/yr in the north. Although the rate of subduction varies little along the entire arc, there are complex changes in the geologic processes along the subduction zone that dramatically influence volcanic activity, crustal deformation, earthquake generation and occurrence all along the western edge of South America.

Most of the large earthquakes in South America are constrained to shallow depths of 0 to 70 km resulting from both crustal and interplate deformation. Crustal earthquakes result from deformation and mountain building in the overriding South America plate and generate earthquakes as deep as approximately 50 km. Interplate earthquakes occur due to slip along the dipping interface between the Nazca and the South American plates. Interplate earthquakes in this region are frequent and often large, and occur between the depths of approximately 10 and 60 km. Since 1900, numerous magnitude 8 or larger earthquakes have occurred on this subduction zone interface that were followed by devastating tsunamis, including the 1960 M9.5 earthquake in southern Chile, the largest instrumentally recorded earthquake in the world. Other notable shallow tsunami-generating earthquakes include the 1906 M8.5 earthquake near Esmeraldas, Ecuador, the 1922 M8.5 earthquake near Coquimbo, Chile, the 2001 M8.4 Arequipa, Peru earthquake, the 2007 M8.0 earthquake near Pisco, Peru, and the 2010 M8.8 Maule, Chile earthquake located just north of the 1960 event.

Large intermediate-depth earthquakes (those occurring between depths of approximately 70 and 300 km) are relatively limited in size and spatial extent in South America, and occur within the Nazca plate as a result of internal deformation within the subducting plate. These earthquakes generally cluster beneath northern Chile and southwestern Bolivia, and to a lesser extent beneath northern Peru and southern Ecuador, with depths between 110 and 130 km. Most of these earthquakes occur adjacent to the bend in the coastline between Peru and Chile. The most recent large intermediate-depth earthquake in this region was the 2005 M7.8 Tarapaca, Chile earthquake.

Earthquakes can also be generated to depths greater than 600 km as a result of continued internal deformation of the subducting Nazca plate. Deep-focus earthquakes in South America are not observed from a depth range of approximately 300 to 500 km. Instead, deep earthquakes in this region occur at depths of 500 to 650 km and are concentrated into two zones: one that runs beneath the Peru-Brazil border and another that extends from central Bolivia to central Argentina. These earthquakes generally do not exhibit large magnitudes. An exception to this was the 1994 Bolivian earthquake in northwestern Bolivia. This M8.2 earthquake occurred at a depth of 631 km, which was until recently the largest deep-focus earthquake instrumentally recorded (superseded in May 2013 by a M8.3 earthquake 610 km beneath the Sea of Okhotsk, Russia), and was felt widely throughout South and North America.

Subduction of the Nazca plate is geometrically complex and impacts the geology and seismicity of the western edge of South America. The intermediate-depth regions of the subducting Nazca plate can be segmented into five sections based on their angle of subduction beneath the South America plate. Three segments are characterized by steeply dipping subduction; the other two by near-horizontal subduction. The Nazca plate beneath northern Ecuador, southern Peru to northern Chile, and southern Chile descend into the mantle at angles of 25° to 30°. In contrast, the slab beneath southern Ecuador to central Peru, and under central Chile, is subducting at a shallow angle of approximately 10° or less. In these regions of “flat-slab” subduction, the Nazca plate moves horizontally for several hundred kilometers before continuing its descent into the mantle, and is shadowed by an extended zone of crustal seismicity in the overlying South America plate. Although the South America plate exhibits a chain of active volcanism resulting from the subduction and partial melting of the Nazca oceanic lithosphere along most of the arc, these regions of inferred shallow subduction correlate with an absence of volcanic activity.

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M6.3 - 262km ESE of Sola, Vanuatu

2014-03-05 09:56:58 UTC

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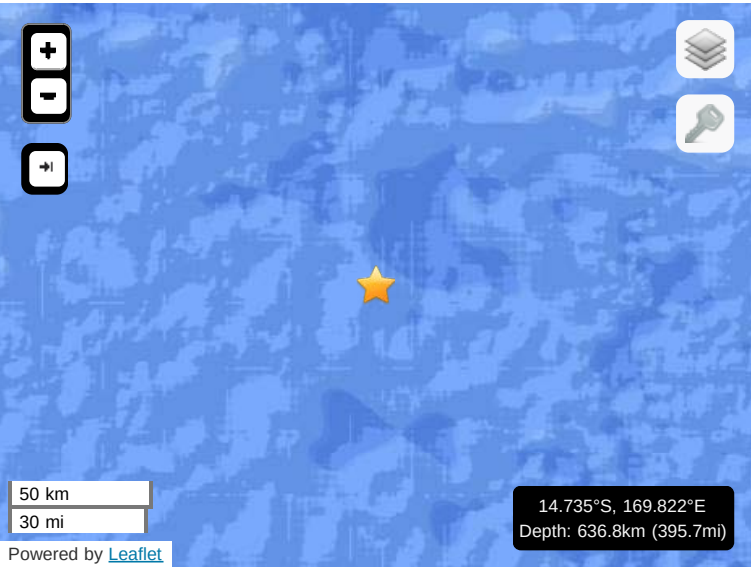
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Event Time

2014-03-05 09:56:58 UTC
2014-03-05 20:56:58 UTC+11:00 at epicenter
2014-03-05 02:56:58 UTC-07:00 system time

Location

14.735°S 169.822°E depth=636.8km (395.7mi)

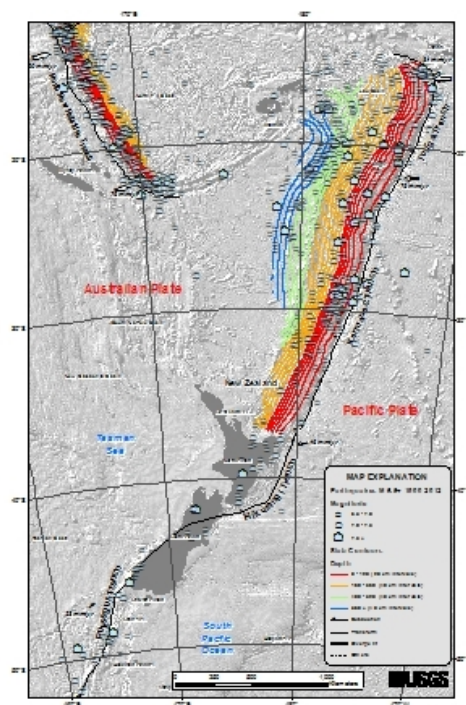
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Tectonic Summary

Seismotectonics of the Eastern Margin of the Australia Plate



The eastern margin of the Australia plate is one of the most seismically active areas of the world due to high rates of convergence between the Australia and Pacific plates. In the region of New Zealand, the 3000 km long Australia-Pacific plate boundary extends from south of Macquarie Island to the southern Kermadec Island chain. It includes an oceanic transform (the Macquarie Ridge), two oppositely verging subduction zones (Puysegur and Hikurangi), and a transpressive continental transform, the Alpine Fault through South Island, New Zealand.

Since 1900 there have been 15 M7.5+ earthquakes recorded near New Zealand. Nine of these, and the four largest, occurred along or near the Macquarie Ridge, including the 1989 M8.2 event on the ridge itself, and the 2004 M8.1 event 200 km to the west of the plate boundary, reflecting intraplate deformation. The largest recorded earthquake in New Zealand itself was the 1931 M7.8 Hawke's Bay earthquake, which killed 256 people. The last M7.5+ earthquake along the Alpine Fault was 170 years ago; studies of the faults' strain accumulation suggest that similar events are likely to occur again.

North of New Zealand, the Australia-Pacific boundary stretches east of Tonga and Fiji to 250 km south of Samoa. For 2,200 km the trench is approximately linear, and includes two segments where old (>120 Myr) Pacific oceanic lithosphere rapidly subducts westward (Kermadec and Tonga). At the northern end of the Tonga trench, the boundary curves sharply westward and changes along a 700 km-long segment from trench-normal subduction, to oblique subduction, to a left lateral transform-like structure.

Australia-Pacific convergence rates increase northward from 60 mm/yr at the southern Kermadec trench to 90 mm/yr at the northern Tonga trench; however, significant back arc extension (or equivalently, slab rollback) causes the consumption rate of subducting Pacific lithosphere to be much faster. The spreading rate in the Havre trough, west of the Kermadec trench, increases northward from 8 to 20 mm/yr. The southern tip of this spreading center is propagating into the North Island of New Zealand, rifting it apart. In the southern Lau Basin, west of the Tonga trench, the spreading rate increases northward from 60 to 90 mm/yr, and in the northern Lau Basin, multiple spreading centers result in an extension rate as high as 160 mm/yr. The overall subduction velocity of the Pacific plate is the vector sum of Australia-Pacific velocity and back arc spreading velocity: thus it increases northward along the Kermadec trench from 70 to 100 mm/yr, and along the Tonga trench from 150 to 240 mm/yr.

The Kermadec-Tonga subduction zone generates many large earthquakes on the interface between the descending Pacific and overriding Australia plates, within the two plates themselves and, less frequently, near the outer rise of the Pacific plate east of the trench. Since 1900, 40 M7.5+ earthquakes have been recorded, mostly north of 30°S. However, it is unclear whether any of the few historic M8+ events that have occurred close to the plate boundary were underthrusting events on the plate interface, or were intraplate earthquakes. On September 29, 2009, one of the largest normal fault (outer rise) earthquakes ever recorded (M8.1) occurred south of Samoa, 40 km east of the Tonga trench, generating a tsunami that killed at least 180 people.

Across the North Fiji Basin and to the west of the Vanuatu Islands, the Australia plate again subducts eastwards beneath the Pacific, at the North New Hebrides trench. At the southern end of this trench, east of the Loyalty Islands, the plate boundary curves east into an oceanic transform-like structure analogous to the one north of Tonga.

Australia-Pacific convergence rates increase northward from 80 to 90 mm/yr along the North New Hebrides trench, but the Australia plate consumption rate is increased by extension in the back arc and in the North Fiji Basin. Back arc spreading occurs at a rate of 50 mm/yr along most of the subduction zone, except near ~15°S, where the D'Entrecasteaux ridge intersects the trench and causes localized compression of 50 mm/yr in the back arc. Therefore, the Australia plate subduction velocity ranges from 120 mm/yr at the

southern end of the North New Hebrides trench, to 40 mm/yr at the D'Entrecasteaux ridge-trench intersection, to 170 mm/yr at the northern end of the trench.

Large earthquakes are common along the North New Hebrides trench and have mechanisms associated with subduction tectonics, though occasional strike slip earthquakes occur near the subduction of the D'Entrecasteaux ridge. Within the subduction zone 34 M7.5+ earthquakes have been recorded since 1900. On October 7, 2009, a large interplate thrust fault earthquake (M7.6) in the northern North New Hebrides subduction zone was followed 15 minutes later by an even larger interplate event (M7.8) 60 km to the north. It is likely that the first event triggered the second of the so-called earthquake "doublet".

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M6.5 - 110km NW of Nago, Japan

2014-03-02 20:11:22 UTC

PAGER - GREEN

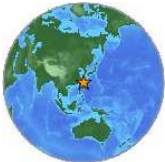
ShakeMap - V

DYFI? - V



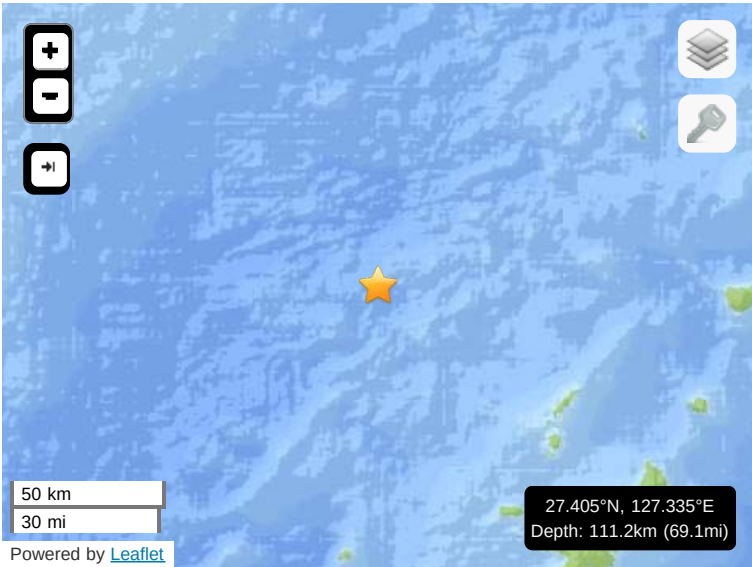
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Summary

Location and Magnitude contributed by: [USGS National Earthquake Information Center](#)



Event Time

2014-03-02 20:11:22 UTC
2014-03-03 04:11:22 UTC+08:00 at epicenter
2014-03-02 13:11:22 UTC-07:00 system time

Location

27.405°N 127.335°E depth=111.2km (69.1mi)

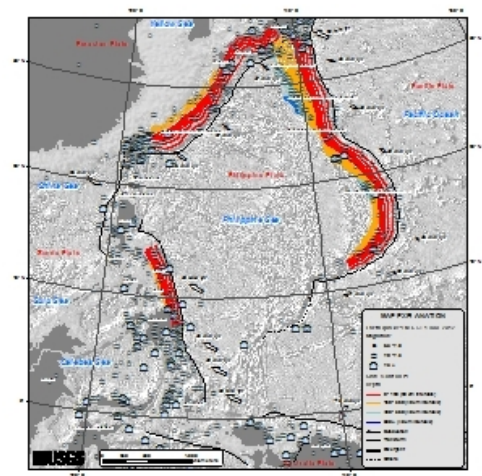
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Tectonic Summary

Seismotectonics of the Philippine Sea and Vicinity



The Philippine Sea plate is bordered by the larger Pacific and Eurasia plates and the smaller Sunda plate. The Philippine Sea plate is unusual in that its borders are nearly all zones of plate convergence. The Pacific plate is subducted into the mantle, south of Japan, beneath the Izu-Bonin and Mariana island arcs, which extend more than 3,000 km along the eastern margin of the Philippine

Sea plate. This subduction zone is characterized by rapid plate convergence and high-level seismicity extending to depths of over 600 km. In spite of this extensive zone of plate convergence, the plate interface has been associated with few great ($M > 8.0$) 'megathrust' earthquakes. This low seismic energy release is thought to result from weak coupling along the plate interface (Scholz and Campos, 1995). These convergent plate margins are also associated with unusual zones of back-arc extension (along with resulting seismic activity) that decouple the volcanic island arcs from the remainder of the Philippine Sea Plate (Karig et al., 1978; Klaus et al., 1992).

South of the Mariana arc, the Pacific plate is subducted beneath the Yap Islands along the Yap trench. The long zone of Pacific plate subduction at the eastern margin of the Philippine Sea Plate is responsible for the generation of the deep Izu-Bonin, Mariana, and Yap trenches as well as parallel chains of islands and volcanoes, typical of circum-pacific island arcs. Similarly, the northwestern margin of the Philippine Sea plate is subducting beneath the Eurasia plate along a convergent zone, extending from southern Honshu to the northeastern coast of Taiwan, manifested by the Ryukyu Islands and the Nansei-Shoto (Ryukyu) trench. The Ryukyu Subduction Zone is associated with a similar zone of back-arc extension, the Okinawa Trough. At Taiwan, the plate boundary is characterized by a zone of arc-continent collision, whereby the northern end of the Luzon island arc is colliding with the buoyant crust of the Eurasia continental margin offshore China.

Along its western margin, the Philippine Sea plate is associated with a zone of oblique convergence with the Sunda Plate. This highly active convergent plate boundary extends along both sides the Philippine Islands, from Luzon in the north to the Celebes Islands in the south. The tectonic setting of the Philippines is unusual in several respects: it is characterized by opposite-facing subduction systems on its east and west sides; the archipelago is cut by a major transform fault, the Philippine Fault; and the arc complex itself is marked by active volcanism, faulting, and high seismic activity. Subduction of the Philippine Sea Plate occurs at the eastern margin of the archipelago along the Philippine Trench and its northern extension, the East Luzon Trough. The East Luzon Trough is thought to be an unusual example of a subduction zone in the process of formation, as the Philippine Trench system gradually extends northward (Hamburger et al., 1983). On the west side of Luzon, the Sunda Plate subducts eastward along a series of trenches, including the Manila Trench in the north, the smaller less well-developed Negros Trench in the central Philippines, and the Sulu and Cotabato trenches in the south (Cardwell et al., 1980). At its northern and southern terminations, subduction at the Manila Trench is interrupted by arc-continent collision, between the northern Philippine arc and the Eurasian continental margin at Taiwan and between the Sulu-Borneo Block and Luzon at the island of Mindoro. The Philippine fault, which extends over 1,200 km within the Philippine arc, is seismically active. The fault has been associated with major historical earthquakes, including the destructive M7.6 Luzon earthquake of 1990 (Yoshida and Abe, 1992). A number of other active intra-arc fault systems are associated with high seismic activity, including the Cotabato Fault and the Verde Passage-Sibuyan Sea Fault (Galgana et al., 2007).

Relative plate motion vectors near the Philippines (about 80 mm/yr) is oblique to the plate boundary along the two plate margins of central Luzon, where it is partitioned into orthogonal plate convergence along the trenches and nearly pure translational motion along the Philippine Fault (Barrier et al., 1991). Profiles B and C reveal evidence of opposing inclined seismic zones at intermediate depths (roughly 70-300 km) and complex tectonics at the surface along the Philippine Fault.

Several relevant tectonic elements, plate boundaries and active volcanoes, provide a context for the seismicity presented on the main map. The plate boundaries are most accurate along the axis of the trenches and more diffuse or speculative in the South China Sea and Lesser Sunda Islands. The active volcanic arcs (Siebert and Simkin, 2002) follow the Izu, Volcano, Mariana, and Ryukyu island chains and the main Philippine islands parallel to the Manila, Negros, Cotabato, and Philippine trenches.

Seismic activity along the boundaries of the Philippine Sea Plate (Allen et al., 2009) has produced 7 great ($M > 8.0$) earthquakes and 250 large ($M > 7$) events. Among the most destructive events were the 1923 Kanto, the 1948 Fukui and the 1995 Kobe (Japan) earthquakes (99,000, 5,100, and 6,400 casualties, respectively), the 1935 and the 1999 Chi-Chi (Taiwan) earthquakes (3,300 and 2,500 casualties, respectively), and the 1976 M7.6 Moro Gulf and 1990 M7.6 Luzon (Philippines) earthquakes (7,100 and 2,400 casualties, respectively). There have also been a number of tsunami-generating events in the region, including the Moro Gulf earthquake, whose tsunami resulted in more than 5000 deaths.

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M6.2 - 23km WSW of Jiquilillo, Nicaragua

2014-03-02 09:37:56 UTC

PAGER - GREEN

ShakeMap - VI

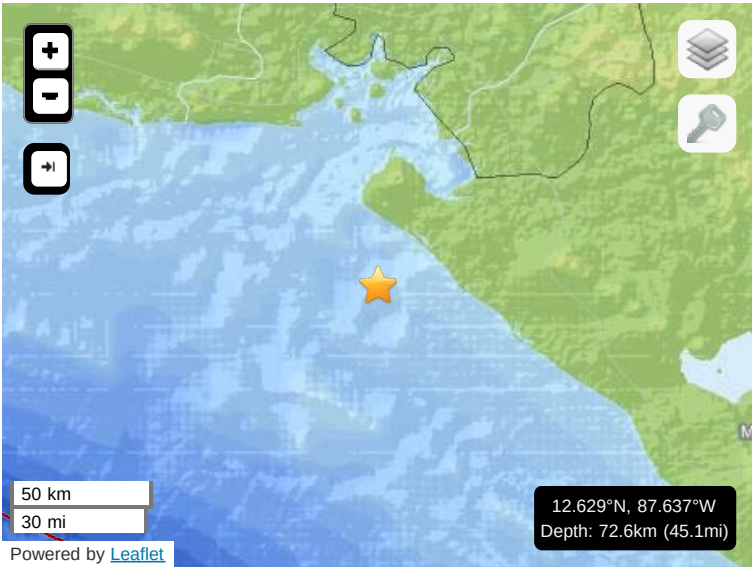
DYFI? - VI

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Event Time

2014-03-02 09:37:56 UTC
2014-03-02 03:37:56 UTC-06:00 at epicenter
2014-03-02 02:37:56 UTC-07:00 system time

Location

12.629°N 87.637°W depth=72.6km (45.1mi)

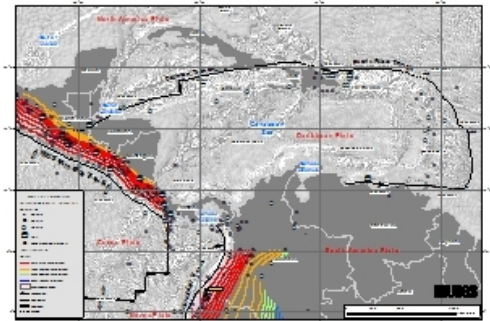
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Related Links

- [Additional earthquake information for Nicaragua](#)
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Tectonic Summary

Seismotectonics of the Caribbean Region and Vicinity



Extensive diversity and complexity of tectonic regimes characterizes the perimeter of the Caribbean plate, involving no fewer than four major plates (North America, South America, Nazca, and Cocos). Inclined zones of deep earthquakes (Wadati-Benioff zones), ocean trenches, and arcs of volcanoes clearly indicate subduction of oceanic lithosphere along the Central American and Atlantic Ocean margins of the Caribbean plate, while crustal seismicity in Guatemala, northern Venezuela, and the Cayman Ridge and Cayman Trench indicate transform fault and pull-apart basin tectonics.

Along the northern margin of the Caribbean plate, the North America plate moves westwards with respect to the Caribbean plate at a velocity of approximately 20 mm/yr. Motion is accommodated along several major transform faults that extend eastward from Isla de

Roatan to Haiti, including the Swan Island Fault and the Oriente Fault. These faults represent the southern and northern boundaries of the Cayman Trench. Further east, from the Dominican Republic to the Island of Barbuda, relative motion between the North America plate and the Caribbean plate becomes increasingly complex and is partially accommodated by nearly arc-parallel subduction of the North America plate beneath the Caribbean plate. This results in the formation of the deep Puerto Rico Trench and a zone of intermediate focus earthquakes (70-300 km depth) within the subducted slab. Although the Puerto Rico subduction zone is thought to be capable of generating a megathrust earthquake, there have been no such events in the past century. The last probable interplate (thrust fault) event here occurred on May 2, 1787 and was widely felt throughout the island with documented destruction across the entire northern coast, including Arecibo and San Juan. Since 1900, the two largest earthquakes to occur in this region were the August 4, 1946 M8.0 Samana earthquake in northeastern Hispaniola and the July 29, 1943 M7.6 Mona Passage earthquake, both of which were shallow thrust fault earthquakes. A significant portion of the motion between the North America plate and the Caribbean plate in this region is accommodated by a series of left-lateral strike-slip faults that bisect the island of Hispaniola, notably the Septentrional Fault in the north and the Enriquillo-Plantain Garden Fault in the south. Activity adjacent to the Enriquillo-Plantain Garden Fault system is best documented by the devastating January 12, 2010 M7.0 Haiti strike-slip earthquake, its associated aftershocks and a comparable earthquake in 1770.

Moving east and south, the plate boundary curves around Puerto Rico and the northern Lesser Antilles where the plate motion vector of the Caribbean plate relative to the North and South America plates is less oblique, resulting in active island-arc tectonics. Here, the North and South America plates subduct towards the west beneath the Caribbean plate along the Lesser Antilles Trench at rates of approximately 20 mm/yr. As a result of this subduction, there exists both intermediate focus earthquakes within the subducted plates and a chain of active volcanoes along the island arc. Although the Lesser Antilles is considered one of the most seismically active regions in the Caribbean, few of these events have been greater than M7.0 over the past century. The island of Guadeloupe was the site of one of the largest megathrust earthquakes to occur in this region on February 8, 1843, with a suggested magnitude greater than 8.0. The largest recent intermediate-depth earthquake to occur along the Lesser Antilles arc was the November 29, 2007 M7.4 Martinique earthquake northwest of Fort-De-France.

The southern Caribbean plate boundary with the South America plate strikes east-west across Trinidad and western Venezuela at a relative rate of approximately 20 mm/yr. This boundary is characterized by major transform faults, including the Central Range Fault and the Boconó-San Sebastian-El Pilar Faults, and shallow seismicity. Since 1900, the largest earthquakes to occur in this region were the October 29, 1900 M7.7 Caracas earthquake, and the July 29, 1967 M6.5 earthquake near this same region. Further to the west, a broad zone of compressive deformation trends southwestward across western Venezuela and central Columbia. The plate boundary is not well defined across northwestern South America, but deformation transitions from being dominated by Caribbean/South America convergence in the east to Nazca/South America convergence in the west. The transition zone between subduction on the eastern and western margins of the Caribbean plate is characterized by diffuse seismicity involving low- to intermediate-magnitude (M<6.0) earthquakes of shallow to intermediate depth.

The plate boundary offshore of Colombia is also characterized by convergence, where the Nazca plate subducts beneath South America towards the east at a rate of approximately 65 mm/yr. The January 31, 1906 M8.5 earthquake occurred on the shallowly dipping megathrust interface of this plate boundary segment. Along the western coast of Central America, the Cocos plate subducts towards the east beneath the Caribbean plate at the Middle America Trench. Convergence rates vary between 72-81 mm/yr, decreasing towards the north. This subduction results in relatively high rates of seismicity and a chain of numerous active volcanoes; intermediate-focus earthquakes occur within the subducted Cocos plate to depths of nearly 300 km. Since 1900, there have been many moderately sized intermediate-depth earthquakes in this region, including the September 7, 1915 M7.4 El Salvador and the October 5, 1950 M7.8 Costa Rica events.

The boundary between the Cocos and Nazca plates is characterized by a series of north-south trending transform faults and east-west trending spreading centers. The largest and most seismically active of these transform boundaries is the Panama Fracture Zone. The Panama Fracture Zone terminates in the south at the Galapagos rift zone and in the north at the Middle America trench, where it forms part of the Cocos-Nazca-Caribbean triple junction. Earthquakes along the Panama Fracture Zone are generally shallow, low- to intermediate in magnitude (M<7.2) and are characteristically right-lateral strike-slip faulting earthquakes. Since 1900, the largest earthquake to occur along the Panama Fracture Zone was the July 26, 1962 M7.2 earthquake.

References for the Panama Fracture Zone:
Molnar, P., and Sykes, L. R., 1969, Tectonics of the Caribbean and Middle America Regions from Focal Mechanisms and Seismicity: Geological Society of America Bulletin, v. 80, p. 1639-1684.

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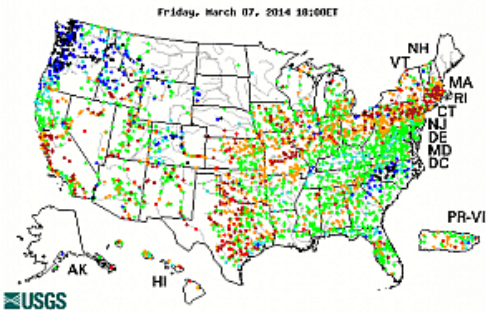
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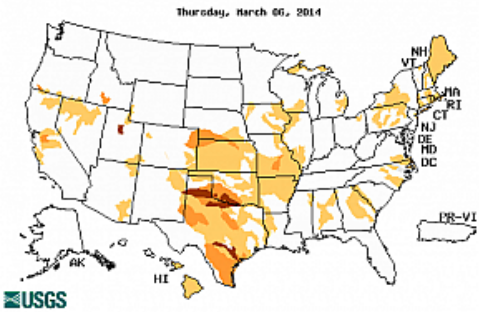
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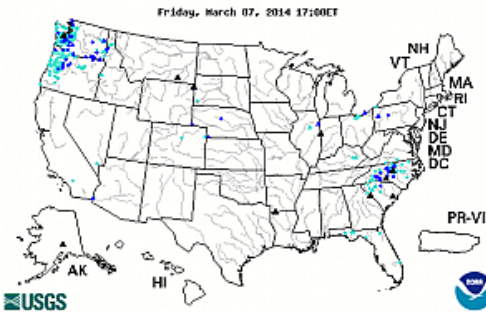
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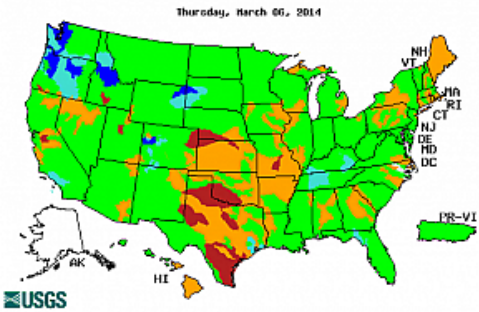
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- Elliott State Forest, Oregon
- Johnson Creek Landslide, Coastal Oregon
- Portland, Oregon
- Washington
- Seattle Area, Washington

Landslide Monitoring

Monitoring is essential to predicting the behavior of landslides and forecasting which storms can trigger large numbers of landslides. Scientists in the USGS Landslide Hazards Program monitor selected landslides and hillsides in order to learn more about the physical processes that trigger landslides or control their movement.

Current Monitoring Sites

(Click a site's marker for more information.)



Continuous, real-time monitoring occurs at some sites and periodic monitoring occurs at others; the most recent measurements are provided on-line for a few of our monitoring sites.

Graphs showing the most recent data are updated regularly with update cycles ranging from 15 minutes to 24 hours. Landslide monitoring data and information provided on this web site are preliminary and have not been reviewed for accuracy; therefore the data are subject to revision.

Links

- [Capturing landslide dynamics and hydrologic triggers using near-real-time monitoring \(PDF\)](#)
- [What to do and look for during and immediately after heavy rains](#)
- [Landslide Preparedness & Safety Information](#)
- [Real-Time Monitoring of Landslides](#)



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Cleveland Advisory Yellow2014-03-07 13:50:45

Shishaldin Advisory Yellow2014-03-07 13:50:45

Veniaminof Advisory Yellow2014-03-07 13:50:45

Pagan Advisory Yellow2014-03-07 11:12:23

Cascade Range Normal Green2014-03-07 11:33:28

Yellowstone Normal Green2014-03-03 11:58:41

Mauna Loa Normal Green2014-02-06 09:37:52

Hualalai Normal Green2014-02-06 09:37:52

Haleakala Normal Green2014-02-06 09:37:52

Mauna Kea Normal Green2014-02-06 09:37:52

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n/a

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◀ 3/6 23:11 ▶

-

3/7 23:11

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2000nT

1000nT

500nT

200nT

100nT

50nT

20nT

10nT

5nT

2nT

1nT

Auto

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H

E

Z

F

ΔF

 Normal plot

 Top wrap

 Bottom wrap

 Spike

 Gap/ No data

UTC 24hr Time of last update: 3/7 23:11

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The USGS serves the Nation by providing reliable scientific information to describe and understand the Earth; minimize loss of life and property from natural disasters; and manage water, biological, energy and mineral resources. The USGS has a special scientific focus for FY 07 and beyond on lessening the adverse impacts of natural hazards - - volcanoes, earthquake, hurricanes, landslides, wild fires, and floods.

See also [United States Geological Survey \(USGS\) Natural Hazards Response Factsheet](#)

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- [Avian Influenza](#)
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 - [PandemicFlu.gov](#)

Emergency Management Programs & Resources

- Partners with more than 2,000 state, local and tribal governments, the academic community, federal allies, non-governmental organizations, and the private sector.
- Maintains the Global Seismographic Network in collaboration with international partners/the National Earthquake Information Center in Colorado where earthquake activity is monitored and reported globally.
- Maintains the volcano monitoring networks: the Alaska Volcano Observatory, the Cascades Volcano Observatory and the Hawaiian Volcano Observatory where USGS scientist lead the world in the study of how volcanoes work; how to forecast them and warn the public about an eruption; and how to mitigate potential volcanic disasters from occurring.
- Assesses and monitors potential landslide hazards, providing warning information on landslide activity and rapid monitoring response to events.

- [West Nile](#)

[Drought](#)

USGS & DOI Documents

USGS Emergency Response Documents

• USGS Charters, Procedures and Plans

- [Hazard Response Executive Committee \(HREC\) Charter](#)



- [Geospatial Information Response Team \(GIRT\)](#)

- [Geospatial Information Response Team \(GIRT\)](#)



- [Geospatial Information Response Team \(GIRT\) Standard Operating](#)



- [USGS Storm Response Plan](#)



• International Charter

- [Disasters Charter](#)

DOI Emergency Policy

[DOI Emergency Management](#)

Departmentwide policy relating to emergency management is found in the [Department's Manual](#), Part 900:

Chapter 1: [Policy, Functions & Responsibilities](#)

Chapter 2: [Continuity of Operations Program](#)

Chapter 3: [National Security Emergency Preparedness](#)

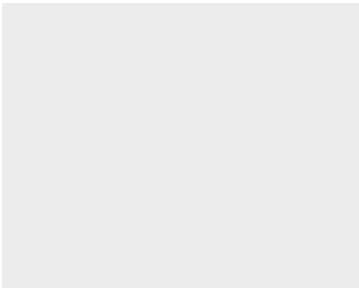
Chapter 4: [Coordination of Emergency Incidents](#)

Chapter 5: [National Response Plan Coordination](#)

- Maintains Satellite Land Remote Sensing Data with federal agency partners (Landsat 7; NASA's TERRA Satellite; NOAA's satellites; and declassified intelligence photos).
- Maintains the National Mapping Facilities where geographic research is conducted. The National Mapping Facilities are: The EROS Data Center in Sioux Falls SD; the Mid-Continent Mapping Center in Rolla MO; the Rocky Mountain Mapping Center in Lakewood, CO; the Western Mapping Center in CA; and the Headquarters and Mapping Applications Center in Reston, VA.
- Provides unbiased scientific information to characterize and manage contaminated sites and protect human and environmental health.
- Provides real-time flood warnings to promote safer communities.
- Houses Biological Science and Technology Centers nationwide such as the Patuxent Wildlife Research Center in MD; the Alaska Biological Science Center; the Northern Prairie Wildlife Research Center in ND; and the Florida Caribbean Science Center.
- Houses the Columbia Environmental Research Center in Columbia MO to provide scientific information on environmental contaminants and assessments of the effects on habitat alterations on aquatic and terrestrial ecosystems.
- USGS is the Department of the Interior Planner for ESF-11 (Animal & Plant Disease and Pest Response), and ESF-14 (Economic Stabilization, Community Recovery & Mitigation).

Other Emergency Management Links

- [Data Sources & Web Mapping Applications](#)
- [ReadyAmerica](#)
- [USGS Emergency Operations](#)



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USGS Oil Spill Response

Note: We will be continually updating this page as more information is made available.

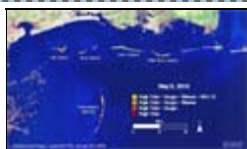
The USGS continues to mobilize equipment and personnel to gather scientific data and information on the environmental impacts of the oil spill to affected coastal habitats.

USGS scientists will be:

- Collecting satellite imagery to assess the impact on wetlands and coasts
- Developing maps showing NOAA projections of spill trajectory with respect to DOI Lands
- Collecting samples to ascertain source and levels of toxicity to soils and water systems
- Conducting tests to determine cause of mortality of wildlife
- Developing models that depict how local tidal and current conditions will interact with seafloor bathymetry to carry oil over barrier islands
- Providing decision support tools to help DOI land managers mitigate the effects of the oil spill and assist in restoration efforts

Some documents on this page may require [Adobe Reader](#).

Coastal Impacts



- [Barrier-Island Inundation and Overwash](#)

Satellite Imagery and other Geospatial Data



- [Northern Gulf of Mexico Map Products](#)
Lidar topography, bathymetry, aerial imagery
- [Hazards Data Distribution System](#) (HDDS)
Full-resolution GeoTIFF and JPEG images.
- [Deepwater Horizon Oil Spill 2010](#) gallery (continually updated)

Sampling Efforts



The U.S. Geological Survey (USGS) as part of the U.S. Department of the Interior (DOI) is responding to the Deepwater Horizon Oil Spill by establishing baseline conditions in water chemistry, bottom sediments, and aquatic invertebrates prior to landfall of the oil spill. Over the past several weeks teams of scientists have been

collecting samples in Texas, Louisiana, Mississippi, Alabama, and Florida at over 60 locations unaffected as yet by the oil spill. These locations include barrier islands and coastal wetlands. These areas are critical to fish and wildlife in the Gulf of Mexico and could suffer severe environmental damage if oil from this spill comes ashore.

- [Sampling sites \(2/28/2011\)](#) (Google Earth KMZ) | [ZIP file](#) | [JPG](#)

Wildlife Issues



In the past 30 years, there has been considerable research on the impacts of oil on birds and their habitats. In particular, the USGS Patuxent Wildlife Research Center has undertaken a wide range of experimental studies on the effects of oil on birds. Much of that information is relevant to the current situation in the Gulf of Mexico.

- [Biological Impacts](#)
- [Oil Pollution Impacts on Birds](#)

News Releases and Congressional Testimonies



- [Admiral Allen, Dr. McNutt Provide Updates on Progress of Scientific Teams Analyzing Flow Rates from BP's Well](#) (June 10, 2010)
- [Salazar Continues Oversight of BP Response Efforts and Activities at Houston Command Center](#)
- [Flow Rate Group Provides Preliminary Best Estimate Of Oil Flowing from BP Oil Well](#)
 - [Press conference tweet chat](#) (May 27, 2010)
- [Statement of Marcia McNutt, Director, U.S. Geological Survey, May 27, 2010](#)  before the House Appropriations Subcommittee on Interior, Environment and Related Agencies, May 27, 2010, on USGS Science in Response to the Deepwater Horizon Oil Spill

Publications



- [Open-File Report 2012-1234: Application of a Hydrodynamic and Sediment Transport Model for Guidance of Response Efforts Related to the Deepwater Horizon Oil Spill in the Northern Gulf of Mexico Along the Coast of Alabama and Florida](#) (Sept. 20, 2013) 
- [DOI Strategic Sciences Working Group. Mississippi Canyon 252/Deepwater Horizon Oil Spill Progress Report 2, April 2012](#)  (May 04, 2012)
- [OFR 2011-1078: Sediment Pore-Water Toxicity Test Results and Preliminary Toxicity Identification of Post-Landfall Pore-Water Samples Collected Following the Deepwater Horizon Oil Release, Gulf of Mexico, 2010](#)
- [OFR 2010-1318: Determination of the Anionic](#)

[Surfactant Di\(Ethylhexyl\) Sodium Sulfosuccinate in Water Samples Collected from Gulf of Mexico Coastal Waters Before and After Landfall of Oil from the Deepwater Horizon Oil Spill, May to October, 2010](#)

- [OFR 2011-1022: Shoreline Surveys of Oil-Impacted Marsh in Southern Louisiana, July to August 2010](#)
- [OFR 2011-1014: Petroleum Hydrocarbons in Sediment from the Northern Gulf of Mexico Shoreline, Texas to Florida](#)
- [OFR 2010-1290: Reconnaissance of Macondo-1 Well Oil in Sediment and Tarballs from the Northern Gulf of Mexico Shoreline, Texas to Florida](#)
- [Science Supporting Gulf of Mexico Oil-Spill Response, Mitigation, and Restoration—Assessment, Monitoring, Mapping, and Coordination](#)
- [Assessment of Flow Rate Estimates for the Deepwater Horizon / Macondo Well Oil Spill](#)  (March 10, 2011)
 - [Appendix A - Hsieh 2010: Reservoir Depletion Report](#) 
 - [Appendix B - Labson et al. 2010: Mass Balance Team Report](#) 
 - [Appendix C - Camilli 2010: Woods Hole Oceanographic Institution Acoustics Analysis Report](#) 
 - [Appendix D - Plume Calculation Team 2010: Particle Image Velocimetry Report](#) 
 - [Appendix E - Reservoir Modeling Team 2010: Reservoir Modeling Report](#) 
 - [Appendix F - Guthrie et al. 2010: Nodal Analysis Team Report](#) 
- [Plume Team Report: Deepwater Horizon Release Estimate of Rate by PIV](#)  (July 21, 2010)
- [DOI Strategic Sciences Working Group, Mississippi Canyon 252/Deepwater Horizon Oil Spill Progress Report, June 9, 2010](#)  (August 24, 2010)
 - "Scenario-Building for the Deepwater Horizon Oil Spill" -- [Science Magazine Summary](#) [Full Text](#) [Reprint](#)
- [A Method for Quantitative Mapping of Thick Oil Spills Using Imaging Spectroscopy](#) (August 13, 2010)
- [A Rapid Method for Creating Qualitative Images Indicative of Thick Oil Emulsion on the Ocean's Surface from Imaging Spectrometer Data](#) (July 21, 2010)
- [A Role for Analytical Chemistry in Advancing our Understanding of the Occurrence, Fate, and Effects of Corexit Oil Dispersants](#) (July 27, 2010)
- [Estimated Minimum Discharge Rates of the Deepwater Horizon Spill-Interim Report to the Flow Rate Technical Group from the Mass Balance Team](#) (June 21, 2010)
- [Effects of Building a Sand Barrier Berm to Mitigate the Effects of the Deepwater Horizon Oil Spill on Louisiana Marshes](#) (June 2, 2010)
- [A Method for Qualitative Mapping of Thick Oil Spills Using Imaging Spectroscopy](#) (May 14, 2010)

Video

[Compared to What?](#)

The video relates how a team of scientists conducted rapid response sampling of coastal environments before any oil had reached land, following up in October 2010 with post-landfall sampling for comparison. USGS hydrologist Dennis Demcheck describes details of the work and explains the importance and value of having pre-landfall data for assessing impacts of the oil spill.

Full transcript, additional formats, and details available in the [Multimedia Gallery](#).

Photos

Deepwater Horizon Oil Spill 2010 Collection  



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ADDED: MARCH 3, 2014
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Is “The Impossible” Possible in the Pacific Northwest? – Coastal Community Tsunami Hazards and Risk Free USGS Public Lecture February 28



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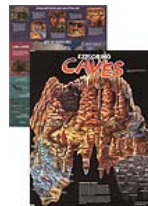
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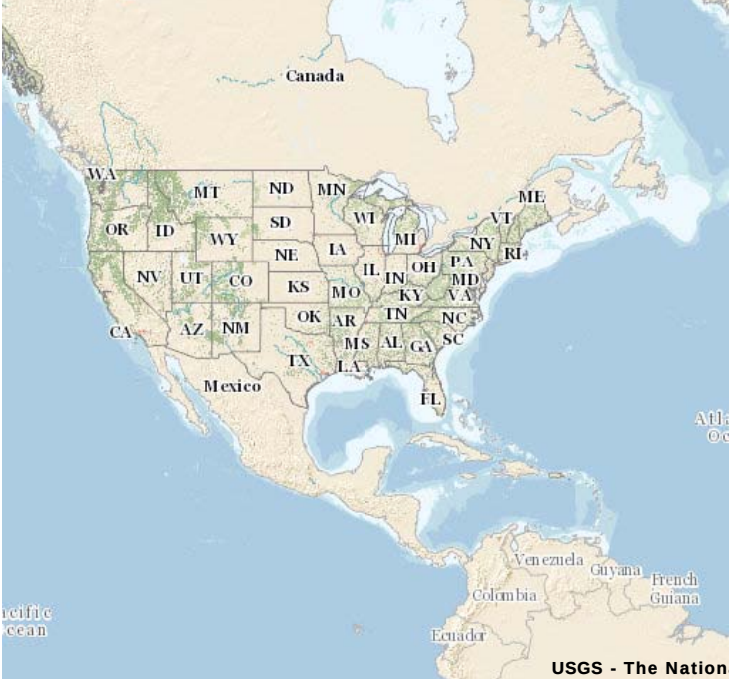
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Avian influenza

A virulent disease of poultry and wild birds that has spread throughout a large geographic area in Asia and Eastern Europe since it was first documented in 1997 in Asia.

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[Avian influenza news and disease information](#) [[More info](#)]

News regarding US efforts to monitor the spread of highly pathogenic avian influenza, with links to bulletins, FAQ list, field guides, and other resources.

[Avian Influenza: Information and on-going research at the USGS Alaska Science Center](#) [[More info](#)]

Maps and information about potential spread of avian influenza in migratory birds in Alaska. Includes descriptions and photos of the waterfowl that are being monitored.

[Surveillance for asian H5N1 avian influenza in the United States](#) [[More info](#)]

General description of US government efforts to monitor the occurrence of highly pathogenic avian influenza in wild migratory birds.

[The avian influenza H5N1 threat](#) [[More info](#)]

Describes highly pathogenic avian influenza and explains why this wildlife disease is of concern to health scientists and the public. Diagram shows potential pathways by which the disease could be transmitted to other animals, including humans.

[Global Wildlife Disease News Map](#) [[More info](#)]

Displays news articles from the Wildlife Disease News Digest. Users can see wildlife disease headlines both locally and globally. The Map displays Wildlife Disease News Digest articles that have been posted within the last 45 days.

[Wildlife Data Integration Network](#) [[More info](#)]

A web-based monitoring and reporting system that provides access to data on wildlife and zoonotic diseases, mortality events, and other critical related information.

[Wildlife Disease News Digest](#) [[More info](#)]

This news service focuses on wildlife diseases and wildlife morbidity/mortality, especially as they relate to human and ecosystem health.

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Climate change

Long-term alteration in the characteristic weather conditions of a region, such as changes in precipitation and temperature.

Subtopics:

[Desertification](#) (5 items)

Related topics:

- [Climatology](#)
- [Effects of climate change](#)
- [Greenhouse gases](#)

Refine results by state:

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[USGS Global Change Science](#) [[More info](#)]

Broad overview of USGS research and monitoring designed to understand current changes in the context of prehistoric and recent earth processes, distinguishing between natural and human-influenced changes, and recognizing ecological and physical responses

[Climate Change and Wildlife Health: Direct and Indirect Effects](#) [[More info](#)]

Addresses geographic range and distribution of wildlife diseases, plant and animal phenology, wildlife host-pathogen interactions, and disease patterns in wildlife.

[Climate change in mountain ecosystems](#) [[More info](#)]

Overview of interdisciplinary research studies in Glacier National Park to understand how this mountain wilderness responds to present climatic variability and other external stressors, such as air pollution, and links to detailed reports.

[Biological resource status and trends: Climate change](#) [[More info](#)]

Information concerning status and trends of biological resources, focusing on climate change

[Effects of climate change and land use on water resources in the Upper Colorado River Basin](#) [[More info](#)]

Information from climate model forecasts, projections of future flows, paleoclimatic indicators, timing of snowmelt, airborne dust, and the effects on vegetation of troublesome pest species indicate the nature and severity of problems looming.

[Forecasting the effects of land-use and climate change on wildlife communities and habitats in the lower Mississippi Valley](#) [[More info](#)]

Describes the analytical process by which spatial scientific information contributes to forecasts and models in support of regional and local decision-making.

[National Climate Change and Wildlife Science Center](#) [[More info](#)]

Coordinates our efforts to address challenges resulting from climate change and to empower natural resource managers with rigorous scientific information and effective tools for decision-making.

[Prehistoric packrats piled up clues to climate change](#) [[More info](#)]

Hoarding behavior preserved prehistoric materials we can use as clues to ancient climate and ecosystem changes.

[Quantifying effects of climate change on the snowmelt-dominated groundwater resources of northern New](#)

England [\[More info\]](#)

Planned analysis of the sensitivity of groundwater levels to changes in air temperature and precipitation. Changes in groundwater recharge and discharge also will be correlated with other hydrologic indicators.

 [Regional climate change--Science in the Southeast](#) [\[More info\]](#)

Research projects intended to create regional and national data that conform to conditions predicted by general circulation models, so that land and wildlife managers can understand the likely consequences of climatic changes in their areas of study.

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Contamination and pollution

Introduction of harmful substances into the environment by human action or natural processes.

Subtopics:

[Industrial pollution](#) (25 items)
[Nonpoint-source pollution](#) (11 items)
[Pesticide and herbicide contamination](#) (24 items)
[Pharmaceutical contamination](#) (3 items)
[Toxic radionuclide contamination](#) (12 items)
[Toxic trace element contamination](#) (40 items)

[Water pollution](#) (13 items)

[Soil pollution](#) (1 items)

[Air pollution](#) (7 items)

Related topics:

- [Human impacts](#)
- [Waste treatment and disposal](#)
- [Ecotoxicology](#)
- [Hazards](#)
- [Water quality](#)

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[Toxic Substances Hydrology Program](#) [[More info](#)]

Homepage for the Toxic Substances Hydrology Program, which provides scientific information on contaminated sites and on human and environmental health. Links to news, topical information, investigations, meetings, publications, and photos.

[Pesticide National Synthesis Project: national assessment of pesticides in streams, rivers, and ground water of the United States](#) [[More info](#)]

An assessment of pesticides in national water resources, with links to national reports, national statistics, national data, pesticide use, analytical strategy, and standards for the U.S.

[National analysis of trace elements in ground water, streams, stream and reservoir sediment, and fish and clam tissue across the United States](#) [[More info](#)]

Trace elements are inorganic chemicals occurring in small amounts in nature. This web site of the National Water Quality Assessment links to U.S. data, publications, news, and other sites on trace metals, metalloids and radionuclides in water.

[Nutrients National Synthesis Project: nutrients in rivers, streams, and aquifers in the United States](#) [[More info](#)]

This Nutrients National Synthesis Project site on the U.S. study of nutrients, especially nitrogen and phosphorus, as contaminants in high concentrations links to an overview, study team, featured reports, publications, and national datasets.

[National assessment of volatile organic chemicals \(VOCs\) in water resources of the United States](#) [[More info](#)]

Links to online data retrieval, information on MTBE and gasoline oxygenates, VOCs analysis, VOC publications, news features, and featured online publications.

[Pollution and waste disposal](#) [[More info](#)]

Lists priority survey areas and objectives of these programs.



[Algal toxins](#) [[More info](#)]

Chapter of Field Manual of Wildlife Diseases on algal toxins, red tide toxins, phycotoxins, dinoflagellates, cyanobacterium, and bird mortality due to algal toxicosis.

[Water quality information pages](#) [\[More info\]](#)

Homepage of the Office of Water Quality programs on the quality of the Nation's surface water and ground water resources, with links to general information, quality assurance, software, data, publications, USGS facilities, techniques, and programs.

[National Water Quality Assessment urban studies portal](#) [\[More info\]](#)

Multiple studies addressing urban water-quality issues, to describe biological, chemical, and physical characteristics of urban water resources over time, and relate those characteristics to natural processes and human activities

[Human Health Database](#) [\[More info\]](#)

Central site providing links to USGS databases and homepages providing significant data and information on research related to human health.

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Droughts

Extended periods of moisture deficit over a sizeable area sufficient to have an adverse effect on vegetation, animals, or man.

Subtopics:

(none)

Related topics:

- [Atmospheric sciences](#)
- [Hazards](#)

Refine results by state:

Results 1 - 10 of 30 listed by similarity [[list alphabetically](#)]

[Drought watch - USGS state information on drought](#) [[More info](#)]

Map display that highlights states where the streamflow index at USGS streamgages, averaged statewide, were below normal for the past seven days with links to comparison of recent streamflow values with historic values.

[Drought Monitoring with VegDRI](#) [[More info](#)]

The Vegetation Drought Response Index is a drought monitoring and mapping tool integrating satellite observations of vegetation and climate with land cover, soil characteristics, and other environmental factors.

[Drought watch Pacific Northwest states: Washington, Oregon, Idaho](#) [[More info](#)]

Drought water homepage with links to maps showing streamflow conditions, drought definitions, resources, publications, and answers to Frequently Asked Questions (FAQs).

[Extreme drought to extreme floods: summary of hydrologic conditions in Georgia, 2009](#) [[More info](#)]

Discusses the nature and extent of extreme hydrologic events, with supporting observations of the water conditions and their effects on human activities.

[Hydrologic conditions for Illinois: Drought perceptions, effects, and assessment](#) [[More info](#)]

Map of stream conditions and links to precipitation data, drought statistics, and information on floods and droughts in Illinois.

[Kansas drought watch](#) [[More info](#)]

Drought map of Kansas link to real-time data for stream gaging stations and links to historic droughts of Kansas, ground water, drought definitions, and references.

[Maine drought information: drought watch](#) [[More info](#)]

Daily streamflow data and drought conditions for Maine.

[New Jersey drought watch](#) [[More info](#)]

Update on daily streamflow conditions and drought situation in New Jersey.

[Wyoming drought watch](#) [[More info](#)]

Gives map of streamflow conditions in Wyoming with access to streamflow data, real-time, daily and historic, plus information on drought analysis and management.

[Coral mortality and African dust](#) [[More info](#)]

Report with mini-movie and photos on the hypothesis that the atmospheric transport of dust arising from

the desertification in northern Africa led to algal infestation of corals, coral diseases, and the near extinction of associated sea urchins.

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Earthquakes

Ground shaking caused by the sudden release of accumulated strain by an abrupt shift of rock along a fracture in the earth or by volcanic or magmatic activity, or other sudden stress changes in the earth.

Subtopics:

[Earthquake occurrences](#) (42 items)

[Earthquake hazards](#) (50 items)

Related topics:

- [Tsunamis](#)
- [Earthquake probabilities](#)
- [Hazards](#)
- [Seismology](#)
- [Tectonic processes](#)
- [Tectonophysics](#)
- [Volcanic activity](#)

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[Earthquake Hazards Program](#) [[More info](#)]

Information on earthquake activity, earthquake science, and earthquake hazard reduction with links to news reports, products and services, educational resources for teachers, glossary, and current U.S. earthquake activity map.

[Earthquakes: Frequently Asked Questions](#) [[More info](#)]

Answers to a wide variety of questions (FAQs) about earthquakes, such as dictionary of terms, earthquake activity and probabilities, common myths, faults, plate tectonics, and earthquake measurement techniques.

[Earthquake information by topic](#) [[More info](#)]

Information on earthquakes by topic including faults, tsunami, seismic waves, and plate tectonics.

[Earthquake notification services](#) [[More info](#)]

Sign up for USGS real-time earthquake notification services.

[Earthquake preparedness information](#) [[More info](#)]

Links to web sites, publications, and fact sheets on earthquake preparedness.

[Earthquake search](#) [[More info](#)]

Search interface allowing searches of earthquake databases by various parameters including date, depth, intensity, area, and magnitude and download data in a variety of formats.

[Earthquake hazard maps](#) [[More info](#)]

National seismic hazards maps, global seismic hazards map, predictive intensity maps, shaking hazards maps and probabilities for California, and a variety of fact sheets on earthquakes.

[Earthquake: Did you feel it? Report it here.](#) [[More info](#)]

Place to provide information about ground shaking associated with significant earthquakes. A questionnaire to let us know what you felt following an earthquake in the United States or in other countries.

[Earthquakes for kids](#) [[More info](#)]

Links to various earthquake projects, facts, science fair ideas, earthquake science, becoming an earthquake scientist, image glossary, earthquake facts, and puzzles and games for children.

[Earthquake glossary](#) [[More info](#)]

Dictionary of terms associated with earthquakes with simple definitions and photographs especially suited for students.

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Energy resources

Natural resources that are used for heat and power generation, including oil, natural gas, coal, and geothermal energy.

- Subtopics:**
 - [Coal resources](#) (15 items)
 - [Geothermal resources](#) (10 items)
 - [Natural gas resources](#) (96 items)
 - [Oil resources](#) (90 items)
 - [Wind energy](#) (5 items)
- Related topics:**
 - [Economic geology](#)

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- [Energy Resources Program](#) [[More info](#)]

Research program conducting basic and applied research on geologic energy resources and on the environmental, economic, and human health impacts of their production and use.
- [Energy Resources Program - Western Region](#) [[More info](#)]

Home page for the Western Region Energy Resources Program with links to Alaska petroleum studies project, coal, oil and gas, other energy sources, environment and human health, and publications.
- [Eastern Energy Resources Team \(EERT\)](#) [[More info](#)]

Links to overview, major programs, products and publications on coal, oil & gas, environment & human health, and resource economics, and special applications
- [2010 updated assessment of undiscovered oil and gas resources of the National Petroleum Reserve in Alaska \(NPRA\)](#) [[More info](#)]

We estimate mean volumes of 896 million barrels of oil and about 53 trillion cubic feet of nonassociated natural gas in conventional, undiscovered accumulations within this area, a reduction of our 2002 estimate due to new geologic information.
- [Alaska petroleum resources](#) [[More info](#)]

Information on Alaskan energy resources in oil, petroleum, and natural gas with links to publications and other research.
- [An estimate of undiscovered conventional oil and gas resources of the world, 2012](#) [[More info](#)]

Using a geology-based assessment methodology, we estimated means of 565 billion barrels of conventional oil and 5,606 trillion cubic feet of undiscovered conventional natural gas in 171 priority geologic provinces of the world, exclusive of the U.S.
- [Assessment of coal geology, resources, and reserve base in the Powder River Basin, Wyoming and Montana](#) [[More info](#)]

We estimated in-place resources of 1.07 trillion short tons of coal in this area using a geology-based assessment methodology. Of that total, recoverable coal was 162 billion tons, 25 billion economically recoverable.
- [Assessment of Gas Hydrate Resources on the North Slope, Alaska, 2008](#) [[More info](#)]

We estimate that there are about 85 trillion cubic feet (TCF) of undiscovered, technically recoverable gas

resources within gas hydrates in northern Alaska.



[Assessment of in-place oil shale resources of the Green River Formation, Greater Green River Basin in Wyoming, Colorado, and Utah](#) [\[More info\]](#)

Using the Fischer assay measure of oil yield, we estimated a total of 1.44 trillion barrels of oil in three assessed units. There is currently no economic method to recover oil from this geologic unit.



[Assessment of In-Place Oil Shale Resources of the Green River Formation, Piceance Basin, Western Colorado](#) [\[More info\]](#)

We estimated a total of 1.525 trillion barrels of oil are in place in seventeen oil shale zones in this area using a geology-based assessment methodology.

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Mineral resources

Natural occurrences of useful inorganic elements or compounds.

Subtopics:

[Metallic mineral resources](#) (25 items)

[Nonmetallic mineral resources](#) (16 items)

Related topics:

- [Economic geology](#)
- [Mineralogy](#)

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[Mineral Resources Program](#) [[More info](#)]

Homepage of the Mineral Resources Program that provides current, impartial information on the occurrence, quality, quantity, and availability of mineral resources with links to projects, publications, spatial data, teams, issues, and news.

[Mineral Resources Data System \(MRDS\)](#) [[More info](#)]

MRDS is a worldwide database of metallic and industrial mineral sites. Links to portions of the database that are available online.

[Mineral resources online spatial data](#) [[More info](#)]

Website for geospatial data on mineral resources of the U.S. or the world that users can locate by geographic area, view, and download.

[Mineral resources spatial data](#) [[More info](#)]

Geochemical, geological, geophysical, mineral, and general reference spatial datasets that users can locate and download.

[Alaska mineral resources](#) [[More info](#)]

Reports, data, and current research on mineral resources in Alaska

[Central Colorado Assessment Project - application of integrated geologic, geochemical, biologic, and mineral resource studies](#) [[More info](#)]

Diverse geoscientific and biological data collected in anticipation of ecological, land-management, and mineral resource-related problems.

[Central Region Mineral Resources Team](#) [[More info](#)]

Site for programs of the Central Region Mineral Resources Team with links to products, personnel, projects and programs of land stewardship, regional geochemistry, analytical chemistry, geology and resources assessment and remote sensing.

[Eastern Mineral Resources](#) [[More info](#)]

Home page for Eastern Mineral Resources Team conducting research on the occurrence, quality, quantity, and availability of mineral resources. Links to products, descriptions of research projects, and staff.

[Preliminary Assessment of Non-Fuel Mineral Resources of Afghanistan, 2007](#) [[More info](#)]

Estimates of known and undiscovered copper resources total nearly 60 million metric tons of copper. Iron resources in known deposits total 2200 million metric tons of ore. Twenty mineralized areas meriting further study were identified.

[Selected Western Region Mineral Resources on-line publications](#) [[More info](#)]

Links to digital publications on minerals and mineral resources research in the western United States.

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Floods

Relatively high water that overflows the natural or artificial banks of a stream or coastal area that submerges land not normally below water level.

Subtopics:

[Storm surge](#) (8 items)

[Flood preparedness](#) (7 items)

Related topics:

- [Controlled flooding](#)
- [Hazards](#)
- [Hydrology](#)
- [Surface water \(non-marine\)](#)
- [Watershed management](#)

Refine results by state:

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[Large floods in the United States: where they happen and why](#) [[More info](#)]

Discussion of large floods and occurrence in relationship to regional climatology, topography, and basin size.

[Natural Hazards - Floods](#) [[More info](#)]

News and related information focusing on the hazards associated with floods in the United States.

[An overview of coastal land loss with emphasis on the southeastern United States](#) [[More info](#)]

Comprehensive background information on coastal land loss, discussing the influence of waves and storms, the intrinsic characteristics of the shoreline materials, and the role of human activities.

[USGS news and information on El Nino](#) [[More info](#)]

Information sources on El Nino effects such as landslides, coastal hazards, floods. Includes links to maps and images.

[Water Watch: current water resources conditions](#) [[More info](#)]

U.S. map of real-time streamflow compared to historical values with links to U.S. maps and data of surface water, ground water, precipitation, river conditions and floods and other information on current and past water resources conditions.

[Assessment of potential coastal impacts: Hurricane Rita](#) [[More info](#)]

Areas susceptible to inundation during landfall of Hurricane Rita are assessed by comparing lidar-derived dune elevations to simulated storm surge values. Results shown on pictorial maps.

[Mississippi River flood: April 2001](#) [[More info](#)]

A large collection of photographs showing the historic flooding of the upper Mississippi River near LaCrosse, Wisconsin and points south during April of 2001. Includes video footage as well.

[The Great Flood of 1993](#) [[More info](#)]

Photos, publications and recordbreaking flood peaks from the flood that included 9 states, the Mississippi and Missouri Rivers, and completely inundated 75 towns.

[Upper Mississippi River basin: water quality, water elevation, and discharge](#) [[More info](#)]

Information on flood potential and water quality in the upper Mississippi River, including downloadable data and map images.

[Flood frequency](#) [[More info](#)]

Links to Office of Surface Water memos, reference publications, training guides, and software for

computing flood frequency.

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Geospatial analysis

Detailed study of information such as measurements, counts, and computations as a function of geographical location.

Subtopics:

(none)

Related topics:

- [Image analysis](#)
- [Topological analysis](#)

Refine results by state:

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[Geographic Analysis and Monitoring Program](#) [[More info](#)]

Geographic Analysis and Monitoring Program (GAM) conducts studies about land surface change, environmental and human health, fire and urban ecology, and natural hazards to help decision-makers in land-use planning and land management.

[A spatial analysis of cultural ecosystem service valuation by regional stakeholders in Florida: a coastal application of the social values for ecosystem services \(SoVES\) tool](#) [[More info](#)]

Research project to close gaps in our knowledge about the attitudes and perceptions, or nonmonetary values, held by coastal residents for ecosystem services, particularly for cultural services.

[Alaska Geospatial Data Clearinghouse](#) [[More info](#)]

Clearinghouse for the description and availability of multiple geospatial datasets relating to Alaska from many federal, state and local cooperating agencies under the coordination of the Alaska Geographic Data Committee.

[Spatial Analysis Branch, National Wetlands Research Center](#) [[More info](#)]

Home page for National Wetlands Research Center's (NWRC) Spatial Analysis Branch (SAB), which uses state-of-the-art technology to assist the work of natural resource managers with spatial data and computerized analysis techniques.

[A New Method for Mapping Population Distribution](#) [[More info](#)]

With the addition of elevation and land use and land cover data, we can show population density on a map much more effectively than if we simply color census areas. The resulting maps should allow better planning, especially in highly developed areas.

[A program for the conversion of The National Map data from proprietary format to resource description framework \(RDF\)](#) [[More info](#)]

To expand data functionality and capabilities for users of The National Map of the U.S. Geological Survey, data sets for six watersheds and three urban areas were converted from the Best Practices vector data model formats to Semantic Web data formats.

[Advanced Remote Sensing Research](#) [[More info](#)]

New and experimental methods of analyzing geospatial imagery, including detailed spectral analysis of land surface materials, historical image analysis, and long wave infrared image analysis.

[An Overview of the GIS Weasel](#) [[More info](#)]

Software system designed to aid users in preparing spatial information as input to lumped and distributed parameter environmental simulation models.

[Columbia Environmental Research Center](#) [\[More info\]](#)

Website for the Columbia Environmental Research Center with links to staff, publications, databases, field stations, and projects including those on the Rio Grande, burrowing owls, sea turtles, and geospatial technology.

[Columbia River USGS Interdisciplinary Science Explorer WebSite](#) [\[More info\]](#)

Web site for an Internet Map Service (IMS) serving base cartographic data, USGS data, science applications and real time modelling analyses for the Columbia River basin using geospatial analysis technology.

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Groundwater

All water that exists beneath the land surface, but more commonly applied to water in fully saturated soils and geologic formations.

Subtopics:

[Groundwater level](#) (27 items)

Related topics:

- [Freshwater ecosystems](#)
- [Groundwater flow](#)
- [Groundwater quality](#)
- [Hydrogeology](#)

Refine results by state:

Alabama

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[Ground water information pages](#) [[More info](#)]

Lead page to connect to ground water information on the Nation's ground water resources and ground water activities of the USGS. Includes links to ground-water data, news reports, publications, field techniques, models, programs, and issues.

[Ground-water data for the Nation](#) [[More info](#)]

National Water Information System (NWIS) real-time data on selected ground water sites, ground water level data, site inventory of wells, test holes, drains, springs and excavations and ground water-quality data for the United States.

[BRASS: Bedrock Regional Aquifer Systematics Study](#) [[More info](#)]

Description of the project to publish new bedrock geologic maps in the United States to advance the understanding of the region's bedrock aquifers. Includes list of projects.

[Ground water atlas of the United States](#) [[More info](#)]

The U.S. ground water atlas consists of information on ground water resources of 13 regions covering the 50 States, Puerto Rico, and the U.S. Virgin Islands. Text and maps can be viewed online and downloaded as ASCII, GIF, and *.eps files.

[Ground water climate response network](#) [[More info](#)]

Map showing a network of selected ground water wells in the U.S. The water levels in these wells are used to monitor the effects of droughts and other climate variability.

[Water science for schools: the Earth's water - ground water](#) [[More info](#)]

Educational site for elementary schools students on ground water sources, ground water flow, and aquifers.

[Assessing ground-water vulnerability to contamination: providing scientifically defensible information for decision makers](#) [[More info](#)]

The information, citations, and hypothetical examples provided in this report highlight how basic principles and assessments are essential components of the regulatory and policy decision-making process. Link to PDF version.

[Measuring human-induced land subsidence from space](#) [[More info](#)]

Examples of the use of Satellite Interferometric Synthetic Aperture Radar to measure and map changes on the Earth's surface as an aid to understanding how ground-water pumping, hydrocarbon production, or other human activities cause land subsidence.

[Aquifer basics](#) [\[More info\]](#)

Links to general information on water supply by aquifers based on rock types and to principal national aquifers by name.

[Water-Level Changes in the High Plains Aquifer, Predevelopment to 2002, 1980 to 2002, and 2001 to 2002](#) [\[More info\]](#)

Data from some 7,000 wells monitoring annual water level changes in the High Plains aquifer indicting changes in water level 1980 to 2002.

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Surface water (non-marine)

Open bodies of water, such as lakes, rivers, or streams. All non-marine waters on the surface of the earth, including fresh, brackish, and salt water.

Subtopics:

[River systems](#) (34 items)

[Surface-water level](#) (7 items)

Related topics:

- [Floods](#)
- [Freshwater ecosystems](#)
- [Hydrology](#)
- [Limnology](#)
- [Ocean characteristics](#)
- [Ocean processes](#)
- [Stream discharge](#)
- [Snow and ice cover](#)
- [Streamflow](#)
- [Surface water quality](#)

Refine results by state:

[Refine](#)

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[Surface water information pages](#) [[More info](#)]

Lead page for detailed United States surface water information with links to real-time and historic streamflow data, suspended sediment data, USGS programs and facilities, publications, techniques, and featured news releases.

[Surface-water data for the Nation](#) [[More info](#)]

Homepage for USGS national surface-water data with more than 850,000 station years of time-series data for stream levels, streamflow (discharge), reservoir and lake levels, surface-water quality, and rainfall plus real-time data and tutorial.

[National Hydrography Dataset \(NHD\)](#) [[More info](#)]

Main page for National Hydrography Dataset (NHD), a comprehensive set of digital spatial data about surface water features, with links to references, data, software tools, applications, tutorials, technical support, and data maintenance.

[Water science for schools: Earth's water - surface water](#) [[More info](#)]

Educational site for elementary school students with information on surface water (rivers, streams, lakes, floods).

[National Streamflow Information Program](#) [[More info](#)]

National Streamflow Information Program home page describing the operation and maintenance of 7000 streamgages, overview of the program, system for collection of streamflow data, maintaining of historic streamflow data, and available reports.

[Hydrologic unit maps](#) [[More info](#)]

Overview of hydrologic unit maps adapted from USGS Water-Supply Paper 2294 giving description of hydrologic units, link to list of hydrologic units, paper maps and digital spatial data sets.

[River corridor habitat dynamics, Lower Missouri River](#) [[More info](#)]

Detailed description of The Lower Missouri River Corridor Habitat Dynamics Project studying river habitat in a heavily engineered river.

[Pesticides in Midwestern rivers, 1989-2002](#) [\[More info\]](#)

Overview of aspects of research on pesticides and herbicides in Midwestern rivers with collection of data, results over a period of time, online publications, and bibliography.

[Columbia Environmental Research Center](#) [\[More info\]](#)

Website for the Columbia Environmental Research Center with links to staff, publications, databases, field stations, and projects including those on the Rio Grande, burrowing owls, sea turtles, and geospatial technology.

[Large floods in the United States: where they happen and why](#) [\[More info\]](#)

Discussion of large floods and occurrence in relationship to regional climatology, topography, and basin size.

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Environmental health (human)

Effects of the environment on human health.

Subtopics:

[Human environmental safety](#) (12 items)

Related topics:

- [Human impacts](#)
- [Social sciences](#)
- [Toxic radionuclide contamination](#)
- [Toxic trace element contamination](#)
- [Virology](#)

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[Environment and human health](#) [[More info](#)]

Home page for USGS research on the relationship of environment and health with links to fact sheets, reports, projects and programs, Human Health database and meeting and conferences.

[Human Health Database](#) [[More info](#)]

Central site providing links to USGS databases and homepages providing significant data and information on research related to human health.

[Coal-tar-based pavement sealcoat, polycyclic aromatic Hydrocarbons \(PAHs\), and environmental health](#) [[More info](#)]

Pavement sealant contains chemicals that are known carcinogens, which get into nearby homes, lakes, and the air. Sealants based on coal tar release more dangerous chemicals than those based on asphalt.

[Environmental health science at the U.S. Geological Survey](#) [[More info](#)]

Explains the USGS strategy for research directed towards preventing or reducing the adverse impacts of toxicologic and infectious disease.

[U.S. - Mexico Border Environmental Health Initiative: interactive maps](#) [[More info](#)]

Geographic and scientific information focused on health issues in the area of the US-Mexico border

[Alaska Interagency Ecosystem Health Work Group](#) [[More info](#)]

A community of practice that recognizes the interconnections between the health of ecosystems, wildlife, and humans and meets to facilitate the exchange of ideas, data, and research opportunities.

[Great Lakes Beach Health Initiative](#) [[More info](#)]

Research and development efforts to improve our ability to provide scientific information needed by local beach managers faced with questions about environmental quality and possible beach closure or resource usage.

[Health effects of mineral dusts](#) [[More info](#)]

Overview of project to develop and apply a variety of earth science methods to interpret the geologic links between mineral dusts such as silica and asbestos and human health problems with links to contacts, tasks, and products.

[Understanding beach health throughout the Great Lakes-Entering a new era of investigations](#) [[More info](#)]

People who manage recreational areas need better, more timely estimates of the likelihood that the beach and lake waters will be hazardous to human health, and which factors cause those hazards.

[USGS Science Serves Public Health](#) [\[More info\]](#)

Studies showing how human activities affect environmental and ecological health and how the quality of our environment and wildlife affects human health.

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Invasive species

Plant, animal, or microbe species that is non-native (or alien) to the ecosystem under consideration and whose introduction causes or is likely to cause economic or environmental harm, or harm to human health.

Subtopics:

(none)

[Biological invasions](#) (0 items)

Related topics:

- [Biodiversity](#)
- [Ecology](#)
- [Human impacts](#)
- [Life sciences](#)

Refine results by state:

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[Invasive species program](#) [[More info](#)]

This program provides management-oriented research and delivers information needed to prevent, detect, control, and eradicate invasive species, and to restore impaired ecosystems.

[Invasive Species Program -- Snakeheads, aquatic invaders](#) [[More info](#)]

Snakeheads, aggressive airbreathing freshwater fishes that are not native to North America, are considered injurious to certain native North American fish and other aquatic wildlife.

[Invasive species research](#) [[More info](#)]

Links to research projects that will improve the ability to detect, monitor, and predict the effects of invasive species, including exotic animals, on native ecosystems of the Pacific Southwest (California, Nevada, Utah, and Arizona).



[Applying remote sensing to invasive species science-A tamarisk example](#) [[More info](#)]

Explains how remote sensing data are used to understand the current extent and likely future of an invasive plant, in this case a bush.

[Patuxent's effects of ecological processes and human impacts on biological resources--invasive species](#) [[More info](#)]

List and brief abstracts on research projects on invasive species, the ecology of introduced species, and developing management strategies at Patuxent Wildlife Research Center.



[Using genetic research to inform imperiled and invasive species management](#) [[More info](#)]

Describes investigative techniques focused on genetic characteristics of individuals and populations, and explains how this information helps improve existing natural populations and potentially impede invasive populations.

[Biological resource status and trends: Aquatic invasive organisms](#) [[More info](#)]

Information concerning status and trends of biological resources, focusing on aquatic invasive organisms

[Biological resource status and trends: Invasive organisms](#) [[More info](#)]

Information concerning status and trends of biological resources, focusing on invasive organisms

[Biological resource status and trends: Terrestrial invasive organisms](#) [[More info](#)]

Information concerning status and trends of biological resources, focusing on terrestrial invasive organisms

[South Florida Restoration Science Forum: Invasive exotic species](#) [[More info](#)]

Posters on the distribution and control of nonindigenous species introduced into southern Florida.

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Map interfaces

Online interfaces showing interactive maps and geospatial information

Subtopics:

[Web map services](#) (5 items)

Refine results by state:

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[Coastal and Marine Geology Program interactive map server](#) [[More info](#)]

Interactive map server to view and create maps using available coastal and marine geology data sets of offshore and coastal U.S. and the Gulf of Mexico. Links to available data and metadata that can be downloaded.

[Gulf of Maine internet map](#) [[More info](#)]

Gulf of Maine regional overview interactive map depicting research activities of the U.S. Geological Survey showing surficial sample sites, bathymetry, continental margin and coastal areas.

[Mississippi Fan internet map](#) [[More info](#)]

Mississippi River alluvial fan interactive map with GIS data and imagery depicting core sites, depositional and channel interpretation, Gloria and SeaMarc datasets.

[National Atlas Map Maker - Map layers](#) [[More info](#)]

Links to hundreds of map layers of geospatial information listed by subjects for use with the National Atlas Map Maker to assemble, view, and print customized maps using one or more of the layers.

[Tampa Bay Estuary Interactive Mapping System \(IMS\)](#) [[More info](#)]

Interactive Mapping Service (IMS) is an Internet based Geographic Information System designed to provide users with online mapping capability of habitats, land use and land cover, and seagrass for areas of Tampa Bay.

[The National Map Viewer](#) [[More info](#)]

National Map Viewer, a GIS application, is a Web-enabled portal to the geospatial information contained in The National Map. It supports on-line access and allows the download of digital data and creation of cartographic products.

[U.S. - Mexico Border Environmental Health Initiative: interactive maps](#) [[More info](#)]

Geographic and scientific information focused on health issues in the area of the US-Mexico border

[U.S. Pacific West Coast internet map server](#) [[More info](#)]

Interactive map of the U.S. Pacific West Coast with data layers of Gloria sidescan data, multibeam backscatter and shaded relief imagery.

[Columbia River USGS Interdisciplinary Science Explorer WebSite](#) [[More info](#)]

Web site for an Internet Map Service (IMS) serving base cartographic data, USGS data, science applications and real time modelling analyses for the Columbia River basin using geospatial analysis technology.

[EarthExplorer](#) [[More info](#)]

Query and order satellite images, aerial photographs, and cartographic products through the U.S. Geological Survey. Log in as a guest or as a registered user with more privileges. Uses Java Script or Applet Versions for PC, MacIntosh, and Unix programs.

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Maps and atlases

Representation, usually on a flat surface, of a part or whole of the Earth or other parts of the universe. Collections of maps linked digitally or bound together in a book are called atlases.

Subtopics:

- [Geologic maps](#) (28 items)
- [Topographic maps](#) (5 items)
- [Cadastral maps](#) (0 items)
- [Earthquake activity maps](#) (14 items)
- [Ground motion maps](#) (14 items)
- [Seismic hazard maps](#) (14 items)
- [Shaking maps \(seismic\)](#) (14 items)
- [Earthquake epicenter maps](#) (14 items)
- [Engineering geology maps](#) (2 items)
- [Geotechnical properties maps](#) (2 items)
- [Rock mechanics maps](#) (2 items)
- [Subsurface maps](#) (93 items)
- [Geophysical maps](#) (30 items)
- [Land subsidence maps](#) (0 items)
- [Slope stability maps](#) (2 items)
- [Aeromagnetic maps](#) (4 items)
- [Basement maps](#) (8 items)
- [Depth-to maps](#) (2 items)
- [Earthquake occurrence maps](#) (14 items)
- [Geochemical anomaly maps](#) (9 items)
- [Gravity anomaly maps](#) (5 items)
- [Hydrologic maps](#) (28 items)
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- [Landslide susceptibility maps](#) (2 items)
- [Lithologic maps](#) (18 items)
- [Magnetic anomaly maps](#) (8 items)
- [Paleotectonic maps](#) (6 items)
- [Seismic reflection survey maps](#) (2 items)
- [Species distribution maps](#) (12 items)
- [Surficial geologic maps](#) (14 items)
- [Tectonic maps](#) (6 items)
- [Thickness maps](#) (2 items)
- [Seismicity maps](#) (7 items)

Related topics:

- [Cartography](#)

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[30 day animations of US daily streamflow maps](#) [[More info](#)]

Animated WaterWatch streamflow maps showing daily highs and lows.

[Digital representation of tree species range maps from "Atlas of United States trees" by Elbert L. Little, Jr. \(and other publications\)](#) [\[More info\]](#)

Maps of the ranges of tree species in North America compiled by Elbert Little and others were digitized for use in USGS vegetation and climate modeling studies. Can be downloaded as ArcView shapefiles and in PDF graphic files.

[Earthquake hazard maps](#) [\[More info\]](#)

National seismic hazards maps, global seismic hazards map, predictive intensity maps, shaking hazards maps and probabilities for California, and a variety of fact sheets on earthquakes.

[FAQs - National Seismic Hazard Maps](#) [\[More info\]](#)

Provides detailed technical information on earthquake hazards in the form of frequently asked questions. Designed for the technical audience, including building and safety planners.

[Geomagnetic charts](#) [\[More info\]](#)

Links to charts of the Earth's magnetic field in different projections showing declination, inclination, and total, horizontal and vertical intensities plus references and note on limitations.

[Hydrologic unit maps](#) [\[More info\]](#)

Overview of hydrologic unit maps adapted from USGS Water-Supply Paper 2294 giving description of hydrologic units, link to list of hydrologic units, paper maps and digital spatial data sets.

[Magnetic and gravity anomaly maps of West Virginia](#) [\[More info\]](#)

Colored map in two parts and text in PDF files requiring Adobe Acrobat Reader 3.0 to view.

[Maps of distribution and abundance of selected species of birds on uncultivated native upland grasslands and shrubsteppe in the northern Great Plains](#) [\[More info\]](#)

Links to maps of breeding distributions of bird species on grasslands and shrublands in the northern Great Plains. Maps can also be downloaded from *.zip files in HTML format.

[Maps of recent earthquake activity in California-Nevada](#) [\[More info\]](#)

Near-real-time maps of location, ground motion, and shaking intensity of earthquakes in California and Nevada for the past hour, past day, and past week and links to other earthquake information.

[Maps of the distribution and occurrence of ground water quality constituents and early 1970's land use in New Jersey](#) [\[More info\]](#)

Links to maps of New Jersey showing nitrate levels, pesticides, Total Volatile Organic Compounds (VOCs), and radium in wells and land use of the 1970s.

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Microbiology

Branch of biology dealing with organisms too small to be seen without the use of a microscope.

Subtopics:

[Virology](#) (4 items)

Related topics:

- [Archaea](#)
- [Bacteria](#)
- [Culturing \(specimens\)](#)
- [Faunal and floral census \(microscopic\)](#)
- [Plankton](#)
- [Protists](#)

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[Microbiology research](#) [[More info](#)]

Highlights scientific studies in which microbiology plays an important role; includes a listing of USGS scientists with expertise in microbiology.

[Ohio District's Microbiology Program](#) [[More info](#)]

Overview of microbiology projects related to water quality investigating bacteria, viral and protozoan pathogens and indicators in the environment with links to publications, analytical and field methods, laboratory, and current projects.

[Biochemistry/Physiology Branch, Columbia Environmental Research Center \(CERC\)](#) [[More info](#)]

Homepage for the Biochemistry and Physiology Branch in Columbia, MO, which develops analytical techniques (cell bioassay/immunoassay) on toxicity related to fish and wildlife; and conducts research in microbiology and physiology.

[Biological soil crusts](#) [[More info](#)]

Explains biological soil crusts, organism-produced soil formations commonly found in semiarid and arid environments, with special reference to their biological composition, physical characteristics, and ecological significance.



[Biological soil crusts: webs of life in the desert](#) [[More info](#)]

Fact sheet on the need to protect biological soil crusts in the desert. These crusts are most of the soil surface in deserts not covered by green plants and are inhabited by cyanobacterium (blue-green algae) and other organisms useful to the ecosystem.

[Emerging diseases in wildlife](#) [[More info](#)]

News releases on adenovirus, West Nile Virus, foot and mouth disease, iridovirus, chronic wasting disease, and other emerging health issues in wildlife.

[Field manual of wildlife diseases: general field procedures and diseases of birds](#) [[More info](#)]

Manual listing field procedures for bird specimen collecting, bacterial, fungal, parasitic, and viral diseases, biotoxins, chemical toxins, common and scientific names of birds, and glossary. Manual can be downloaded or viewed in PDF format.



[Microbial ecology of deep-water mid-Atlantic canyons](#) [[More info](#)]

Plan for an upcoming study, at the microbiological scale, of the benthic communities (including corals) that reside in and around mid-Atlantic canyons, which are located at the edge of the continental shelf.



[Microbial production of natural gas from coal and organic-rich shale](#) [[More info](#)]

Explains how natural gas can be formed by microorganisms from geological materials, and how we plan to assess the potential value of this process for improving energy resources.

[National Wildlife Health Center](#) [\[More info\]](#)

The National Wildlife Health Center (NWHC) is a biomedical laboratory assessing the impact of disease on wildlife and identifying the role of various pathogens in wildlife losses. Site has links to news, programs, publications and metadata.

[Scientists discover analog for extraterrestrial life in Idaho Hot Springs](#) [\[More info\]](#)

Report on a community of microscopic organisms, Archaea, found deep in an Idaho hot spring living on hydrogen and carbon dioxide that could possibly exist on other planets. Includes links to related studies, investigators, and microbiology.

[West Nile Virus \(WNV\)](#) [\[More info\]](#)

National Wildlife Health Center studies the West Nile Virus to learn the current geographic extent, to understand how the virus moves between birds, mosquitoes, and humans, and to predict future movements of the virus.

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Real-time monitoring and reporting

Gathering information through periodic or continuous measurement in the field to provide a view of current conditions. In some instances, observations may not be subject to rigorous review before release; this will be noted in the documentation accompanying the data.

Subtopics:

(none)

Refine results by state:

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[Earthquake Hazards Program](#) [[More info](#)]

Information on earthquake activity, earthquake science, and earthquake hazard reduction with links to news reports, products and services, educational resources for teachers, glossary, and current U.S. earthquake activity map.

[Earthquake: Did you feel it? Report it here.](#) [[More info](#)]

Place to provide information about ground shaking associated with significant earthquakes. A questionnaire to let us know what you felt following an earthquake in the United States or in other countries.

[Water resources real-time data for the Nation](#) [[More info](#)]

Access to national water resources real-time data typically recorded at 15-60 minute intervals, stored onsite, and then transmitted to USGS offices every 4 hours. Select for site information, ground water, surface water, and water quality.

[Water Watch: current water resources conditions](#) [[More info](#)]

U.S. map of real-time streamflow compared to historical values with links to U.S. maps and data of surface water, ground water, precipitation, river conditions and floods and other information on current and past water resources conditions.

[Volcano Hazards Program](#) [[More info](#)]

Homepage for USGS Volcano Hazards Program with feature stories, and links to worldwide volcano updates, volcanic hazards, reducing volcanic risk, USGS international programs, and resources such as educator's page, videos, and online reports.

[Landslide events](#) [[More info](#)]

Current, regularly updated reports of landslides nationwide

[Ground water climate response network](#) [[More info](#)]

Map showing a network of selected ground water wells in the U.S. The water levels in these wells are used to monitor the effects of droughts and other climate variability.

[National Geomagnetism Program](#) [[More info](#)]

Overview of USGS programs related to geomagnetism including observatories, data, program services, links to models, charts, and movies, program contacts, Intermagnet, Geomag, publications, and bibliographies.

[30 day animations of US daily streamflow maps](#) [[More info](#)]

Animated WaterWatch streamflow maps showing daily highs and lows.

[Alaska Volcano Observatory](#) [[More info](#)]

Homepage for Alaska Volcano Observatory (AVO) with offices in Anchorage and Fairbanks monitors and studies Alaska's hazardous volcanoes. Links to featured news, updates, publications and products, and a volcano atlas for Alaska.

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Remote sensing

The process of detecting and monitoring the physical characteristics of an area by measuring its reflected and emitted radiation at a distance from the targeted area. Remote sensing is used in this thesaurus to refer to methods that are solely or primarily deployed through air or space. Included in this concept are studies of biological populations using remote imaging techniques. Related methods which are used most frequently on the ground (e.g. photography), whether underwater, from airplanes or satellites, are not included in the term remote sensing.

Subtopics:

[IFSAR](#) (4 items)
[LIDAR](#) (17 items)
[Aeromagnetic surveying](#) (10 items)
[Aeroradiometric surveying](#) (1 items)
[Hyperspectral imaging](#) (5 items)
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[Multispectral imaging](#) (26 items)
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[Thermal imaging](#) (2 items)
[Visible light imaging](#) (5 items)

[Remote-sensing data](#) (28 items)
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[Composite burn index](#) (1 items)
[Normalized burn ratio](#) (1 items)
[Satellite altimetry](#) (2 items)
[Satellite images](#) (28 items)

Related topics:

- [Aerial photography](#)
- [Geography](#)
- [Seismic methods](#)
- [Telemetry](#)
- [Videography](#)

Refine results by state:

Results 1 - 10 of 117 listed by similarity [[list alphabetically](#)]

[Land Remote Sensing Program](#) [[More info](#)]

Land Remote Sensing Program (LRS) provides a primary source of remotely sensed data and applications of land remote sensing, nationally and internationally.

[Remote sensing phenology](#) [[More info](#)]

[Advanced Remote Sensing Research](#) [[More info](#)]

New and experimental methods of analyzing geospatial imagery, including detailed spectral analysis of land surface materials, historical image analysis, and long wave infrared image analysis.

[Applying remote sensing to invasive species science-A tamarisk example](#) [[More info](#)]

Explains how remote sensing data are used to understand the current extent and likely future of an invasive plant, in this case a bush.



[\[More info\]](#)

[Assessment of least tern and piping plover habitats on the Missouri River using remote sensing](#)

Analysis and modeling of multispectral imagery helps to predict the suitability of sand bars for nesting of these migratory birds.

[National Satellite Land Remote Sensing Data Archive](#) [\[More info\]](#)

USGS Archive for preservation and access for satellite remote sensing data and imagery (Landsat and AVHRR). Links to locating and ordering imagery, international collaborators, advisory committee, and Earthshots (satellite photos.).

[Post-fire burn assessment by remote sensing on Federal lands](#) [\[More info\]](#)

Remote sensing and field sampling techniques to support national assessment of burned areas



[Wetland fire remote sensing research -- The Greater Everglades example](#) [\[More info\]](#)

The U.S. Geological Survey uses remote sensing to improve fire-management databases in the Everglades, gain insights into post-fire land-cover dynamics, and develop spatial and temporal fire-scar data for habitat and hydrologic modeling.

[Earthshots, satellite images of environmental change](#) [\[More info\]](#)

Satellite images of geographic areas of interest, cities, deserts, glaciers, geologic features, disaster areas, water bodies, and wildlife linked with articles, maps, and other images such as AVHRR, photographs, and special project images.

[A rapid method for creating qualitative images indicative of thick oil emulsion on the ocean's surface from imaging spectrometer data](#) [\[More info\]](#)

Technical details explaining how remotely sensed visible and infrared data can help recognize the extent of oil spills.

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Volcanoes

Vents in the surface of the Earth through which magma and associated gases erupt; also, the forms or structures, usually conical, that are produced by the erupted material. [Glossary of Geology, 4th ed.]

Alexandria Digital Library Feature Type Thesaurus

Subtopics:
(none)

Related topics:

- [Craters](#)
- [Mountains](#)

Refine results by state:

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[Volcano Hazards Program](#) [[More info](#)]

Homepage for USGS Volcano Hazards Program with feature stories, and links to worldwide volcano updates, volcanic hazards, reducing volcanic risk, USGS international programs, and resources such as educator's page, videos, and online reports.

[Volcanoes](#) [[More info](#)]

This booklet presents a generalized summary of the nature, workings, publications, and hazards of the common types of volcanoes around the world, along with a brief introduction to the techniques of volcano monitoring and research.

[Volcanoes of Hawaii feature stories archive](#) [[More info](#)]

Archive of feature stories on volcanic features on the Big Island, guided tours of Hawaii Volcanoes National Park, eruptions and eventful earthquakes, and other topics about the work of scientists at the Hawaiian Volcano Observatory.

[Volcanoes of Hawaii photo gallery](#) [[More info](#)]

Images of Hawaiian volcanoes and the islands they've built in the past few million years, and images of recent eruptions.

[Volcanoes of the United States](#) [[More info](#)]

Booklet detailing plate tectonics, eruptions, hazards, and monitoring of U.S. volcanoes with black and white photos.

[Alaska volcanoes guidebook for teachers](#) [[More info](#)]

The lessons and activities in this guidebook are meant to supplement and enhance existing science content already being taught to Alaskan students in grade levels 6-12.

[Cascades Volcano Observatory - Learn about volcanoes](#) [[More info](#)]

Educational volcano site providing answers to frequently asked volcano questions with links to other general information on volcanoes and to information on specific volcanoes including the Cascade Range volcanoes.

[Eruptions of Hawaiian volcanoes - past, present, and future](#) [[More info](#)]

Originally published in 1987, this general-interest booklet has been revised in anticipation of the Centennial of the Hawaiian Volcano Observatory (HVO) in January 2012.

[Geologic hazards at volcanoes](#) [[More info](#)]

Poster diagram showing the various hazards that accompany volcanic activity as they relate to the

structure of the volcano.

Most recent updates for U.S. volcanoes [More info]

Short descriptions of recent volcanic activity in the US.

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Water quality

The chemical, physical, and biological characteristics of water, usually in respect to its suitability for a particular purpose.

Subtopics:

[Groundwater quality](#) (80 items)

[Marine water quality](#) (14 items)

[Surface water quality](#) (66 items)

[Water-quality data](#) (83 items)

Related topics:

- [Aquatic biology](#)
- [Drinking water use](#)
- [Hydrology](#)
- [Water chemistry](#)
- [Water properties](#)
- [Contamination and pollution](#)

Refine results by state:

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[National Water-Quality Assessment \(NAWQA\) Program](#) [[More info](#)]

Primary homepage for the National Water Quality Assessment (NAWQA) Program studying water quality in river, aquifer and coastal water basins throughout the nation. Links to reports, data, models, maps and national synthesis studies.

[Water quality information pages](#) [[More info](#)]

Homepage of the Office of Water Quality programs on the quality of the Nation's surface water and ground water resources, with links to general information, quality assurance, software, data, publications, USGS facilities, techniques, and programs.

[Water-quality data for the Nation](#) [[More info](#)]

Homepage for USGS water quality information. The NWISWeb discrete sample database is a compilation of over 3.5 million historical water quality analyses in the USGS district databases. Also includes access to real-time data and a tutorial.

[Water science for schools: water quality](#) [[More info](#)]

Educational site for elementary school students on water quality with links to related topics including pesticides in ground water, kid's view, urbanization and water and others.

[Toxic Substances Hydrology Program](#) [[More info](#)]

Homepage for the Toxic Substances Hydrology Program, which provides scientific information on contaminated sites and on human and environmental health. Links to news, topical information, investigations, meetings, publications, and photos.

[The USGS role in Total Maximum Daily Load \(TMDL\) assessments](#) [[More info](#)]

Detailed information on Total Maximum Daily Load, the total quantity of a pollutant that a stream can carry and still conform to water quality standards, used as a measurement in the monitoring, assessment, and remediation of polluted waters.

[Hypoxia](#) [[More info](#)]

A brief definition and explanation of hypoxia with special reference to the Gulf of Mexico hypoxic zone along the Louisiana-Texas coast as well as extensive links to USGS and other related information resources.

[Agricultural chemicals](#) [[More info](#)]

Overview of the Toxic Substances Hydrology Program role in investigating the occurrence and fate of

agricultural chemicals with links to investigations, headlines, on-line fact sheets, new publications, bibliographies and photo gallery.

[National highway runoff water quality data and methodology synthesis](#) [\[More info\]](#)

Cooperative national project with the Federal Highway Administration (FHWA) to evaluate FHWA's guidelines for highway-runoff quality. Links to searchable online bibliography of related publications by the USGS, EPA, FHWA, and state agencies.

[Primer on water quality](#) [\[More info\]](#)

Fact sheet on what "water quality" means, how it is determined, and the natural processes and human activities that affect it.

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Fires

Combustion, marked by flames or intense heat, in natural settings, often ignited by lightning or human activities. For fires set as part of natural resource management, use 'controlled fires'.

Subtopics:

(none)

[Fire preparedness](#) (4 items)

Related topics:

- [Atmospheric sciences](#)
- [Controlled fires](#)
- [Ecology](#)
- [Hazards](#)
- [Human impacts](#)

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[Natural Hazards - Wildfires](#) [[More info](#)]

News and related information focusing on the importance of wildfire hazards in the United States.

[Fire ecology research](#) [[More info](#)]

Study of wildland fire history and fire ecology such as plants in the Sierra Nevada forests, California shrublands, the Mojave, and Sonoran deserts to develop management techniques that will reduce hazards.

[Bibliography of fire effects and related literature applicable to the ecosystems and species of Wisconsin](#) [[More info](#)]

The bibliography provides citations pertinent to the effects of fire and its prescribed use on the ecosystems and species of Wisconsin and the upper Midwest. Three separate subject indexes are provided: general, species, and geographic location.

[Biological resource status and trends: Fire](#) [[More info](#)]

Information concerning status and trends of biological resources, focusing on fire

[Born of fire: restoring sagebrush steppe](#) [[More info](#)]

USGS Forest and Rangeland Ecosystem Science Center: fact sheet in Adobe PDF about the studies to restore sagebrush steppe

[Emissions from Coal Fires and Their Impact on the Environment](#) [[More info](#)]

Reviews how coal fires occur, how they can be detected by airborne and remote surveys, and, most importantly, the impact coal-fire emissions may have on the environment and human health, especially mercury, carbon dioxide, carbon monoxide, and methane.

[Geospatial Multi-Agency Coordination \(GeoMAC\) wildland fire perimeters, 2008](#) [[More info](#)]

Where the fires were, as GIS data in shapefile format, geographic coordinates, NAD83.

[Geospatial Multi-Agency Coordination \(GeoMAC\) wildland fire support](#) [[More info](#)]

Description of the Geospatial Multi-Agency Coordination (GeoMAC) project, online maps of current wildland fire locations using Netscape Communicator or Microsoft Internet Explorer, and user guide on how to use mapping application.

[Hazards Management in Grand County, Colorado-Fire Fuels Characterization](#) [[More info](#)]

Using land cover, vegetation, vegetation health, and other characteristics derived from remote-sensing imagery, we develop geospatial models depicting the susceptibility of this area to wildfires.

[Housing arrangement and location determine the likelihood of housing loss due to wildfire](#) [\[More info\]](#)

Using a geographic dataset of structures, with more than 5500 structures that were destroyed or damaged by wildfire since 2001, we identified the main contributors to property loss in two extensive, fire-prone regions in southern California.

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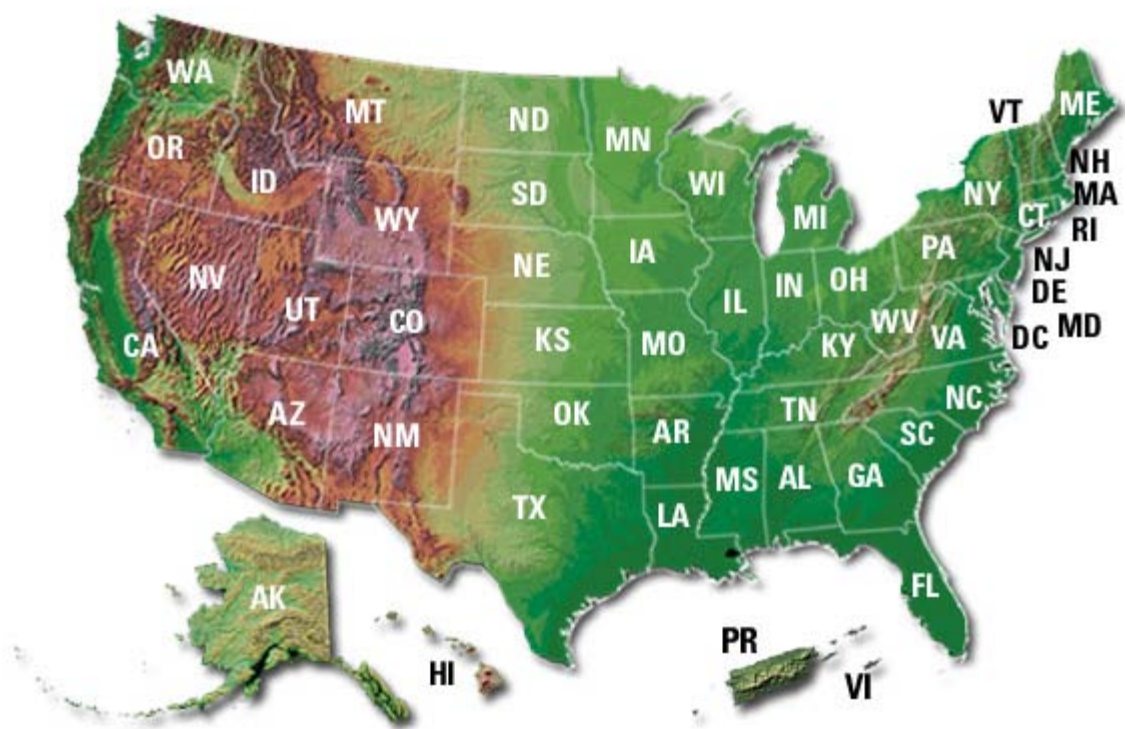


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- [Changes in Stream-Water Quality Attributed to Coalbed Methane Development](#) ([new window](#))
(Released: 2/25/2014 11:00:00 AM)
- [The Yellowstone Volcano: Past, Present and Future](#) ([new window](#))
(Released: 1/21/2014 1:00:00 PM)
- [Low Concentrations of De-icing Chemicals Reaching Jackson Hole Groundwater](#) ([new window](#))
(Released: 1/8/2014 4:48:14 PM)
- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the Southwest Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 12:00:00 PM)
- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the North Central Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 11:00:00 AM)

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Wyoming Real-Time Information:

- [Real-Time Water Data](#) ([new window](#))
Real-time water information
- [WaterWatch—Current Streamflow Conditions](#) ([new window](#))
Real-time tracking of changes to rivers and streams within this location
- [Floods & High Water Flows](#) ([new window](#))
Real-time tracking of flood conditions within the State
- [Drought Watch](#) ([new window](#))
Real-time tracking of drought information within this location
- [Ground Water—Climate Response Network](#) ([new window](#))
Real-time monitoring of the effects of droughts and other climate variability on ground-water levels.
- [Earthquake Activity](#) ([new window](#))
Real-time and historical earthquake information

Highlighted Wyoming Links:

- [Biological Resource Information](#) ([new window](#))
Activities to support the sound management and conservation of our Nation's biological resources
- [Earthquake Information](#) ([new window](#))
The latest information on earthquake related activity

Wyoming State Facts



Locations on image are approximate

Capital: Cheyenne(★)

Land Area: 97,100 sq. miles

(source: 2010 Census)

Population: 563,626

(source: 2010 Census estimate)

Highest Point:

Gannett Peak at 13,804 feet,
located in the county/subdivision of
Fremont

(source: U.S. Geological Survey)

Lowest Point:

Belle Fourche River at 3,099 feet,
located in the county/subdivision of
Crook

(source: U.S. Geological Survey)

Geographic Center:

Located in Fremont County approx.
58 miles east-northeast of Lander

(source: U.S. Geological Survey)

- [Mineral Information](#) (new window)
Statistics and information on the worldwide supply of, demand for, and flow of minerals and materials essential to the U.S. economy, national security, and protection of the environment
- [National Geospatial Program Partnerships](#) (new window)
A network that cultivates and maintains long-term relationships with partners and develops agreements which advance the National Spatial Data Infrastructure (NSDI) and support USGS science.
- [Recreational Information](#)  (new window)
Looking for recreation? General information on tourist sites, trails, byways, maps, passes, and more
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- [National Scenic Trails Added to Washington State Maps](#) ([new window](#))
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- [Limited Food May be Significantly Changing Great Lakes Ecosystems](#) ([new window](#))
(Released: 12/12/2013 11:45:00 AM)
- [Instant Bacteria Forecasts Make Swimmers at Great Lakes Beaches Safer](#) ([new window](#))
(Released: 11/21/2013 12:48:25 PM)
- [Household Products May Harm Tree Swallows in Minnesota and Wisconsin](#) ([new window](#))
(Released: 10/23/2013 12:35:16 PM)
- [Real-time Monitoring Pays Off for Tracking Nitrate Pulse in Mississippi River Basin to the Gulf of Mexico](#) ([new window](#))
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The latest information on earthquake related activity

Wisconsin State Facts



Locations on image are approximate

Capital: Madison(★)

Land Area: 54,310 sq. miles

(source: 2010 Census)

Population: 5,686,986

(source: 2010 Census estimate)

Highest Point:

Timms Hill at 1,951 feet, located in the county/subdivision of Price

(source: U.S. Geological Survey)

Lowest Point:

Lake Michigan at 579 feet

(source: U.S. Geological Survey)

Geographic Center:

Located in Wood County approx. 9 miles southeast of Marshfield

(source: U.S. Geological Survey)

- [Mineral Information](#) (new window)
Statistics and information on the worldwide supply of, demand for, and flow of minerals and materials essential to the U.S. economy, national security, and protection of the environment
- [National Geospatial Program Partnerships](#) (new window)
A network that cultivates and maintains long-term relationships with partners and develops agreements which advance the National Spatial Data Infrastructure (NSDI) and support USGS science.
- [Protecting Wisconsin Groundwater Through Comprehensive Planning](#) (new window)
Learn more about groundwater, find groundwater data and policies, and plans to protect groundwater in your area.
- [Recreational Information](#)  (new window)
Looking for recreation? General information on tourist sites, trails, byways, maps, passes, and more
- [Water Resources Information](#) (new window)
Timely information essential to understanding the Nation's water resources

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- [Crowd-Sourcing the Nation: Using Volunteers for Enhanced Data Collection](#) ([new window](#))
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- [Mining Waste Byproduct Capable of Helping Clean Water](#) ([new window](#))
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- [Groundwater Quality Generally Good in West Virginia](#) ([new window](#))
(Released: 12/6/2012 1:23:13 PM)
- [USGS Releases First Assessment of Shale Gas Resources in the Utica Shale: 38 trillion cubic feet](#) ([new window](#))
(Released: 10/4/2012 5:24:04 PM)
- [A Big Day for Science: Citizens Have Contributed One Million Observations to Top Nature Database](#) ([new window](#))
(Released: 5/3/2012 9:00:00 AM)



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Highlighted West Virginia Links:

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- [Earthquake Information](#) ([new window](#))
The latest information on earthquake related activity
- [Mineral Information](#) ([new window](#))

West Virginia State Facts



Locations on image are approximate

Capital: Charleston(★)

Land Area: 24,078 sq. miles
(source: 2010 Census)

Population: 1,852,994
(source: 2010 Census estimate)

Highest Point:
Spruce Knob at 4,863 feet, located in the county/subdivision of Pendleton
(source: U.S. Geological Survey)

Lowest Point:
Potomac River at 240 feet, located in the county/subdivision of Jefferson
(source: U.S. Geological Survey)

Geographic Center:
Located in Braxton County approx. 4 miles east of Sutton
(source: U.S. Geological Survey)

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News Releases of Interest for Washington:

- [Barred Owls Ousting Spotted Owls in the Pacific Northwest](#) ([new window](#))

(Released: 2/24/2014 11:25:09 AM)

- [Linking U.S. and Canadian Border Waters](#) ([new window](#))

(Released: 2/19/2014 9:00:00 AM)

- [National Scenic Trails Added to Washington State Maps](#) ([new window](#))

(Released: 2/12/2014 9:00:00 AM)

- [Elwha Sediment Detailed in New Document](#) ([new window](#))

(Released: 2/11/2014 1:00:00 PM)

- [Salmon Conservation Efforts Honored](#) ([new window](#))

(Released: 1/16/2014 3:00:00 PM)

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Locations on image are approximate

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- [Current Volcanic Activity in the Cascade Range](#) ([new window](#))
Current volcanic activity from the Cascades Volcano Observatory.
- [Earthquake Activity](#) ([new window](#))
Real-time and historical earthquake information
- [Landslide Activity](#) ([new window](#))
Real-time monitoring of selected landslides and hillsides.

Highlighted Washington Links:

- [Coastal Habitats in Puget Sound \(CHIPS\)](#) ([new window](#))
Critical science dedicated to helping solve problems related to the Puget Sound ecosystem.
- [Biological Resource Information](#) ([new window](#))

Capital: Olympia(★)

Land Area: 66,544 sq. miles

(source: 2010 Census)

Population: 6,724,540

(source: 2010 Census estimate)

Highest Point:

Mt. Rainier at 14,411 feet, located in the county/subdivision of Pierce (source: U.S. Geological Survey)

Lowest Point:

Pacific Ocean at Sea Level

(source: U.S. Geological Survey)

Geographic Center:

Located in Chelan County approx. 10 miles west-southwest of Wenatchee

(source: U.S. Geological Survey)

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News Releases of Interest for Virginia:

- [Media Advisory: USGS to Host Congressional Briefing: Earthquake Science and Remaining Mysteries](#) ([new window](#))
(Released: 2/20/2014 11:20:00 AM)
- [New Sensor Network to Detail Virginia Earthquakes](#) ([new window](#))
(Released: 1/8/2014 3:00:00 PM)
- [Tsunami on the Delaware River? Study of Historical Quake and Early East Coast Seismicity](#) ([new window](#))
(Released: 9/3/2013 3:00:00 PM)
- [Remapping Coastal Areas Damaged by Hurricane Sandy](#) ([new window](#))
(Released: 8/20/2013 11:00:00 AM)
- [Largemouth Bass Virus Found in Northern Snakeheads in Virginia](#) ([new window](#))
(Released: 8/13/2013 9:00:00 AM)



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Virginia State Facts



Locations on image are approximate

Capital: Richmond(★)

Land Area: 39,594 sq. miles

(source: 2010 Census)

Population: 8,001,024

(source: 2010 Census estimate)

Highest Point:

Mt. Rogers at 5,729 feet, located in the county/subdivision of Grayson-Smyth

(source: U.S. Geological Survey)

Lowest Point:

Atlantic Ocean at Sea Level

(source: U.S. Geological Survey)

Geographic Center:

Located in Buckingham County approx. 5 miles southwest of Buckingham

(source: U.S. Geological Survey)

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News Releases of Interest for Virgin Islands:

- [Extent and Speed of Lionfish Spread Unprecedented](#) ([new window](#))
(Released: 3/14/2011 8:30:00 AM)
- [The Good, the Bad, and the Smelly: USGS at the 2008 Coral Reef Symposium](#) ([new window](#))
(Released: 7/7/2008 12:43:56 PM)
- [Media Advisory: USGS To Host Congressional Briefings on How Science is Used to Respond to Hurricanes](#) ([new window](#))
(Released: 1/24/2008 12:04:56 PM)
- [Research Needed on Imperiled Coral Ecosystems](#) ([new window](#))
(Released: 7/30/2007 8:08:21 AM)
- [Supertyphoon Pongsona Damages Guam's Water Supplies](#) ([new window](#))
(Released: 12/19/2002)



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Virgin Islands State Facts



Locations on image are approximate

Capital: Charlotte Amalie(★)

Highest Point:

Crown Mtn. at 1,556 feet, located in the county/subdivision of St. Thomas Island

(source: U.S. Geological Survey)

Lowest Point:

Atlantic Ocean at Sea Level

(source: U.S. Geological Survey)

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News Releases of Interest for Vermont:

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- [Crowd-Sourcing the Nation: USGS Seeking More Volunteers](#) ([new window](#))
(Released: 6/19/2013 12:00:00 PM)
- [Study Confirms Presence of Contaminants in Some New England Bedrock Groundwater, ID's New Concerns, Determines Likely Locations](#) ([new window](#))
(Released: 6/25/2012 6:26:36 PM)
- [Low April Streamflows Not Necessarily an Indicator of Summer Drought](#) ([new window](#))
(Released: 5/21/2012 2:00:00 PM)
- [A Big Day for Science: Citizens Have Contributed One Million Observations to Top Nature Database](#) ([new window](#))
(Released: 5/3/2012 9:00:00 AM)

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The latest information on earthquake related activity

Vermont State Facts



Locations on image are approximate

Capital: Montpelier(★)

Land Area: 9,250 sq. miles
(source: 2010 Census)

Population: 625,741
(source: 2010 Census estimate)

Highest Point:
Mt. Mansfield at 4,393 feet, located in the county/subdivision of Chittenden

(source: U.S. Geological Survey)

Lowest Point:
Lake Champlain at 95 feet
(source: U.S. Geological Survey)

Geographic Center:
Located in Washington County approx. 3 miles east of Roxbury
(source: U.S. Geological Survey)



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News Releases of Interest for Utah:

- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the Southwest Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 12:00:00 PM)
- [Parts of Sonoran Desert May Become Unsuitable for Tortoise Survival Due to Climate and Drought](#) ([new window](#))
(Released: 12/13/2013 11:43:20 AM)
- [New Insight on Vulnerability of Public-Supply Wells to Contamination](#) ([new window](#))
(Released: 8/5/2013 10:00:00 AM)
- [Invasive Snails are Target of UI, USGS Environmental DNA Study](#) ([new window](#))
(Released: 6/19/2013 1:03:55 PM)
- [Crowd-Sourcing the Nation: Using Volunteers for Enhanced Data Collection](#) ([new window](#))
(Released: 4/1/2013 6:41:01 PM)

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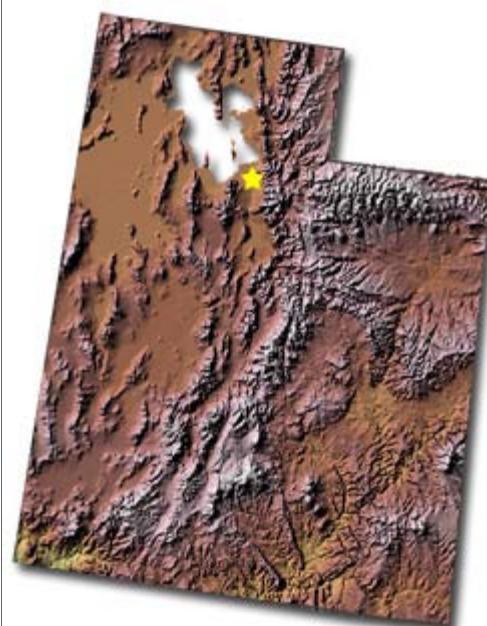
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The latest information on earthquake related activity

Utah State Facts



Locations on image are approximate

Capital: Salt Lake City(★)
Land Area: 82,144 sq. miles
(source: 2010 Census)
Population: 2,763,885
(source: 2010 Census estimate)
Highest Point:
Kings Peak at 13,528 feet, located in the county/subdivision of Duchesne
(source: U.S. Geological Survey)
Lowest Point:
Beaverdam Wash at 2,000 feet, located in the county/subdivision of Washington
(source: U.S. Geological Survey)
Geographic Center:
Located in Sanpete County approx.

3 miles north of Manti
(source: U.S. Geological Survey)

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- [PAH Levels in Runoff from Coal-Tar Sealcoated Pavement Remain Elevated for Months After Application](#) ([new window](#))
(Released: 2/21/2014 8:00:00 AM)
- [Causes of Toxic Golden Algal Blooms Determined](#) ([new window](#))
(Released: 1/17/2014 1:11:35 PM)
- [Earthquake Events on Par For 2013](#) ([new window](#))
(Released: 1/8/2014 3:37:55 PM)
- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies for the South Central Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 11:00:00 AM)

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Statistics and information on the worldwide supply of, demand for,

Texas State Facts



Locations on image are approximate

Capital: Austin(★)
Land Area: 261,797 sq. miles
(source: 2010 Census)
Population: 25,145,561
(source: 2010 Census estimate)
Highest Point:
Guadalupe Peak at 8,749 feet,
located in the county/subdivision of
Culberson
(source: U.S. Geological Survey)
Lowest Point:
Gulf of Mexico at Sea Level
(source: U.S. Geological Survey)
Geographic Center:
Located in McCulloch County
approx. 15 miles northeast of Brady
(source: U.S. Geological Survey)

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News Releases of Interest for Tennessee:

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 - [Streamflow Alteration Impacts Fish Diversity in Local Rivers](#) ([new window](#))
(Released: 1/16/2014 10:00:00 AM)
 - [Aircraft Studying New Madrid Seismic Zone on Display](#) ([new window](#))
(Released: 7/15/2013 12:57:59 PM)
 - [Low-Flying Airplane to "Look" Underground for Clues about New Madrid Earthquakes](#) ([new window](#))
(Released: 7/9/2013 11:04:22 AM)
 - [Revised Kentucky and Tennessee Maps Reveal New Design](#) ([new window](#))
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Tennessee State Facts



Locations on image are approximate

Capital: Nashville(★)

Land Area: 41,217 sq. miles

(source: 2010 Census)

Population: 6,346,105

(source: 2010 Census estimate)

Highest Point:

Clingmans Dome at 6,643 feet,
located in the county/subdivision of Sevier

(source: U.S. Geological Survey)

Lowest Point:

Mississippi River at 178 feet, located
in the county/subdivision of Shelby

(source: U.S. Geological Survey)

Geographic Center:

Located in Rutherford County
approx. 5 miles northeast of Murfreesboro

(source: U.S. Geological Survey)

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- [Linking U.S. and Canadian Border Waters](#) ([new window](#))
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- [Landsat 8 Celebrates First Year of Success](#) ([new window](#))
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- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the North Central Climate Science Center](#) ([new window](#))
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- [Crowd-Sourcing the Nation: USGS Seeking More Volunteers](#) ([new window](#))
(Released: 6/19/2013 12:00:00 PM)
- [USGS Releases New Oil and Gas Assessment for Bakken and Three Forks Formations](#) ([new window](#))
(Released: 4/30/2013 12:59:32 PM)



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- [Land Remote Sensing Information - EROS](#) ([new window](#))

South Dakota State Facts



Locations on image are approximate

Capital: Pierre(★)

Land Area: 75,885 sq. miles

(source: 2010 Census)

Population: 814,180

(source: 2010 Census estimate)

Highest Point:

Harney Peak at 7,242 feet, located in the county/subdivision of Pennington

(source: U.S. Geological Survey)

Lowest Point:

Big Stone Lake at 966 feet, located in the county/subdivision of Roberts

(source: U.S. Geological Survey)

Geographic Center:

Located in Hughes County approx. 8 miles northeast of Pierre

(source: U.S. Geological Survey)

Timely and ready access to global land remote sensing and other Earth surface data and information from USGS Earth Resource Observation and Science (EROS).

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News Releases of Interest for South Carolina:

- [Tsunami on the Delaware River? Study of Historical Quake and Early East Coast Seismicity](#) ([new window](#))
(Released: 9/3/2013 3:00:00 PM)
- [New Tools to Help Manage Saltwater Intrusion](#) ([new window](#))
(Released: 4/3/2013 3:21:18 PM)
- [Crowd-Sourcing the Nation: Using Volunteers for Enhanced Data Collection](#) ([new window](#))
(Released: 4/1/2013 6:41:01 PM)
- [Photos Reveal Severity of Hurricane Sandy's Coastal Impacts](#) ([new window](#))
(Released: 11/9/2012 3:20:00 PM)
- [USGS Releases Unconventional Gas Estimates for Five East Coast Basins](#) ([new window](#))
(Released: 6/20/2012 11:04:29 AM)



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The latest information on earthquake related activity

South Carolina State Facts



Locations on image are approximate

Capital: Columbia(★)

Land Area: 30,109 sq. miles
(source: 2010 Census)

Population: 4,625,364
(source: 2010 Census estimate)

Highest Point:
Sassafras Mtn. at 3,560 feet,
located in the county/subdivision of
Pickens
(source: U.S. Geological Survey)

Lowest Point:
Atlantic Ocean at Sea Level
(source: U.S. Geological Survey)

Geographic Center:
Located in Richland County approx.
13 miles southeast of Columbia
(source: U.S. Geological Survey)

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News Releases of Interest for Rhode Island:

- [Crowd-Sourcing the Nation: USGS Seeking More Volunteers](#) ([new window](#))
(Released: 6/19/2013 12:00:00 PM)
- [USGS Storm-Surge Sensors Deployed Ahead of Tropical Storm Sandy](#) ([new window](#))
(Released: 10/27/2012 2:01:41 PM)
- [Study Confirms Presence of Contaminants in Some New England Bedrock Groundwater, ID's New Concerns, Determines Likely Locations](#) ([new window](#))
(Released: 6/25/2012 6:26:36 PM)
- [Sea Level Rise Accelerating in U.S. Atlantic Coast](#) ([new window](#))
(Released: 6/24/2012 1:00:00 PM)
- [Low April Streamflows Not Necessarily an Indicator of Summer Drought](#) ([new window](#))
(Released: 5/21/2012 2:00:00 PM)



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Rhode Island State Facts



Locations on image are approximate

Capital: Providence(★)

Land Area: 1,045 sq. miles
(source: 2010 Census)

Population: 1,052,567
(source: 2010 Census estimate)

Highest Point:
Jerimoth Hill at 812 feet, located in the county/subdivision of Providence
(source: U.S. Geological Survey)

Lowest Point:
Atlantic Ocean at Sea Level
(source: U.S. Geological Survey)

Geographic Center:
Located in Kent County approx. 1 mile south-southwest of Crompton
(source: U.S. Geological Survey)

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News Releases of Interest for Puerto Rico:

- [Invasive Boa Constrictor Thriving on Puerto Rico](#) ([new window](#))
(Released: 11/29/2012 4:29:15 PM)
- [Isolation of Puerto Rico's Manatees Affects Survival Odds](#) ([new window](#))
(Released: 10/23/2012 9:00:00 AM)
- [Extent and Speed of Lionfish Spread Unprecedented](#) ([new window](#))
(Released: 3/14/2011 8:30:00 AM)
- [Manatee Subspecies Genetically Confirmed. But Diversity Challenge Looms](#) ([new window](#))
(Released: 9/13/2010)
- [Report Documents the Risks of Giant Invasive Snakes in the U.S.](#) ([new window](#))
(Released: 10/13/2009 12:00:00 PM)



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Puerto Rico State Facts



Locations on image are approximate

Capital: San Juan(★)

Highest Point:

Cerro de Punta at 4,390 feet,
located in the county/subdivision of
Ponce District

(source: U.S. Geological Survey)

Lowest Point:

Atlantic Ocean at Sea Level

(source: U.S. Geological Survey)

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News Releases of Interest for Pennsylvania:

- [Limited Food May be Significantly Changing Great Lakes Ecosystems](#) ([new window](#))
(Released: 12/12/2013 11:45:00 AM)
- [Instant Bacteria Forecasts Make Swimmers at Great Lakes Beaches Safer](#) ([new window](#))
(Released: 11/21/2013 12:48:25 PM)
- [Measuring Landscape Disturbance of Gas Exploration in Four More Pennsylvania Counties:](#) ([new window](#))
(Released: 11/21/2013 10:23:40 AM)
- [Media Advisory: Upper Delaware River Basin Listening Sessions](#) ([new window](#))
(Released: 9/30/2013 9:52:52 AM)
- [Measuring Landscape Disturbance of Gas Exploration in Four Pennsylvania Counties](#) ([new window](#))
(Released: 9/18/2013 12:06:07 PM)

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Highlighted Pennsylvania Links:

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- [Earthquake Information](#) ([new window](#))

Pennsylvania State Facts



Locations on image are approximate

Capital: Harrisburg()

Land Area: 44,817 sq. miles
(source: 2010 Census)

Population: 12,702,379
(source: 2010 Census estimate)

Highest Point:
Mt. Davis at 3,213 feet, located in the county/subdivision of Somerset
(source: U.S. Geological Survey)

Lowest Point:
Delaware River at Sea Level
(source: U.S. Geological Survey)

Geographic Center:
Located in Centre County approx. 2 1/2 miles southwest of Bellefonte
(source: U.S. Geological Survey)

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News Releases of Interest for Oregon:

- [Barred Owls Ousting Spotted Owls in the Pacific Northwest](#) ([new window](#))

(Released: 2/24/2014 11:25:09 AM)

- [Nutrient Ratios Could Affect Microcystin Occurrence](#) ([new window](#))

(Released: 2/3/2014 9:00:00 AM)

- [Salmon Conservation Efforts Honored](#) ([new window](#))

(Released: 1/16/2014 3:00:00 PM)

- [20 Years After Northridge Quake, Buildings Remain Vulnerable](#) ([new window](#))

(Released: 1/15/2014 6:30:00 PM)

- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the Northwest Climate Science Center](#) ([new window](#))

(Released: 12/19/2013 12:00:00 PM)



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Current volcanic activity from the Cascades Volcano Observatory.
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Oregon State Facts



Locations on image are approximate

Capital: Salem(★)

Land Area: 95,997 sq. miles
(source: 2010 Census)

Population: 3,831,074
(source: 2010 Census estimate)

Highest Point:
Mt. Hood at 11,239 feet, located in the county/subdivision of Clackamas-Hood River
(source: U.S. Geological Survey)

Lowest Point:
Pacific Ocean at Sea Level
(source: U.S. Geological Survey)

Geographic Center:
Located in Crook County approx. 25 miles south-southeast of Prineville
(source: U.S. Geological Survey)

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News Releases of Interest for Oklahoma:

- [2011 Oklahoma Induced Earthquake May Have Triggered Larger Quake](#) ([new window](#))
(Released: 3/6/2014 5:00:00 PM) **NEW**
- [Earthquake Events on Par For 2013](#) ([new window](#))
(Released: 1/8/2014 3:37:55 PM)
- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies for the South Central Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 11:00:00 AM)
- [Earthquake Swarm Continues in Central Oklahoma](#) ([new window](#))
(Released: 10/22/2013 1:07:59 PM)
- [New USGS Report Updates Decline of High Plains Aquifer Groundwater Levels](#) ([new window](#))
(Released: 2/22/2013 7:48:52 AM)

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Oklahoma State Facts



Locations on image are approximate

Capital: Oklahoma City(★)
Land Area: 68,667 sq. miles
(source: 2010 Census)

Population: 3,751,351
(source: 2010 Census estimate)

Highest Point:
Black Mesa at 4,973 feet, located in the county/subdivision of Cimarron
(source: U.S. Geological Survey)

Lowest Point:
Little River at 289 feet, located in the county/subdivision of McCurtain
(source: U.S. Geological Survey)

Geographic Center:
Located in Oklahoma County approx. 8 miles north of Oklahoma City
(source: U.S. Geological Survey)

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News Releases of Interest for Ohio:

- [Huron-Erie Corridor Initiative partners receive prestigious Secretary of the Interior honor](#) ([new window](#))
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- [Limited Food May be Significantly Changing Great Lakes Ecosystems](#) ([new window](#))
(Released: 12/12/2013 11:45:00 AM)
- [Instant Bacteria Forecasts Make Swimmers at Great Lakes Beaches Safer](#) ([new window](#))
(Released: 11/21/2013 12:48:25 PM)
- [Buckeye Quads Released](#) ([new window](#))
(Released: 11/13/2013 1:00:00 PM)
- [First Evidence of Grass Carp Reproduction in the Great Lakes](#) ([new window](#))
(Released: 10/28/2013 11:00:00 AM)

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- [Mineral Information](#) ([new window](#))

Ohio State Facts



Locations on image are approximate

Capital: Columbus(★)

Land Area: 40,948 sq. miles
(source: 2010 Census)

Population: 11,536,504
(source: 2010 Census estimate)

Highest Point:
Campbell Hill at 1,550 feet, located in the county/subdivision of Logan
(source: U.S. Geological Survey)

Lowest Point:
Ohio River at 455 feet, located in the county/subdivision of Hamilton
(source: U.S. Geological Survey)

Geographic Center:
Located in Delaware County approx. 25 miles north-northeast of Columbus
(source: U.S. Geological Survey)

Statistics and information on the worldwide supply of, demand for, and flow of minerals and materials essential to the U.S. economy, national security, and protection of the environment

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(Released: 2/19/2014 9:00:00 AM)
- [Climate Change Could Negatively Affect Chase Lake Pelican Population](#) ([new window](#))
(Released: 1/8/2014 5:15:00 PM)
- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the North Central Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 11:00:00 AM)
- [Rural Well-Being in the Prairie Pothole Region](#) ([new window](#))
(Released: 9/12/2013 9:47:58 AM)
- [USGS Releases New Oil and Gas Assessment for Bakken and Three Forks Formations](#) ([new window](#))
(Released: 4/30/2013 12:59:32 PM)

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- [Mineral Information](#) ([new window](#))

North Dakota State Facts



Locations on image are approximate

Capital: Bismarck(★)

Land Area: 68,976 sq. miles

(source: 2010 Census)

Population: 672,591

(source: 2010 Census estimate)

Highest Point:

White Butte at 3,506 feet, located in the county/subdivision of Slope

(source: U.S. Geological Survey)

Lowest Point:

Red River at 750 feet, located in the county/subdivision of Pembina

(source: U.S. Geological Survey)

Geographic Center:

Located in Sheridan County approx. 5 miles southwest of McClusky

(source: U.S. Geological Survey)

Statistics and information on the worldwide supply of, demand for, and flow of minerals and materials essential to the U.S. economy, national security, and protection of the environment

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- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the Southeast Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 11:00:00 AM)
- [Tsunami on the Delaware River? Study of Historical Quake and Early East Coast Seismicity](#) ([new window](#))
(Released: 9/3/2013 3:00:00 PM)
- [Nearly 3,900 New Maps in Time for Summer](#) ([new window](#))
(Released: 7/30/2013 11:00:00 AM)
- [Photos Reveal Severity of Hurricane Sandy's Coastal Impacts](#) ([new window](#))
(Released: 11/9/2012 3:20:00 PM)
- [Students at USGS: As A USGS Geographer Kitty Kolb Helps Protect People's Lives and Property](#) ([new window](#))
(Released: 10/1/2012 7:00:00 AM)



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The latest information on earthquake related activity

North Carolina State Facts



Locations on image are approximate

Capital: Raleigh(★)

Land Area: 48,711 sq. miles

(source: 2010 Census)

Population: 9,535,483

(source: 2010 Census estimate)

Highest Point:

Mt. Mitchell at 6,684 feet, located in the county/subdivision of Yancey

(source: U.S. Geological Survey)

Lowest Point:

Atlantic Ocean at Sea Level

(source: U.S. Geological Survey)

Geographic Center:

Located in Chatham County approx. 10 miles northwest of Sanford

(source: U.S. Geological Survey)

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News Releases of Interest for New York:

- [Identifying Bats By Sound](#) ([new window](#))
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- [A Tough Balance: Brown Trout Can Interfere with Brook Trout Conservation](#) ([new window](#))
(Released: 12/18/2013 12:00:00 PM)
- [Methane is Common in Groundwater from Valleys in South-Central New York State](#) ([new window](#))
(Released: 12/17/2013 10:28:24 AM)
- [Decade of Fire Island Research Available to Help Understand Future Coastal Changes](#) ([new window](#))
(Released: 12/17/2013 9:00:00 AM)
- [Limited Food May be Significantly Changing Great Lakes Ecosystems](#) ([new window](#))
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The latest information on earthquake related activity

New York State Facts



Locations on image are approximate

Capital: Albany(★)

Land Area: 47,214 sq. miles
(source: 2010 Census)

Population: 19,378,102
(source: 2010 Census estimate)

Highest Point:
Mt. Marcy at 5,344 feet, located in the county/subdivision of Essex
(source: U.S. Geological Survey)

Lowest Point:
Atlantic Ocean at Sea Level
(source: U.S. Geological Survey)

Geographic Center:
Located in Madison County approx. 12 miles south of Oneida and 26 miles southwest of Utica
(source: U.S. Geological Survey)

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- [Latest Idaho and New Mexico Quads Available](#) ([new window](#))
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- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the Southwest Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 12:00:00 PM)
- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies for the South Central Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 11:00:00 AM)
- [New Insight on Vulnerability of Public-Supply Wells to Contamination](#) ([new window](#))
(Released: 8/5/2013 10:00:00 AM)
- [Lesser Prairie-Chicken Nest Survival May Decline by 2050](#) ([new window](#))
(Released: 7/11/2013 5:10:00 PM)

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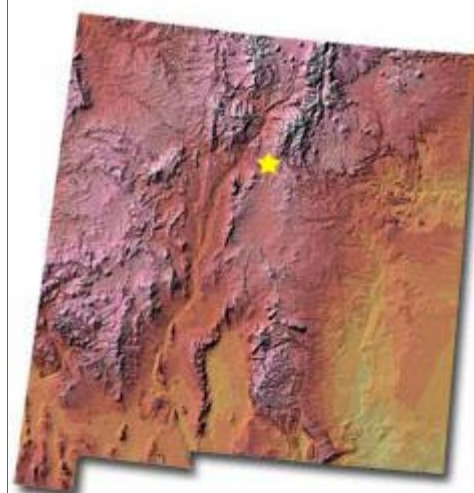
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New Mexico State Facts



Locations on image are approximate

Capital: Santa Fe(★)

Land Area: 121,356 sq. miles
(source: 2010 Census)

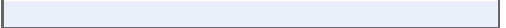
Population: 2,059,179
(source: 2010 Census estimate)

Highest Point:
Wheeler Peak at 13,161 feet,
located in the county/subdivision of
Taos
(source: U.S. Geological Survey)

Lowest Point:
Red Bluff Reservoir at 2,842 feet,
located in the county/subdivision of
Eddy
(source: U.S. Geological Survey)

Geographic Center:
Located in Torrance County approx.
12 miles south-southwest of Willard
(source: U.S. Geological Survey)

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- [Hurricane Sandy Eroded Half of Fire Island's Beaches and Dunes: New Report Quantifies Coastal Change](#) ([new window](#))
(Released: 8/27/2013 9:16:01 AM)
- [Remapping Coastal Areas Damaged by Hurricane Sandy](#) ([new window](#))
(Released: 8/20/2013 11:00:00 AM)
- [New Insight on Vulnerability of Public-Supply Wells to Contamination](#) ([new window](#))
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- [Crowd-Sourcing the Nation: Using Volunteers for Enhanced Data Collection](#) ([new window](#))
(Released: 4/1/2013 6:41:01 PM)
- [Come Test the Waters at the USGS](#) ([new window](#))
(Released: 12/3/2012 10:12:17 AM)

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New Jersey State Facts



Locations on image are approximate

Capital: Trenton(★)

Land Area: 7,417 sq. miles

(source: 2010 Census)

Population: 8,791,894

(source: 2010 Census estimate)

Highest Point:

High Point at 1,803 feet, located in the county/subdivision of Sussex

(source: U.S. Geological Survey)

Lowest Point:

Atlantic Ocean at Sea Level

(source: U.S. Geological Survey)

Geographic Center:

Located in Mercer County approx. 5 miles southeast of Trenton

(source: U.S. Geological Survey)

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News Releases of Interest for New Hampshire:

- [Crowd-Sourcing the Nation: USGS Seeking More Volunteers](#) ([new window](#))
(Released: 6/19/2013 12:00:00 PM)
- [Arsenic Likely in Nearly 40 Percent of New Hampshire's Groundwater](#) ([new window](#))
(Released: 12/4/2012 1:26:35 PM)
- [Birds at Sea and Offshore Wind Energy](#) ([new window](#))
(Released: 12/4/2012 11:59:28 AM)
- [New Flood Mapping Tool Helps Prepare Suncook Area for Future Floods](#) ([new window](#))
(Released: 8/14/2012 8:30:00 AM)
- [Study Confirms Presence of Contaminants in Some New England Bedrock Groundwater, ID's New Concerns, Determines Likely Locations](#) ([new window](#))
(Released: 6/25/2012 6:26:36 PM)



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New Hampshire State Facts



Locations on image are approximate

Capital: Concord(★)

Land Area: 8,968 sq. miles

(source: 2010 Census)

Population: 1,316,470

(source: 2010 Census estimate)

Highest Point:

Mt. Washington at 6,288 feet,
located in the county/subdivision of
Coos

(source: U.S. Geological Survey)

Lowest Point:

Atlantic Ocean at Sea Level

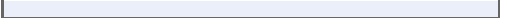
(source: U.S. Geological Survey)

Geographic Center:

Located in Belknap County approx.
3 miles east of Ashland

(source: U.S. Geological Survey)

The latest information on earthquake related activity



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- [USGS Researcher Honored for Helping Managers Save Desert Fish from Extinction](#) (new window)
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- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the Southwest Climate Science Center](#) (new window)
(Released: 12/19/2013 12:00:00 PM)
- [Parts of Sonoran Desert May Become Unsuitable for Tortoise Survival Due to Climate and Drought](#) (new window)
(Released: 12/13/2013 11:43:20 AM)
- [Study Evaluates Elevated Nitrate Levels in Carson Valley Groundwater](#) (new window)
(Released: 12/3/2013 1:00:00 PM)
- [New Insight on Vulnerability of Public-Supply Wells to Contamination](#) (new window)
(Released: 8/5/2013 10:00:00 AM)

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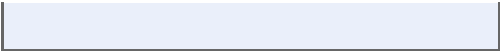
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Nevada State Facts



Locations on image are approximate

Capital: Carson City(★)
Land Area: 109,826 sq. miles
(source: 2010 Census)
Population: 2,700,551
(source: 2010 Census estimate)
Highest Point:
Boundary Peak at 13,140 feet,
located in the county/subdivision of Esmeralda
(source: U.S. Geological Survey)
Lowest Point:
Colorado River at 479 feet, located
in the county/subdivision of Clark
(source: U.S. Geological Survey)
Geographic Center:
Located in Lander County approx.
26 miles southeast of Austin
(source: U.S. Geological Survey)



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News Releases of Interest for Nebraska:

- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the North Central Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 11:00:00 AM)
- [Real-time Monitoring Pays Off for Tracking Nitrate Pulse in Mississippi River Basin to the Gulf of Mexico](#) ([new window](#))
(Released: 8/21/2013 2:00:00 PM)
- [New Insight on Vulnerability of Public-Supply Wells to Contamination](#) ([new window](#))
(Released: 8/5/2013 10:00:00 AM)
- [Crowd-Sourcing the Nation: USGS Seeking More Volunteers](#) ([new window](#))
(Released: 6/19/2013 12:00:00 PM)
- [Iowa Meteorite Crater Confirmed](#) ([new window](#))
(Released: 3/5/2013 9:01:00 AM)

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Nebraska Real-Time Information:

- [Real-Time Water Data](#) ([new window](#))
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Highlighted Nebraska Links:

- [Biological Resource Information](#) ([new window](#))
Activities to support the sound management and conservation of our Nation's biological resources
- [Earthquake Information](#) ([new window](#))
The latest information on earthquake related activity

Nebraska State Facts



Locations on image are approximate

Capital: Lincoln(★)

Land Area: 76,872 sq. miles

(source: 2010 Census)

Population: 1,826,341

(source: 2010 Census estimate)

Highest Point:

Panorama Point at 5,424 feet,
located in the county/subdivision of
Kimball

(source: U.S. Geological Survey)

Lowest Point:

Missouri River at 840 feet, located
in the county/subdivision of
Richardson

(source: U.S. Geological Survey)

Geographic Center:

Located in Custer County approx.
10 miles northwest of Broken Bow
(source: U.S. Geological Survey)

- [Mineral Information](#) (new window)
Statistics and information on the worldwide supply of, demand for, and flow of minerals and materials essential to the U.S. economy, national security, and protection of the environment
- [National Geospatial Program Partnerships](#) (new window)
A network that cultivates and maintains long-term relationships with partners and develops agreements which advance the National Spatial Data Infrastructure (NSDI) and support USGS science.
- [Recreational Information](#)  (new window)
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News Releases of Interest for Montana:

- [Changes in Stream-Water Quality Attributed to Coalbed Methane Development](#) ([new window](#))
(Released: 2/25/2014 11:00:00 AM)
- [The Yellowstone Volcano: Past, Present and Future](#) ([new window](#))
(Released: 1/21/2014 1:00:00 PM)
- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the Northwest Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 12:00:00 PM)
- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the North Central Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 11:00:00 AM)
- [Rural Well-Being in the Prairie Pothole Region](#) ([new window](#))
(Released: 9/12/2013 9:47:58 AM)

 [View more news releases of interest for Montana](#) ([new window](#))

Montana Real-Time Information:

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Highlighted Montana Links:

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Activities to support the sound management and conservation of our Nation's biological resources
- [Earthquake Information](#) ([new window](#))
The latest information on earthquake related activity
- [Mineral Information](#) ([new window](#))

Montana State Facts



Locations on image are approximate

Capital: Helena(★)

Land Area: 145,552 sq. miles
(source: 2010 Census)

Population: 989,415
(source: 2010 Census estimate)

Highest Point:
Granite Peak at 12,799 feet, located in the county/subdivision of Park
(source: U.S. Geological Survey)

Lowest Point:
Kootenai River at 1800 feet, located in the county/subdivision of Lincoln
(source: U.S. Geological Survey)

Geographic Center:
Located in Fergus County approx. 11 miles west of Lewistown
(source: U.S. Geological Survey)

Statistics and information on the worldwide supply of, demand for, and flow of minerals and materials essential to the U.S. economy, national security, and protection of the environment

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News Releases of Interest for Missouri:

- [Helicopter Survey to Map Potential Mineral Resources in Southeast Missouri](#) ([new window](#))
(Released: 2/5/2014 1:20:18 PM)
- [Threat of Earthquakes Occurring in Central United States Still Alive](#) ([new window](#))
(Released: 1/23/2014 2:00:00 PM)
- [Nitrate Levels Continue to Increase in Mississippi River; Signs of Progress in the Illinois River](#) ([new window](#))
(Released: 10/30/2013 12:41:43 PM)
- [Real-time Monitoring Pays Off for Tracking Nitrate Pulse in Mississippi River Basin to the Gulf of Mexico](#) ([new window](#))
(Released: 8/21/2013 2:00:00 PM)
- [Aircraft Studying New Madrid Seismic Zone on Display](#) ([new window](#))
(Released: 7/15/2013 12:57:59 PM)

[View more news releases of interest for Missouri](#) ([new window](#))

Missouri Real-Time Information:

- [Real-Time Water Data](#) ([new window](#))
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- [WaterWatch—Current Streamflow Conditions](#) ([new window](#))
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Highlighted Missouri Links:

- [Biological Resource Information](#) ([new window](#))
Activities to support the sound management and conservation of our Nation's biological resources
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The latest information on earthquake related activity
- [Mineral Information](#) ([new window](#))

Missouri State Facts



Locations on image are approximate

Capital: Jefferson City(★)

Land Area: 68,886 sq. miles
(source: 2010 Census)

Population: 5,988,927
(source: 2010 Census estimate)

Highest Point:
Taum Sauk Mtn. at 1,772 feet,
located in the county/subdivision of
Iron
(source: U.S. Geological Survey)

Lowest Point:
St. Francis River at 230 feet,
located in the county/subdivision of
Dunklin
(source: U.S. Geological Survey)

Geographic Center:
Located in Miller County approx. 20
miles southwest of Jefferson City
(source: U.S. Geological Survey)

Statistics and information on the worldwide supply of, demand for, and flow of minerals and materials essential to the U.S. economy, national security, and protection of the environment

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News Releases of Interest for Mississippi:

- [New Tool Available to Help Track Spilled Oil](#) ([new window](#))
(Released: 2/6/2014 1:30:10 PM)
- [Nitrate Levels Continue to Increase in Mississippi River; Signs of Progress in the Illinois River](#) ([new window](#))
(Released: 10/30/2013 12:41:43 PM)
- [Crowd-Sourcing the Nation: USGS Seeking More Volunteers](#) ([new window](#))
(Released: 6/19/2013 12:00:00 PM)
- [New Insight on Gas Hydrates in Gulf of Mexico](#) ([new window](#))
(Released: 5/14/2013 10:00:00 AM)
- [New Map Tool Helps Prepare Hattiesburg for Floods](#) ([new window](#))
(Released: 11/8/2012 10:06:53 AM)



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Mississippi Real-Time Information:

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Highlighted Mississippi Links:

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- [Mineral Information](#) ([new window](#))
Statistics and information on the worldwide supply of, demand for,

Mississippi State Facts



Locations on image are approximate

Capital: Jackson(★)

Land Area: 46,907 sq. miles

(source: 2010 Census)

Population: 2,967,297

(source: 2010 Census estimate)

Highest Point:

Woodall Mtn. at 806 feet, located in the county/subdivision of Tishomingo

(source: U.S. Geological Survey)

Lowest Point:

Gulf of Mexico at Sea Level

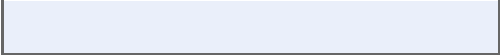
(source: U.S. Geological Survey)

Geographic Center:

Located in Leake County approx. 9 miles west-northwest of Carthage

(source: U.S. Geological Survey)

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News Releases of Interest for Minnesota:

- [Linking U.S. and Canadian Border Waters](#) ([new window](#))
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- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies at the North Central Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 11:00:00 AM)
- [Limited Food May be Significantly Changing Great Lakes Ecosystems](#) ([new window](#))
(Released: 12/12/2013 11:45:00 AM)
- [Instant Bacteria Forecasts Make Swimmers at Great Lakes Beaches Safer](#) ([new window](#))
(Released: 11/21/2013 12:48:25 PM)
- [Household Products May Harm Tree Swallows in Minnesota and Wisconsin](#) ([new window](#))
(Released: 10/23/2013 12:35:16 PM)



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The latest information on earthquake related activity

Minnesota State Facts



Locations on image are approximate

Capital: Saint Paul(★)

Land Area: 79,610 sq. miles
(source: 2010 Census)

Population: 5,303,925
(source: 2010 Census estimate)

Highest Point:
Eagle Mtn. at 2,301 feet, located in the county/subdivision of Cook
(source: U.S. Geological Survey)

Lowest Point:
Lake Superior at 601 feet
(source: U.S. Geological Survey)

Geographic Center:
Located in Crow Wing County approx. 10 miles southwest of Brainerd
(source: U.S. Geological Survey)

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Science In Your Backyard: Michigan

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News Releases of Interest for Michigan:

- [Huron-Erie Corridor Initiative partners receive prestigious Secretary of the Interior honor](#) ([new window](#))
(Released: 1/16/2014 7:05:24 PM)
- [Limited Food May be Significantly Changing Great Lakes Ecosystems](#) ([new window](#))
(Released: 12/12/2013 11:45:00 AM)
- [Instant Bacteria Forecasts Make Swimmers at Great Lakes Beaches Safer](#) ([new window](#))
(Released: 11/21/2013 12:48:25 PM)
- [Invasive Snails are Target of UI, USGS Environmental DNA Study](#) ([new window](#))
(Released: 6/19/2013 1:03:55 PM)
- [Determining Rivers Vulnerable to Asian Carp Spawning in the Great Lakes Basin](#) ([new window](#))
(Released: 6/18/2013 11:00:00 AM)

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Highlighted Michigan Links:

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Activities to support the sound management and conservation of our Nation's biological resources
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Michigan State Facts



Locations on image are approximate

Capital: Lansing(★)

Land Area: 56,804 sq. miles

(source: 2010 Census)

Population: 9,883,640

(source: 2010 Census estimate)

Highest Point:

Mt. Arvon at 1,979 feet, located in the county/subdivision of Baraga

(source: U.S. Geological Survey)

Lowest Point:

Lake Erie at 571 feet

(source: U.S. Geological Survey)

Geographic Center:

Located in Wexford County approx. 5 miles north-northwest of Cadillac

(source: U.S. Geological Survey)

The latest information on earthquake related activity



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News Releases of Interest for Massachusetts:

- [Interior's Secretary Jewell Announces New Wildlife and Climate Studies for the Northeast Climate Science Center](#) ([new window](#))
(Released: 12/19/2013 11:00:00 AM)
- [Remapping Coastal Areas Damaged by Hurricane Sandy](#) ([new window](#))
(Released: 8/20/2013 11:00:00 AM)
- [Crowd-Sourcing the Nation: USGS Seeking More Volunteers](#) ([new window](#))
(Released: 6/19/2013 12:00:00 PM)
- [Birds at Sea and Offshore Wind Energy](#) ([new window](#))
(Released: 12/4/2012 11:59:28 AM)
- [Photos Reveal Severity of Hurricane Sandy's Coastal Impacts](#) ([new window](#))
(Released: 11/9/2012 3:20:00 PM)



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- [Mineral Information](#) ([new window](#))

Massachusetts State Facts



Locations on image are approximate

Capital: Boston(★)

Land Area: 7,840 sq. miles

(source: 2010 Census)

Population: 6,547,629

(source: 2010 Census estimate)

Highest Point:

Mt. Greylock at 3,491 feet, located in the county/subdivision of Berkshire

(source: U.S. Geological Survey)

Lowest Point:

Atlantic Ocean at Sea Level

(source: U.S. Geological Survey)

Geographic Center:

Located in Worcester County approx. North part of City of Worcester

(source: U.S. Geological Survey)

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News Releases of Interest for Maryland:

- [Media Advisory: USGS to Host Congressional Briefing: Earthquake Science and Remaining Mysteries](#) ([new window](#))
(Released: 2/20/2014 11:20:00 AM)
- [Tsunami on the Delaware River? Study of Historical Quake and Early East Coast Seismicity](#) ([new window](#))
(Released: 9/3/2013 3:00:00 PM)
- [Remapping Coastal Areas Damaged by Hurricane Sandy](#) ([new window](#))
(Released: 8/20/2013 11:00:00 AM)
- [Largemouth Bass Virus Found in Northern Snakeheads in Virginia](#) ([new window](#))
(Released: 8/13/2013 9:00:00 AM)
- [AMERICA'S GREAT OUTDOORS: USGS Economic Analysis of Anacostia River Shows Potential Value of Restoring Urban Streams Nationwide](#) ([new window](#))
(Released: 5/2/2013 9:44:14 AM)

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Highlighted Maryland Links:

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Activities to support the sound management and conservation of our Nation's biological resources
- [Earthquake Information](#) ([new window](#))

Maryland State Facts



Locations on image are approximate

Capital: Annapolis(★)

Land Area: 9,774 sq. miles

(source: 2010 Census)

Population: 5,773,552

(source: 2010 Census estimate)

Highest Point:

Backbone Mtn. at 3,360 feet,
located in the county/subdivision of
Garrett

(source: U.S. Geological Survey)

Lowest Point:

Atlantic Ocean at Sea Level

(source: U.S. Geological Survey)

Geographic Center:

Located in Prince Georges County
approx. 4 1/2 miles northwest of
Davidsonville

(source: U.S. Geological Survey)

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- [Photos Reveal Severity of Hurricane Sandy's Coastal Impacts](#) ([new window](#))
(Released: 11/9/2012 3:20:00 PM)
- [Study Confirms Presence of Contaminants in Some New England Bedrock Groundwater, ID's New Concerns, Determines Likely Locations](#) ([new window](#))
(Released: 6/25/2012 6:26:36 PM)
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Maine State Facts



Locations on image are approximate

Capital: Augusta(★)

Land Area: 30,862 sq. miles

(source: 2010 Census)

Population: 1,328,361

(source: 2010 Census estimate)

Highest Point:

Mt. Katahdin at 5,268 feet, located in the county/subdivision of Piscataquis

(source: U.S. Geological Survey)

Lowest Point:

Atlantic Ocean at Sea Level

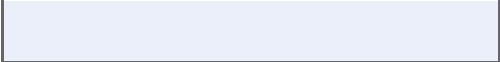
(source: U.S. Geological Survey)

Geographic Center:

Located in Piscataquis County approx. 18 miles north of Dover

(source: U.S. Geological Survey)

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- [Real-time Monitoring Pays Off for Tracking Nitrate Pulse in Mississippi River Basin to the Gulf of Mexico](#) ([new window](#))
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- [New Tool for Evaluation of Baton Rouge's Saltwater Intrusion](#) ([new window](#))
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- [Crowd-Sourcing the Nation: USGS Seeking More Volunteers](#) ([new window](#))
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Louisiana State Facts



Locations on image are approximate

Capital: Baton Rouge(★)

Land Area: 43,562 sq. miles

(source: 2010 Census)

Population: 4,533,372

(source: 2010 Census estimate)

Highest Point:

Driskill Mtn. at 535 feet, located in the county/subdivision of Bienville
(source: U.S. Geological Survey)

Lowest Point:

New Orleans at -8 feet, located in the county/subdivision of Orleans
(source: U.S. Geological Survey)

Geographic Center:

Located in Avoyelles County approx. 3 miles southeast of Marksville

(source: U.S. Geological Survey)

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