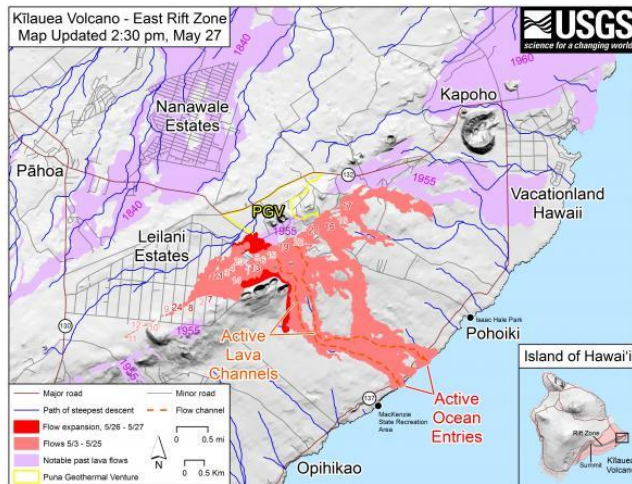


U.S. Geological Survey Library Materials for Natural Hazards (and Land Change)



Kilauea lower East Rift Zone lava flows and fissures, May 27, 2:30 p.m. HST
https://volcanoes.usgs.gov/volcanoes/kilauea/multi-media_maps.html

Presented by:
 Emily C. Wild,
 Librarian (Physical Scientist)

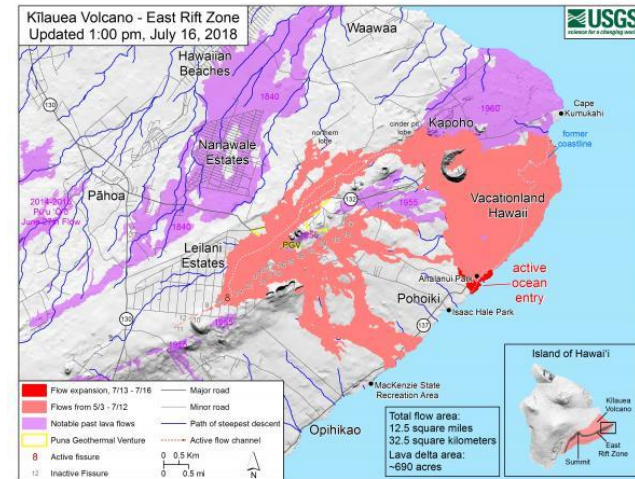
GPO FDLP Academy Webinar
 July 19, 2018

U.S. Department of the Interior
 U.S. Geological Survey



Kilauea eruption near the Leilani Estates Subdivision is the blue burning flame of methane gas, observed in the cracks on Kahukai Street, on May 22, around 11:30 PM, HST. The view is to the southeast.

When hot **lava** buries plants and shrubs, methane gas is produced as a byproduct of burning vegetation.
<https://www.youtube.com/watch?v=7uGjDsN8JGM>



Kilauea lower East Rift Zone lava flows and fissures, July 16, 1:00 p.m. HST
https://volcanoes.usgs.gov/volcanoes/kilauea/multi-media_maps.html

<http://www.usgs.gov>

<http://Library.usgs.gov>

<http://www.doi.gov/library>

Past GPO Presentations & Handouts

- March 27, 2018 - "[USGS Library Materials for Water Resources Information](#)" presentation for the U.S. Government Publishing Office (GPO), FDLP Federal Agency Webinars
- March 6, 2018 - "[USGS Library Materials for Earth's Age](#)" presentation for the U.S. Government Publishing Office (GPO), FDLP Federal Agency Webinars
- September 19, 2017 - "[USGS Library - Indexes, Catalogs, and Other Bibliographic Tools, A day in the life of a reference librarian](#)" presentation for the U.S. Government Publishing Office (GPO), FDLP Federal Agency Webinars
- August 3, 2017 - "[USGS Library - Oil, Gas, Coal, Uranium, and Minerals Maps and Data](#)" presentation for the U.S. Government Publishing Office (GPO), FDLP Federal Agency Webinars
- May 10, 2017 - "[USGS Library - Using USGS Image, Map, and Data Products for Information Inquiries](#)" presentation for the U.S. Government Publishing Office (GPO), FDLP Federal Agency Webinars
- December 7, 2016 - "[USGS Library: Geoscience Outreach and Instruction](#)" presentation for the U.S. Government Publishing Office (GPO), FDLP Federal Agency Webinars
- August 2014 - U.S. Government Printing Office (GPO) Federal Depository Library Program (FDLP), "Tricks and Tips for Finding and Using USGS Topographic Maps" : <http://www.fdlp.gov/all-newsletters/community-insights/2045-tricks-and-tips-for-finding-and-using-usgs-topographic-maps>
- May 2014 - "[U.S. Geological Survey Library: Access and Outreach](#)," presentation for the U.S. Government Printing Office (GPO), FDLP Federal Agency Webinars



Disclaimer: The use of trade, product, or firm names is for descriptive purposes only and does not imply endorsement by the U.S. Government.

Past Presentations, Conferences and Workshops

- **February 11, 2018** - "USGS Library Materials: Measuring Research Impact - What Really Counts?" presentation at American Libraries Association (ALA) Mid-Winter Meeting's session Science & Technology Section Publisher/Vendor Relations Discussion Group (ACRL STS) Measuring Research Impact: What Really Counts? ; Denver, Colorado <https://www.eventscribe.com/2018/ALA-Midwinter/fsPopup.asp?Mode=presInfo&PresentationID=333419>
- **October 2017** - Geoscience Information Society (GSIS), Geoscience Librarianship workshop, "Introduction to Geoscience Librarianship and Instruction: Finding and Using USGS Publications" ; Seattle, Washington
- **March 2017** - Colorado Library Consortium (CLiC) Spring Workshops, Grand Junction, Colorado; "A Maps Workshop--Update 2017" : <http://www.clicweb.org/> – pdf of ppt available upon request
- **March 2017** - Colorado Library Consortium (CLiC) Spring Workshops, Grand Junction, Colorado; "Go with the flow! (The Water Cycle)" : <http://www.clicweb.org/> – pdf of ppt available upon request
- **February 2017** - "USGS Library: Finding Images and Maps" presentation for the Alaska Resources Library and Information Services (ARLIS) – pdf of ppt available upon request
- **November 2016** - "Disaster Resources at the U.S. Geological Survey Library" for National Institute of Health (NIH) National Library of Medicine's (NLM) Disaster Info Specialist Program Webinars: <https://disasterinfo.nlm.nih.gov/dimrc/dismetings.html>

Past Presentations, Conferences and Workshops (Cont...)

- **November 2016** - "Exploring Career Paths through Published Materials" presentation to the Geological Society of America's (GSA) GeoCareers Program: <https://www.geosociety.org/gsa/careers/events.aspx>
- **October 2016:** "U.S. Geological Survey Denver Library: Geoscience Outreach and Instruction" presentation to North American Cartographic Information Society – pdf of ppt available upon request
- **September 2016** - "Prospecting the USGS Library Materials for GIS Nuggets" presentation to Association of Earth Science Editors (AESE) : <http://www.aese.org/> – pdf of ppt available upon request
- **September 2016** - "Prospecting the USGS Library Materials for GIS Nuggets" presentation during the session "Open Data, Open Access: Trends in Geoscience Publications and Data Sources" at the Geological Society of America Annual Meeting, Denver, Colorado:
<https://gsa.confex.com/gsa/2016AM/webprogram/Paper286965.html>
- **September 2016** - Geoscience Information Society, Geoscience Librarianship workshop, "Introduction to Geoscience Librarianship" and "Geoscience Bibliographic Instruction" ; Denver, Colorado
<http://www.geoinfo.org/GL101%202016/101%20Intro%20Instruction%202016.pdf>
- **June 2016** - "Mining USGS Library Materials for Mineral Information Nuggets" presentation to the "All About Mining - A Total Concept of the Mining Industry" class for teachers and librarians:
<http://www.allaboutmining.org/> – pdf of ppt available upon request

Past Presentations, Conferences and Workshops (Cont...)

- **February 2016** - "Drilling through USGS Library Materials for GIS Nuggets" presentation during the session "Taking GIS Retrospective to the Federal Level" at ESRI's FedGIS 2016, Washington, D.C.
http://proceedings.esri.com/library/userconf/fed16/papers/fed_125.pdf
- **October 2015** - Geoscience Information Society, Geoscience Librarianship workshop, "Introduction to Geoscience Librarianship" and "Geoscience Bibliographic Instruction" ; Baltimore, Maryland
<http://www.geoinfo.org/>
- **October 2014** - "EARTH DATA! Accessing Real-Time, Recent, and Historical Water Data from Print and Online Information Sources" presentation at Geological Society of America Annual Meeting, Vancouver, British Columbia, Canada: <https://gsa.confex.com/gsa/2014AM/webprogram/Paper240647.html>
- **February 2014** - "U.S. Geological Survey Denver Library Materials for Law Librarians: Access to Geoscience Information and Legal Databases," presentation to the Colorado Association of Law Libraries (CoALL):
<http://www.aallnet.org/chapter/coall/>
- **June 2013** - "USGS Information Sources for Students, Teachers, and Librarians" presentation to the "All About Mining - A Total Concept of the Mining Industry" class: <http://www.allaboutmining.org/>
- **April 2013** - American Association of Petroleum Geologists, Rocky Mountain Section Young Professionals, (<http://www.aapg.org/youngpros/>); Denver, Colorado; "Using the U.S. Geological Survey Denver Library for Oil & Gas Research: Finding Print and Online Materials"



Quick Government Overview

- Judicial Branch (Supreme Court)
- Legislative Branch (Congress, House & Senate)
 - Library of Congress: <https://www.loc.gov/>
- Executive Branch (President)
 - Example, Departments
 - Department of the Interior:
Interior Library: <https://www.doi.gov/library> and
<https://www.doi.gov/library/electronic/>
 - U.S. Geological Survey: <http://www.usgs.gov>
USGS Library: <http://library.usgs.gov>
 - Other DOI bureaus and offices:
<https://www.doi.gov/bureaus>



**Famous Building Stones of Our Nation's Capital,
[USGS Fact Sheet 2012-3044](#)**

**Building Stones of our Nation's Capital
<https://pubs.usgs.gov/gip/70039206/report.pdf>**

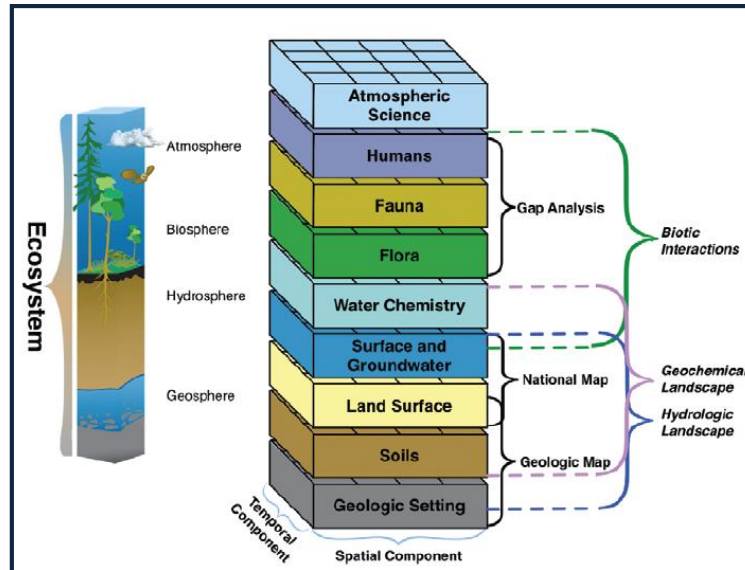
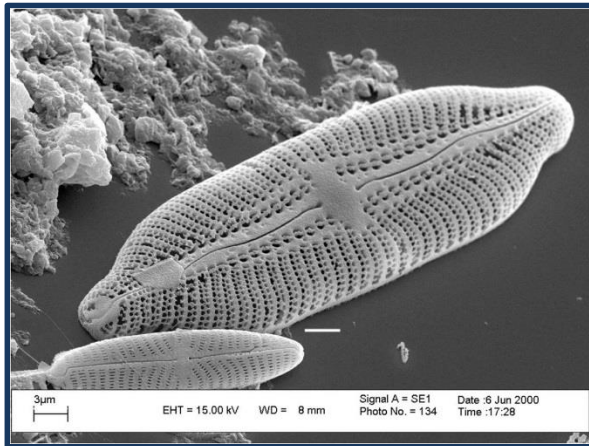
U.S. Geological Survey, March 3, 1879

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.

What Do We Do

As the Nation's largest water, earth, and biological science and civilian mapping agency, USGS collects, monitors, analyzes, and provides science about natural resource conditions, issues, and problems. Our diverse expertise enables us to carry out large-scale, multidisciplinary investigations and provide impartial scientific information to resource managers, planners, and other customers.



USGS Mission Areas:

Core Science Systems

Ecosystems

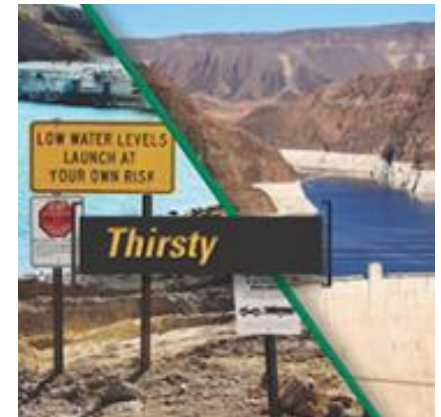
Energy and Minerals

Environmental Health

Land Resources

Natural Hazards

Water Resources



Core Science Systems (CSS):

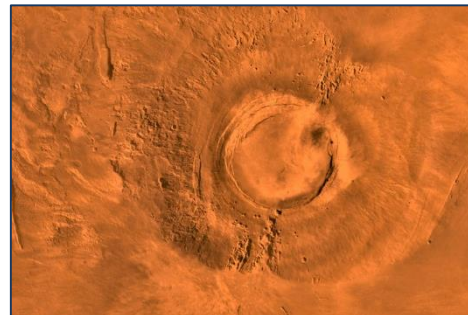
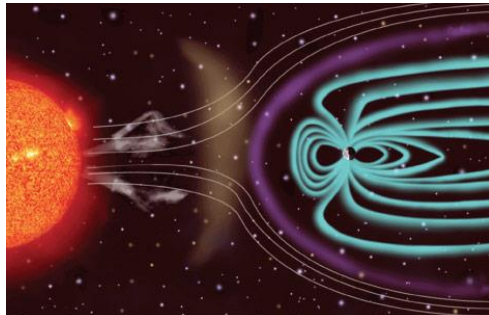
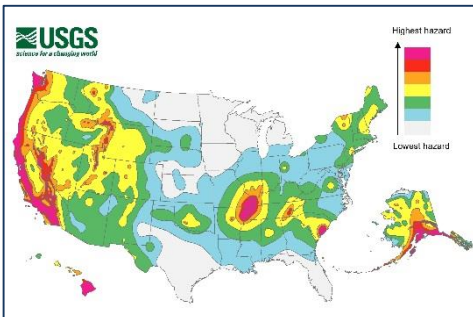
<https://www.usgs.gov/science/mission-areas/core-science-systems>

- **3D Elevation Program (3DEP)** To respond to growing needs for high-quality elevation data, the 3D Elevation Program (3DEP) initiative is systematically collecting 3D elevation data during an 8-year period in the form of light detection and ranging (lidar) data over the conterminous United States, Hawaii, and the U.S. territories; and interferometric synthetic aperture radar (IfSAR) in Alaska.
- **Core Research Center** The Core Research Center (CRC) was established in 1974 by the U.S. Geological Survey (USGS) to preserve valuable rock cores for use by scientists and educators from government, industry, and academia. The cylindrical sections of rock are permanently stored and available for examination and testing at the core storage and research facility in Denver, Colorado.
- **Core Science Analytics, Synthesis, and Libraries (CSAS&L)** **CSAS&L synthesizes and delivers Earth system data and information. We strive to accelerate research and decision making through data science, information delivery, advanced computing and biodiversity analytics. CSAS&L has developed a Five Year Science Strategy that outlines our organization's goals, research questions, and strategic activities.**
- **Hydrography** The National Hydrography Dataset (NHD) and Watershed Boundary Dataset (WBD) are digital geospatial datasets that map the surface water of the United States and are a part of The National Map. Together, the NHD and WBD, along with data from the 3D Elevation Program (3DEP), are processed to create the NHDPlus High Resolution (NHDPlus HR).
- **John Wesley Powell Center for Analysis and Synthesis** Offering the opportunity for emergent knowledge in Earth system science through collaborative analysis and synthesis.
- **National Cooperative Geologic Mapping Program** The National Cooperative Geologic Mapping Program (NCGMP) is the primary source of funds for the production of geologic maps in the United States and provides accurate geologic maps and three-dimensional framework models that help to sustain and improve the quality of life and economic vitality of the Nation and to mitigate natural hazards.
- **National Geological and Geophysical Data Preservation Program** The Energy Policy Act of 2005 established the National Geological and Geophysical Data Preservation Program (NGGDPP) to preserve and expose the Nation's geoscience collections (samples, logs, maps, data) to promote their discovery and use for research and resource development. The National Digital Catalog describes geoscience collections managed by USGS and state geological agencies.
- **National Geospatial Program** The National Geospatial Program provides a foundation of digital geospatial data representing the topography, natural landscape, and built environment of the United States. These data and derived products and services can be accessed through The National Map Data Download and Visualization Services.



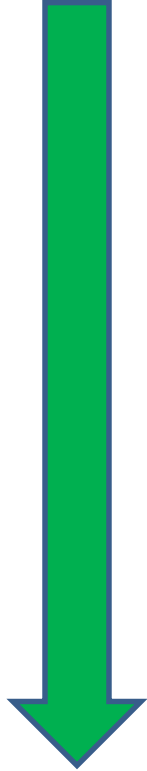
Natural Hazards – Library Reference Inquiries

- Coastal and Marine Geology: Erosion, hurricanes, underwater mining, bathymetry, oil spills, and other topics
- Earthquakes: Tectonic, magmatic, and induced seismicity
- Emergency Management: Wildfires, HDDS library and specific events
- Geomagnetism: Solar storms, oil and gas industry, and others
- Global Seismic Network: collaborations and outreach
- Landslides: Post-fire debris, earthquakes, volcanic eruptions, and others
- Reducing Risk (SAFRR): Wildfires, earthquake early warning (city transit)
- Volcanoes: extinct, dormant/inactive, active and by type and by planet
- Water Resources: water quality (algal blooms, groundwater contamination), floods, droughts, and hurricanes

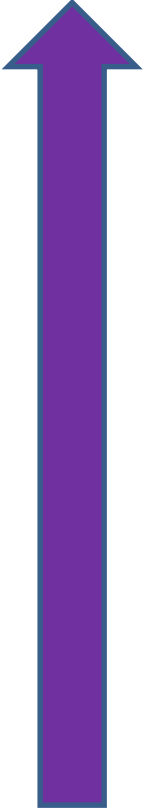


Geoscience Library Inquiry = Data Inquiry

Science Investigations



- **Raw Data:** Chemical and(or) Physical Real-Time, Continuous, Recent Partial Records, Historical
- **Calculated Data:** Equations, Software Results, Lab Results, and Model Results
- **Map Data:** Specific Location Information & other Metadata
- **Citation Data:** Bibliographic Information for Reference Lists & TO FIND THE PUBLICATION



Library Research

Tables & Figures/Images

USGS Frequently Asked Questions (FAQs): <https://www.usgs.gov/faq>

- Natural Hazards FAQs : <https://www.usgs.gov/faq/natural-hazards>

[How does the USGS tell the difference between an earthquake and a sonic boom?](#)

[Which volcanic eruptions were the deadliest?](#)

[When will the next large earthquake occur in Yellowstone?](#)

[What are earthquake lights?](#)

[What is the role of the USGS in responding to hurricanes?](#)

[Can nuclear explosions cause earthquakes?](#)

[What is the difference between a tsunami and a tidal wave?](#)

[How far did the ash from Mount St. Helens travel?](#)

[When will Yellowstone erupt again?](#)

[What gases are emitted by Kīlauea and other active volcanoes?](#)



USGS Library: <https://library.usgs.gov/>

USGS Library Classification System: <https://pubs.usgs.gov/bul/b2010/b2010.pdf>

Natural Hazards – Library Reference Inquiries

- **Coastal and Marine Geology:**
https://usgs.primo.exlibrisgroup.com/discovery/search?query=any,contains,Coastal%20and%20Marine%20Geology&tab=LibraryCatalog&search_scope=MyInstitution&vid=01USGSL_INST:01USGSL_INST&offset=0

- **Earthquakes, seismology = call # 240**

(Includes "man made" earthquakes, seismic waves, ground shaking and earthquake hazard analysis; for seismic wave application to earth structure, seismic profiling see 295.2)

240.1 Conferences

240.2 Earthquake engineering and effects of earthquakes on construction

240.3 Geomorphological effects of earthquakes (Includes earthquake effects on slope stability)

240.4 Earthquake prediction

240.5 Induced seismicity

240.6 Soil liquefaction

240.8 Seismometry (Instrumental aspects of seismology)

240.9 Paleoseismology

245 Landslides, avalanches, debris flows, mudslides, and rockslides

248 Local land subsidences, sinkholes

249 Natural disasters (Includes geological hazards and disaster relief; for specific geologic hazards and associated disasters, see the specific types: earthquakes: 240; landslides: 245; subsidences: 248; hurricanes and typhoons: 515; tsunamis: 533; tornados: 515; floods: 552)

249.1 Congresses

249.2 Natural disasters' effects on construction



Library of Congress (LC) Subject Headings: <http://id.loc.gov/authorities/subjects.html>

Earthquakes: <http://id.loc.gov/authorities/subjects/sh85040496.html>

Variants

- Quakes (Earthquakes)

Broader Terms

- Earth Movements
- Natural Disasters

Narrower Terms

- Earthquake aftershocks
- Earthquake Intensity
- Earthquake magnitude
- Earthquake swarms
- Northern Tier Pipeline—Earthquake effects
- Railroads—Earthquake effects
- Seismites
- Transportation—Earthquake effects

Related Terms

- Seismology

LC Call # QE = Geology

QE1-996.5 Geology

QE1-350.62 General Including
geographical divisions

QE351-399.2 Mineralogy

QE420-499 Petrology

QE500-639.5 Dynamic and structural
geology

QE521-545 Volcanoes and earthquakes

QE601-613.5 Structural geology

QE640-699 Stratigraphy

QE701-760 Paleontology

QE760.8-899.2 Paleozoology

QE901-996.5 Paleobotany



USGS Products: Where do I start? It depends on the Question

- Topographic Maps - to purchase, contact the USGS Store: <http://store.usgs.gov>

To download - Most recent topos = US Topos :

Pre-USGS to about 2008/2009, USGS Topographic Maps :

- Thematic Maps: USGS National Geologic Map Database (NGMD) <http://ngmd.usgs.gov> - select https://ngmdb.usgs.gov/ngm-bin/ngm_compsearch.pl and zoom on map to create lat/long box of area of interest
- Reports and other USGS authored materials: <https://pubs.er.usgs.gov/>
- Imagery: https://lta.cr.usgs.gov/products_overview/
- Data: <http://data.usgs.gov>
- Everything? Use ScienceBase-Catalog: <https://www.sciencebase.gov/catalog/>
- What about journals, books, and other products?

USGS Library online indexes, catalogs, and e-content:

https://usgs.primo.exlibrisgroup.com/discovery/search?vid=01USGSL_INST:01USGSL_INST&sortby=rank



Coastal and Marine Geology: Coastal Change Hazards Portal

<https://marine.usgs.gov/coastalchangehazardsportal/>

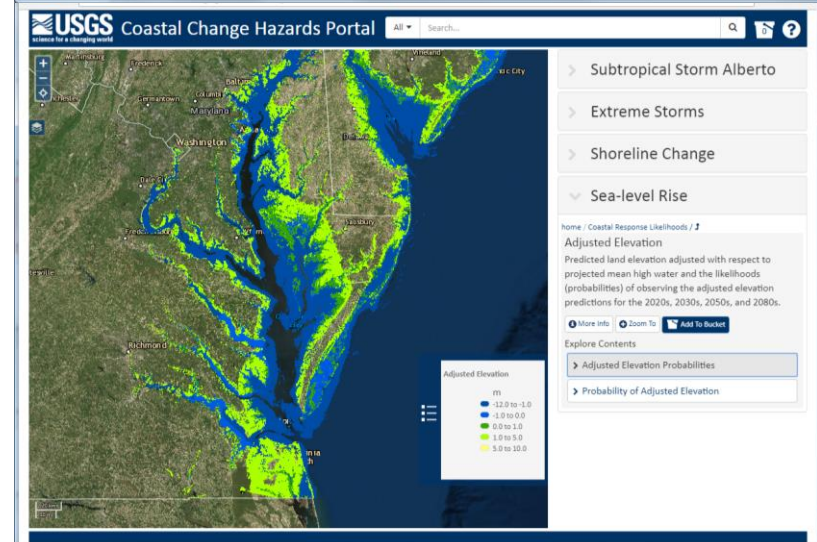
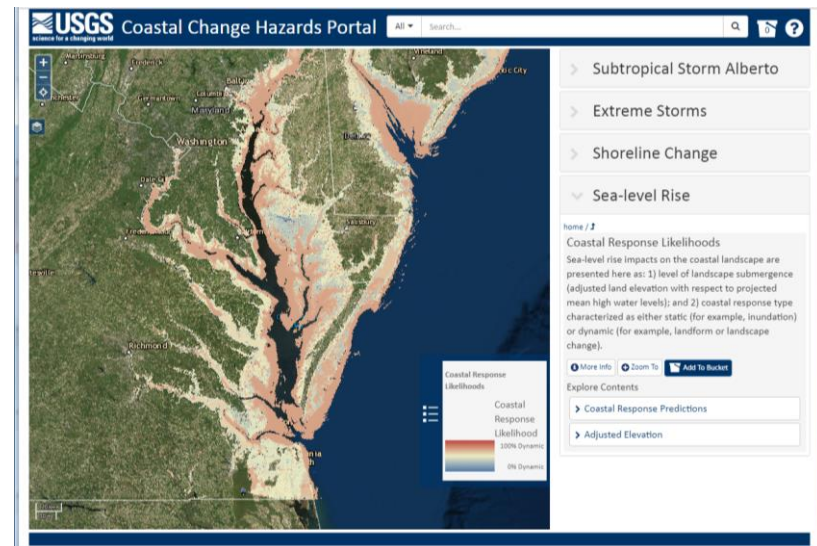
- USGS Publications Warehouse

<https://pubs.er.usgs.gov/search?q=coastal+change>

- ScienceBase Catalog

<https://www.sciencebase.gov/catalog/items?q=coastal%20change>

The screenshot shows the USGS ScienceBase Catalog interface. The search term 'coastal change' has yielded 10,346 results in 32 milliseconds. The left sidebar contains filters for Date Range (Past year, month, week, day, custom), Extensions (Citation, Project, Shapefile, Budget, Raster), and Types (Citation, Map Service, Downloadable, OGC WMS Layer). The main content area displays a list of publications, including 'Coastal Change Processes' with a detailed description of the project's objectives and 'Coastal-change and glaciological maps of Antarctica'.



Coastal and Marine Geology: Bathymetry

<https://marine.usgs.gov/coastalchangehazardsportal/>

- **USGS Publications Warehouse**

<https://pubs.er.usgs.gov/search?q=Bathymetry>

Evaluating the potential for near-shore bathymetry on the Majuro Atoll, Republic of the Marshall Islands, using Landsat 8 and WorldView-3 Imagery

Sandra K. Poppenga, Monica Palaseanu-Lovejoy, Dean B. Gesch, Jeffrey J. Danielson, Dean J. Tyler
2018, Scientific Investigations Report 2018-5024

Satellite-derived near-shore bathymetry (SDB) is becoming an increasingly important method for assessing vulnerability to climate change and natural hazards in low-lying atolls of the northern tropical Pacific Ocean. Satellite imagery has become a cost-effective means for mapping near-shore bathymetry because ships cannot collect soundings safely while operating close to the...

Nearshore coastal bathymetry data collected in 2016 from West Ship Island to Horn Island, Gulf Islands National Seashore, Mississippi

Nancy T. DeWitt, Chelsea A. Stalk, Jake J. Fredericks, James G. Flocks, Kyle W. Kelso, Andrew S. Farmer, Thomas M. Tuten, Noreen A. Buster
2018, Data Series 1081

The U.S. Geological Survey (USGS) St. Petersburg Coastal and Marine Science Center, in cooperation with the U.S. Army Corps of Engineers, Mobile District, conducted bathymetric surveys of the nearshore waters surrounding Ship and Horn Islands, Gulf Islands National Seashore, Mississippi. The objective of this study was to establish base-level elevation...

Spectrally based bathymetric mapping of a dynamic, sand-bedded channel: Niobrara River, Nebraska, USA

Elizabeth Dilbone, Carl Legleiter, Jason S. Alexander, Brandon McElroy
2018, River Research and Applications (34) 430-441

Methods for spectrally based mapping of river bathymetry have been developed and tested in clear-flowing, gravel-bed channels, with limited application to turbid, sand-bed rivers. This study used hyperspectral images and field surveys from the dynamic, sandy Niobrara River to evaluate three depth retrieval methods. The first regression-based approach, optimal band...

One-meter topobathymetric digital elevation model for Majuro Atoll, Republic of the Marshall Islands, 1944 to 2016

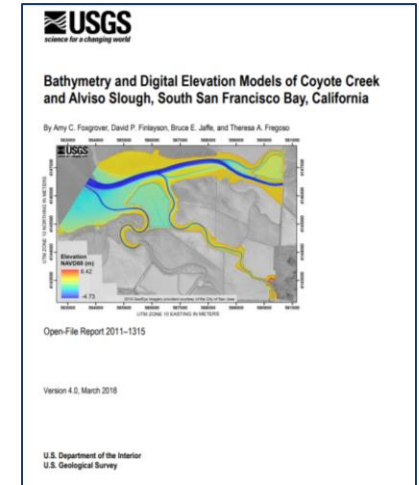
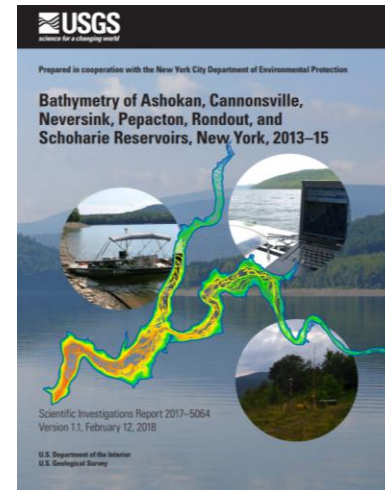
Monica Palaseanu-Lovejoy, Sandra K. Poppenga, Jeffrey J. Danielson, Dean J. Tyler, Dean B. Gesch, Maria Kottermair, Andrea Jalandoni, Edward Carlson, Cindy A. Thatcher, Matthew M. Barbee
2018, Scientific Investigations Report 2018-5047

Atoll and island coastal communities are highly exposed to sea-level rise, tsunamis, storm surges, rogue waves, king tides, and the occasional combination of multiple factors, such as high regional sea levels, extreme high local tides, and unusually strong wave set-up. The elevation of most of these atolls averages just under...

Bathymetry of Ashokan, Cannonsville, Neversink, Pepacton, Rondout, and Schoharie Reservoirs, New York, 2013–15

Elizabeth A. Nystrom
2018, Scientific Investigations Report 2017-5064

Drinking water for New York City is supplied from several large reservoirs, including a system of reservoirs west of the Hudson River. To provide updated reservoir capacity tables and bathymetry maps of the City's six West of Hudson reservoirs, bathymetric surveys were conducted by the U.S. Geological Survey from 2013...



USGS
science for a changing world

Data Series 1031
»» Pub Warehouse »» DS 1031

Archive of Bathymetry Data Collected in South Florida From 1995 to 2015
By Mark Hansen, Nancy T. DeWitt, and B.J. Reynolds

Description

Land development and alterations of the ecosystem in south Florida over the past 100 years have decreased freshwater and increased nutrient flows into many of Florida's estuaries, bays, and coastal regions. As a result, there has been a decrease in the water quality in many of these critical habitats, often prompting seagrass die-offs and reduced fish and aquatic life populations. Restoration of water quality in many of these habitats will depend partly upon using numerical-circulation and sediment-transport models to establish water-quality targets and to assess progress toward reaching restoration targets. Application of these models is often complicated because of complex sea floor topography and tidal flow regimes. Consequently, accurate and modern sea-floor or bathymetry maps are critical for numerical modeling research. Modern bathymetry data sets will also permit a comparison to historical data in order to help assess sea-floor changes within these critical habitats. New and detailed data sets also support marine biology studies to help understand migratory and feeding habitats of marine life.

This data series is a compilation of 13 mapping projects conducted in south Florida between 1995 and 2015 and archives more than 45 million bathymetric soundings (Fig. 1). Data were collected primarily with a single beam sound navigation and ranging (sonar) system called SANDS (Hansen and DeWitt, 2000) developed by the U.S. Geological Survey (USGS) in 1993. Bathymetry data for the Estero Bay project were supplemented with the National Aeronautics and Space Administration's (NASA) Experimental Advanced Airborne Research Lidar (EAARL) system. Data from eight rivers in southwest Florida were collected with an interferometric swath bathymetry system. The projects represented in this data series were funded by the USGS Coastal and Marine Geology Program (CMGP), the USGS South Florida Ecosystem Restoration Project- formally named Placed Based Studies, and other non-Federal agencies. The purpose of the data collection for all these projects was to support one or more of the following scientific aspects: numerical model applications, sea floor change analysis, or marine habitat investigations.

This report serves as an archive of processed bathymetry sounding data, digital bathymetric contours, digital bathymetric maps, sea floor surface grids, and formal Federal Geographic Data Committee (FGDC) metadata. Refer to the [Abbreviations](#) page for explanations of acronyms and abbreviations used in this report. Since 2006, the USGS St. Petersburg Coastal and Marine Science Center (SPCMSC) assigns a unique identifier or Field Activity Number (FAN) for each field data collection. Projects described in this report conducted prior to 2006 do not have a FAN.

[Data from the 13 projects](#) presented in this report provided critical hydrographic information to support multiple science projects in south Florida. The projects and the types of sounding data collected are:

Coastal and Marine Geology: Oil Spill

(<http://library.usgs.gov/publicresources.html>)



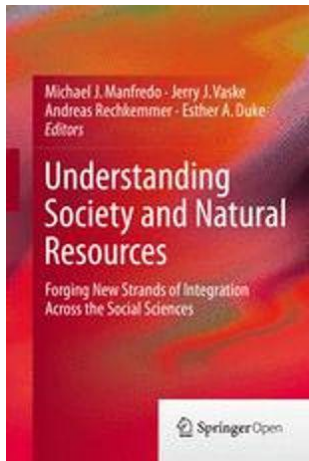
Deepwater Horizon



Macondo Well

- GeoScienceWorld : <https://pubs.geoscienceworld.org>
[Deepwater Horizon \(1,462\)](#) and [Macondo Well \(54\)](#)
- ScienceDirect (Elsevier) : <https://www.sciencedirect.com>
[Deepwater Horizon \(2,218\)](#) and [Macondo Well \(259\)](#)
- Springer: <https://link.springer.com/>
[Deepwater Horizon \(1,705\)](#) and [Macondo Well \(137\)](#)
- Wiley: <https://onlinelibrary.wiley.com/>
[Deepwater Horizon \(1,404 \)](#) and [Macondo Well \(118\)](#)
- AAPG Datapages : <http://archives.datapages.com/data/index.html>
[Deepwater Horizon \(62\)](#) and [Macondo Well \(11\)](#)
- ACS : <https://www.acs.org/content/acs/en.html>
[Deepwater Horizon \(22\)](#) and [Macondo Well \(4\)](#)
- USGS Publications Warehouse: <https://pubs.er.usgs.gov/>
[Deepwater Horizon \(91\)](#) and [Macondo Well \(18\)](#)
- ScienceBase.gov: <https://www.sciencebase.gov/catalog/>
[Deepwater Horizon \(176\)](#) and [Macondo Well \(20\)](#)

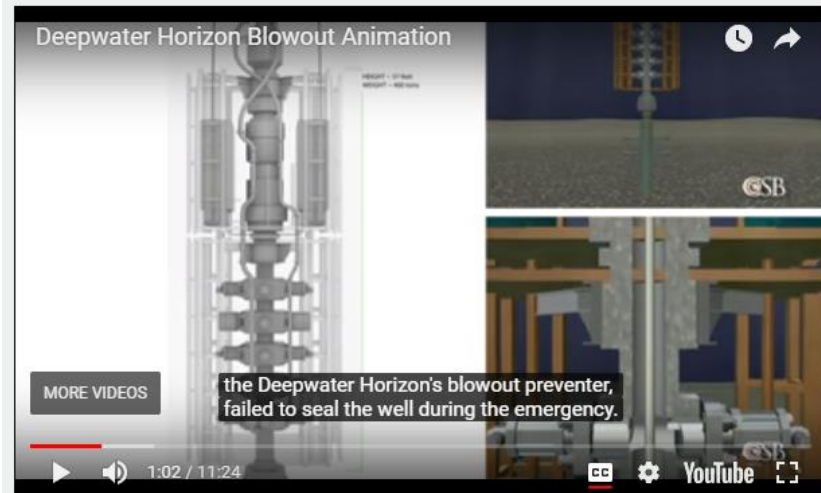
Coastal and Marine Geology: Oil Spill



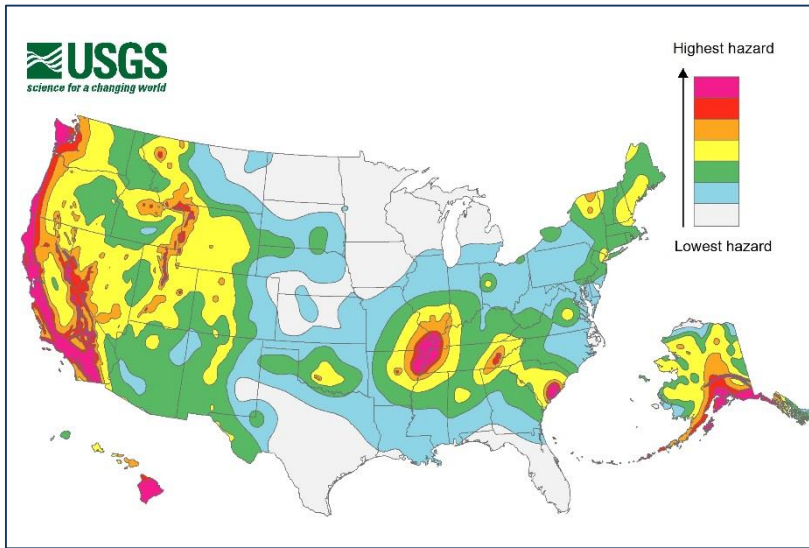
[Science During Crisis: The Application of Interdisciplinary and Strategic Science During Major Environmental Crises, pages 47-65](#)

- USGS National Geologic Map Database (NGMDB): https://ngmdb.usgs.gov/ngmdb/ngmdb_home.html
- USGS NGMDB MapView: <https://ngmdb.usgs.gov/mapview/>
- USGS Energy, Oil & Gas in the United States & World: <https://energy.usgs.gov/OilGas.aspx>
- USGS Water Resources, Deepwater Horizon: <https://water.usgs.gov/owq/deephorizonoilspill/>
- USGS Wetland & Aquatic, Deepwater Horizon: <https://www.usgs.gov/centers/wetland-and-aquatic-research-center-warc/science-topics/oil-spill>
- *USGS Oil Spill* : <https://archive.usgs.gov/archive/sites/www2.usgs.gov/oilspill/index.html>
- U.S. Chemical Safety Board (CSB): <https://www.csb.gov/macondo-blowout-and-explosion/>

Related Video



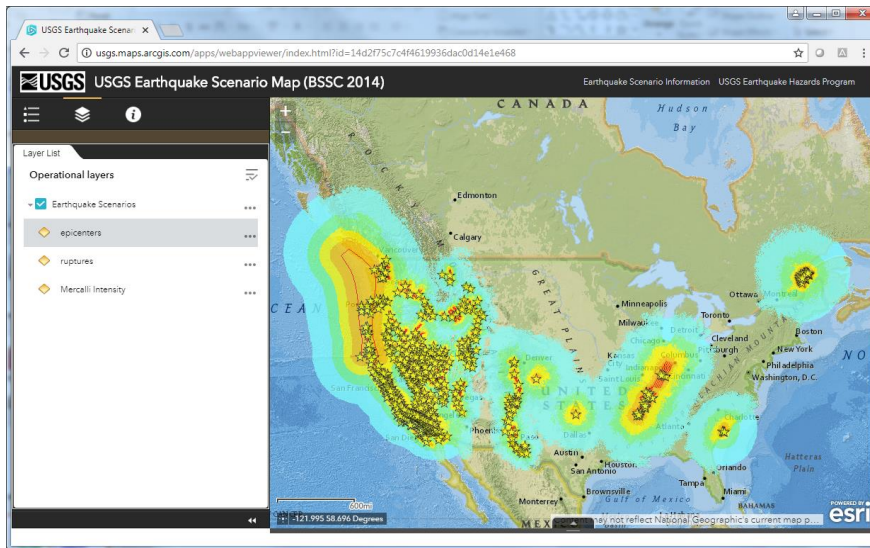
Earthquakes: Seismicity <https://earthquake.usgs.gov/hazards/>



- [Long-term model: 2014](https://earthquake.usgs.gov/hazards/)
- **Fault Maps:**
<https://earthquake.usgs.gov/hazards/qfaults/>
- **Design Ground Motions:**
[Seismic Design Web Service Documentation](https://earthquake.usgs.gov/hazards/design-ground-motions/)

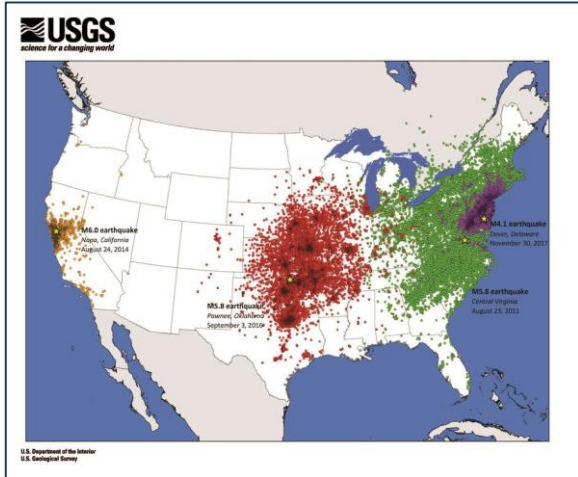
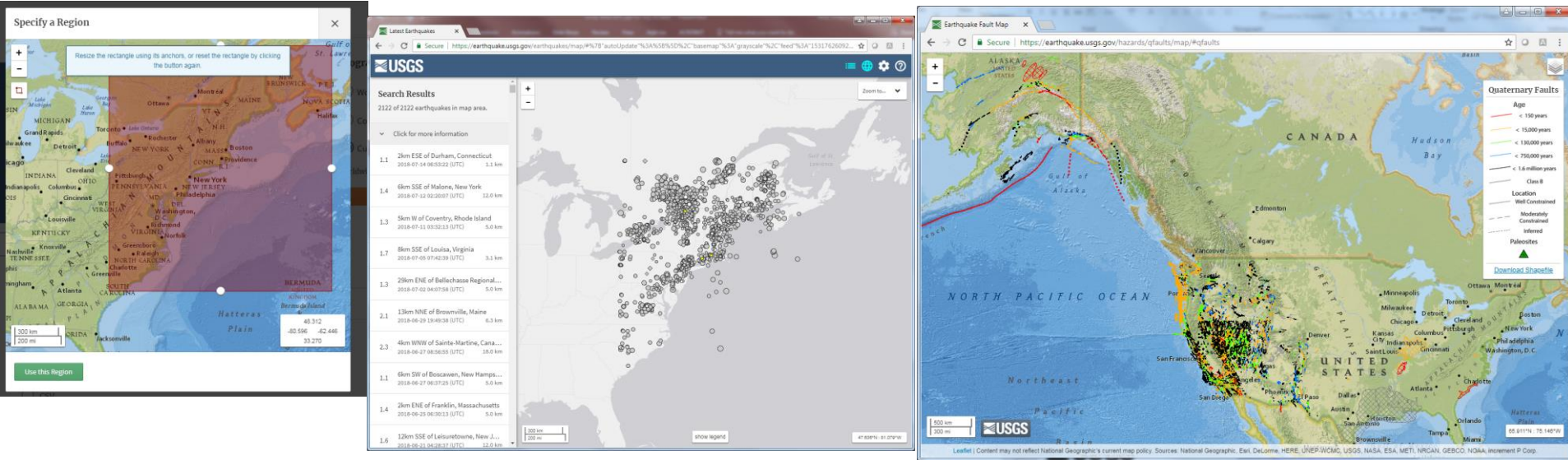
Reference Document End Points

- ASCE7
- [2016 ASCE 7 Standard \(ASCE7-16\)](#)
- [2010 ASCE 7 Standard \(ASCE7-10\)](#)
- [2005 ASCE 7 Standard \(ASCE7-05\)](#)
- ASCE41
- [2017 ASCE 41 Standard \(ASCE41-17\)](#)
- [2013 ASCE 41 Standard \(ASCE41-13\)](#)
- NEHRP
- [2009 NEHRP Standard \(NEHRP-2009\)](#)
- [2015 NEHRP Standard \(NEHRP-2015\)](#)
- IBC
- [2012 IBC Standard \(IBC-2012\)](#)
- [2015 IBC Standard \(IBC-2015\)](#)



<http://usgs.maps.arcgis.com/apps/webappviewer/index.html?id=14d2f75c7c4f4619936dac0d14e1e468>

Earthquakes: Seismicity <https://earthquake.usgs.gov/earthquakes/search/>



East vs West Coast Earthquakes



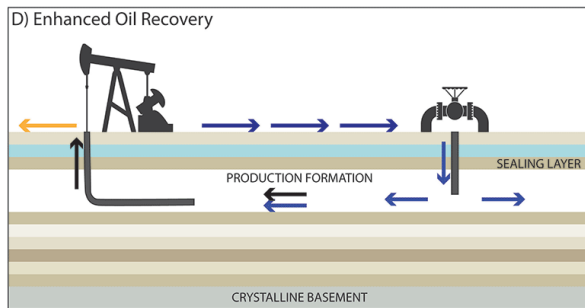
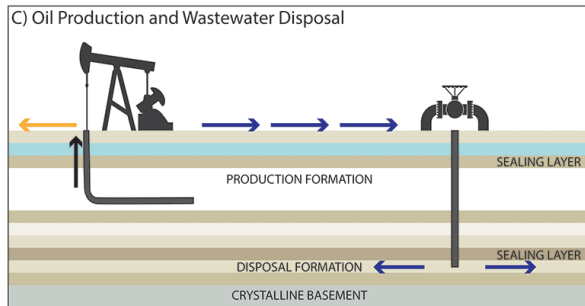
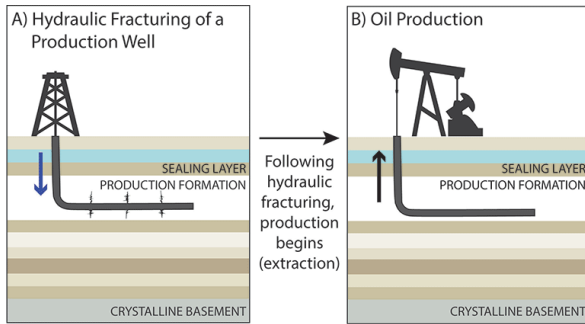
Geologic Map of North America



USGS Circular 985 : [Charlestown, South Carolina August 31, 1886](#)

Earthquakes: Induced Seismicity

<https://earthquake.usgs.gov/hazards/>



Short-term Induced Seismicity Models

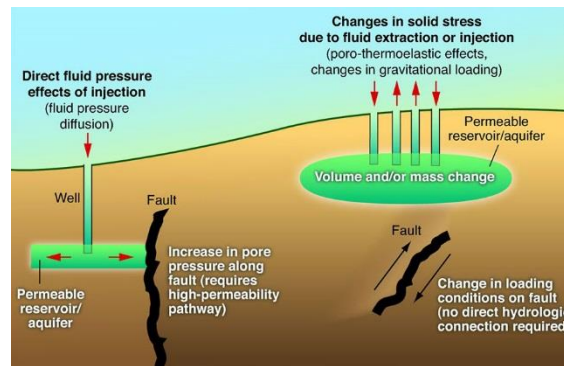
- [2018](#)
- [2017](#)
- [2016](#)

[Publications & References](#)

[USGS Publications Warehouse Search](#)



[Observational Studies](#)



[Produced Waters Geochemical Database](#)

<https://earthquake.usgs.gov/research/induced/myths.php>



Geomagnetism: Solar Storms <https://geomag.usgs.gov/>

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National Geomagnetism Program

USGS Geomagnetism Program

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Highlights

[Rocks Under I-95 Present Odd, and Scary, Threat to Power Grid](#)

A soon-to-be-published USGS publication points out geomagnetic hazards in the Eastern U.S. (Bloomberg News Story)

[The Electric Storm of November 1882](#)

Strange things started happening on November 17, 1882, and no one knew quite what to make of it. (image from Baranyi et al., 2016)

[New 3D Measurements Improve Understanding of Geomagnetic Storm Hazards](#)

Measurements of the three-dimensional structure of the earth, as opposed to the one-dimensional models typically used, can help scientists more accurately determine which areas of the United States are most vulnerable to blackouts during hazardous geomagnetic storms. (Image courtesy of Joshua Strane, U.S. Air

Monitoring

Get information on how our magnetic observatories collect and transfer data a sources for data outside of the United St.

Data & Products

View graphs of real-time magnetic data f and partner observatories and download definitive data'

Research

Get information about research being done by the USGS Geomagnetism Program and view publications by our researchers

Publications

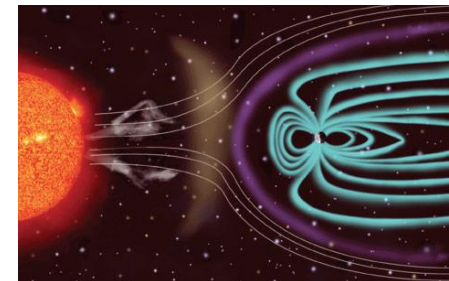
Scientific publications listed by year.

Introduction to Geomag

View "Hazards: Geomagnetic Storms" - a 7-minute introductory video

Hazards: Geomagnetic Storms



[Introduction to Geomag](#)



<https://www.usgs.gov/news/new-3d-measurements-improve-understanding-geomagnetic-storm-hazards>



Landslides: Post-Fire Debris <https://landslides.usgs.gov/hazards/>

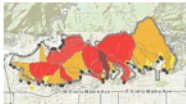


Landslide Hazards Program

- Post-Fire Debris-Flow Hazards
- Emergency Assessment of Post-Fire Debris-Flow Hazards
- Early Warning System
- Post-Fire Debris-Flow Hazards**
- Monitoring
- Learn
- Research


Post-Fire Debris-Flow Hazards

[Emergency Assessment of Post-Fire Debris-Flow Hazards](#)



Estimates of the probability and volume of debris flows that may be produced by a storm in a recently burned area, using a model with characteristics related to basin shape, burn severity, soil properties, and rainfall.


[Early Warning System](#)



NOAA/USGS Demonstration Flash-Flood and Debris-Flow Early-Warning System

What to do if you live in a recently-burned area where debris flows are possible, and there is a rainstorm - before, during, and after. Download the [National Weather Service Post Wildfire Flash Flood and Debris Flow Guide \(PDF 7.2 MB\)](#)

Wildland fires are inevitable in the western United States. Expansion of human development into forested areas has created a situation where wildfires can adversely affect lives and property, as can the flooding and landslides that occur in the aftermath of the fires. There is a need to develop tools and methods to identify and quantify the potential hazards posed by landslides produced from burned watersheds. Post-fire landslide hazards include fast-moving, highly destructive debris flows that can occur in the years immediately after wildfires in response to high intensity rainfall events, and those flows that are generated



Wildfires: <https://geomac.usgs.gov/>

GeoMAC
Wildland Fire Support

Geospatial Multi-Agency Coordination

USGS
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GeoMAC Viewer

Launch Viewer

Help

Fire Perimeters

View Active

View KML

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RSS Feeds

Download Perimeters

WMS Capabilities

Services

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How GeoMAC Works

In order to give fire managers near real-time information, fire perimeter data is updated daily based upon input from incident intelligence sources, GPS data, infrared (IR) imagery from fixed wing and satellite platforms. The GeoMAC web site allows users in remote locations to manipulate map information displays, zoom in and out to display fire information at various scales and detail, and print hard copy maps for use in fire information and media briefings, dispatch offices and coordination centers. The fire maps also have relational databases in which the user can display information on individual fires such as name of the fire, current acreage and other fire status information.

See the [Help page](#) for more specific information.

Launch Viewer

Accessibility FOIA Privacy Policies and Notices

USGS Publications Warehouse search results:

<https://pubs.er.usgs.gov/search?q=wildfire>



USGS ScienceBase search results:

<https://www.sciencebase.gov/catalog/items?q=wildfire>

Earthquake Early Warning (City Transit)

<https://www.usgs.gov/news/earthquake-early-warning-vital-city-transit>



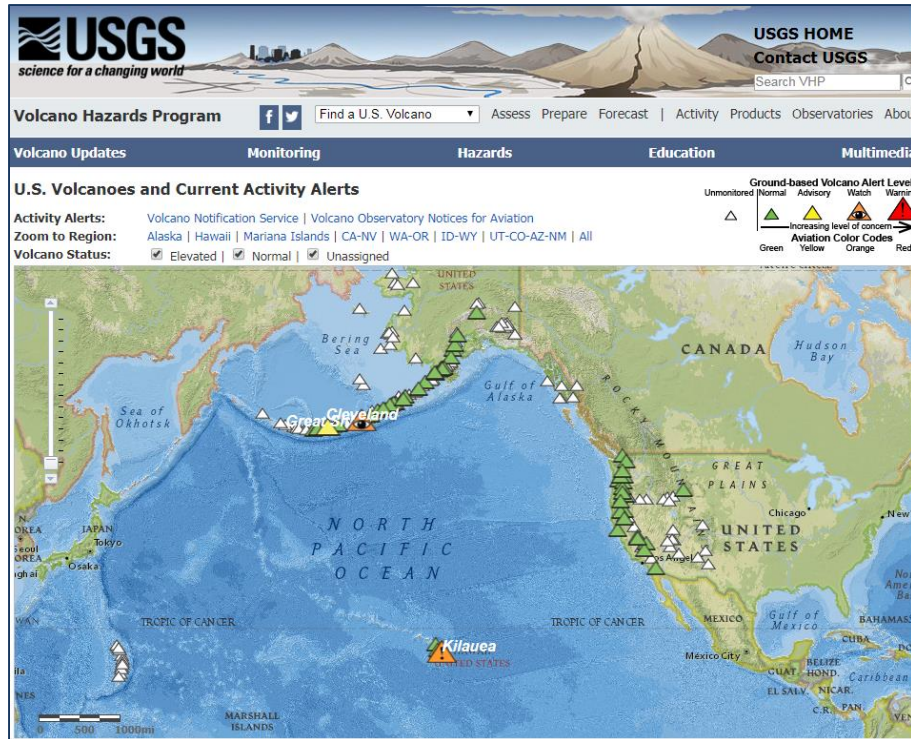
Earthquake Early Warning: Vital for City Transit

GeoScienceWorld: [https://pubs.geoscienceworld.org/search-results?page=1&q=Earthquake%20Early%20Warning%20\(City%20Transit\)%20](https://pubs.geoscienceworld.org/search-results?page=1&q=Earthquake%20Early%20Warning%20(City%20Transit)%20)

USGS Publications Warehouse: <https://pubs.er.usgs.gov/search?q=Earthquake+Early+Warning>

Wiley : <https://onlinelibrary.wiley.com/action/doSearch?AllField=%22Earthquake+Early+Warning%22+>

Volcanoes: Active, by type and planet



<https://volcanoes.usgs.gov/index.html>



<https://www.nasa.gov/jpl/NASA-Juno-data-indicate-another-possible-volcano-on-Jupiter-moon-io>

Volcano search: <https://pubs.er.usgs.gov/search?q=volcano>

Volcano, Mars search: <https://pubs.er.usgs.gov/search?q=volcano+mars>

Volcano, Io (Jupitar's moon) search:

<https://pubs.er.usgs.gov/search?q=volcano+Io>



EarthNow! <https://earthnow.usgs.gov>

EarthNow! displays near-real time imagery of Landsat 7 and Landsat 8 data being collected by USGS as the satellites cross over the Earth. Along with live stream video, the tool also replays image loops from a list of recent overpass recordings.

To learn more about each Landsat satellite, sensors, bands, and years of operation, please visit the [Landsat Missions](#) website.

EarthNow! is based on [FarEarth Global Observer](#) (developed by [Pinkmatter Solutions](#)) to help visualize incoming data for satellite receiving stations, which is freely available to the public. FarEarth Global Observer includes passes from Landsat's [International Ground Stations](#), along with the USGS-acquired imagery shown on *EarthNow!*

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EarthNow! Landsat Image Viewer

Next pass in at LGS **00:02:14**
Landsat 8

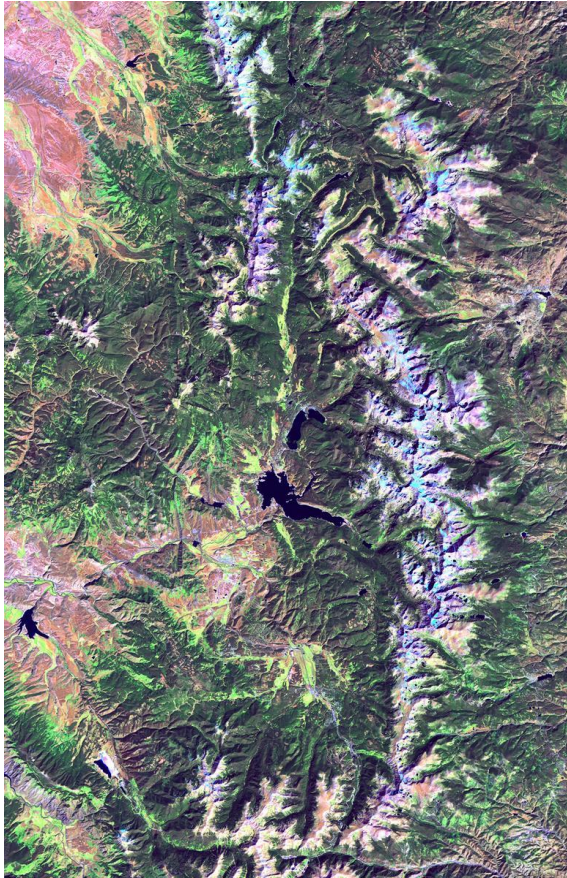
NO PASS RECORDINGS

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25 Jun 2018 00:02:26 UTC	Australia LANDSAT 8 OLI	<input type="checkbox"/>
24 Jun 2018 19:06:35 UTC	LANDSAT 8 OLI	<input type="checkbox"/>
24 Jun 2018 18:35:55 UTC	Northern America LANDSAT 8 OLI	<input type="checkbox"/>
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24 Jun 2018 15:41:14 UTC	Panama LANDSAT 8 OLI	<input type="checkbox"/>
24 Jun 2018 15:36:03 UTC	Caribbean LANDSAT 8 OLI	<input type="checkbox"/>
24 Jun 2018 15:26:54 UTC	Northern America LANDSAT 8 OLI	<input type="checkbox"/>
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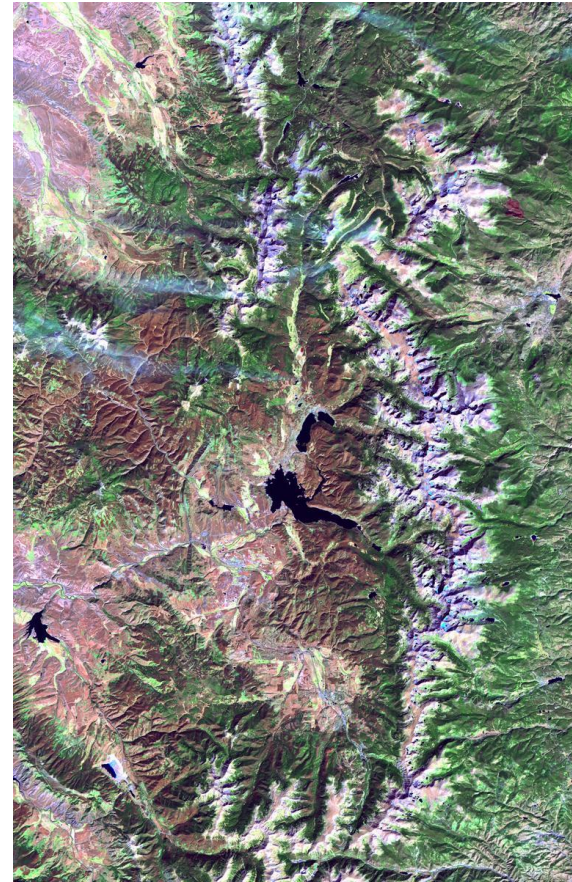
B SERVER
farearth
POWERED BY PINKMATTER SOLUTIONS



Beetle Infestation in Rocky Mountain National Park



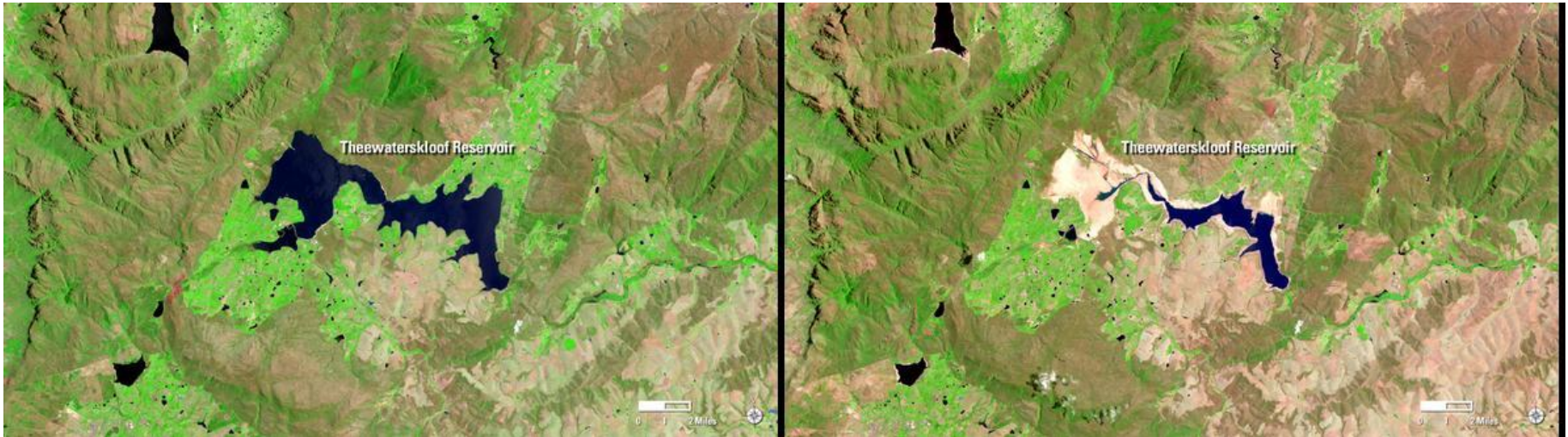
September 22, 2003



September 25, 2010

Tree mortality, caused by the mountain pine beetle, is responsible for almost all the change in conifer tree health status represented in 2003 and 2010 [Landsat](#) satellite imagery over the western slopes of Rocky Mountain National Park in Colorado. Between those two dates, beetles killed a majority of the medium to large lodgepole pines in the forests in the region. Surveys of trees in field plots in that area in 2008-2010 found that an average of around 60% of the lodgepole pines were dead in each plot. There are other conifer species present that were not affected by mountain pine beetle (e.g. fir and spruce) though beetle infestation was the primary factor in tree damage.

Theewaterskloof Reservoir, South Africa



January 3, 2014

January 14, 2018

A three-year drought is threatening to cause city officials in Cape Town, South Africa, to shut off the tap water. The growing city of nearly 4 million relies mostly on reservoirs for its water supply. While drought is part of the cause of the current crisis, an increasing population is also straining water resources.

The view from data acquired by [Landsat](#) 8 brings the crisis in Cape Town into focus. The January 2014 image shows the largest reservoir in its water supply system, Theewaterskloof, at full capacity. In January 2018, it is easy to see how much the surface area of the lake has diminished after three years of drought. The [Western Cape Government](#) lists the reservoir's water capacity at just 13 percent.

Smaller reservoirs do not appear to change much compared to Theewaterskloof, but Cape Town only gets a small fraction of its water from them.

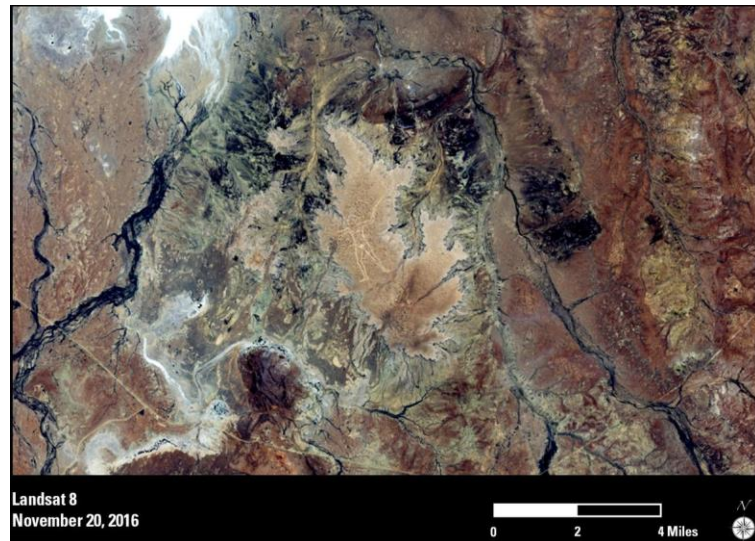
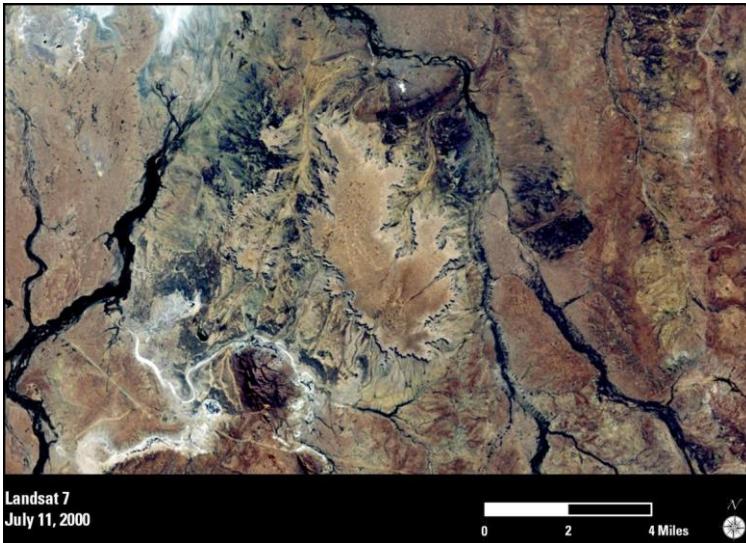
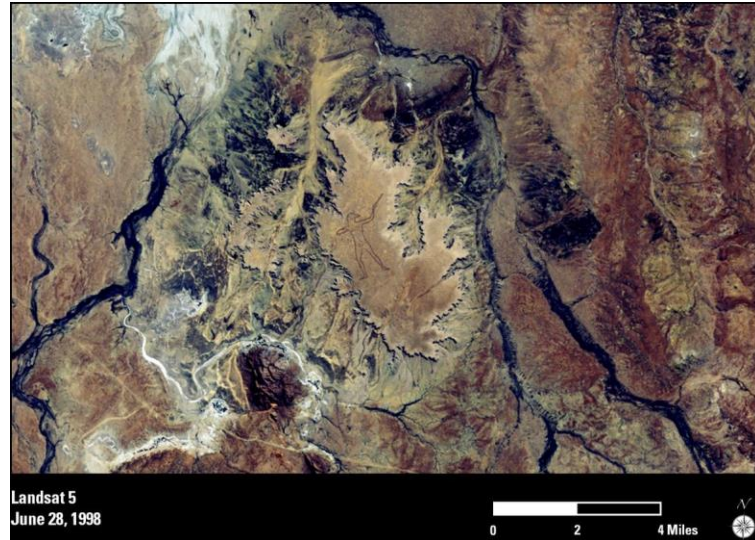
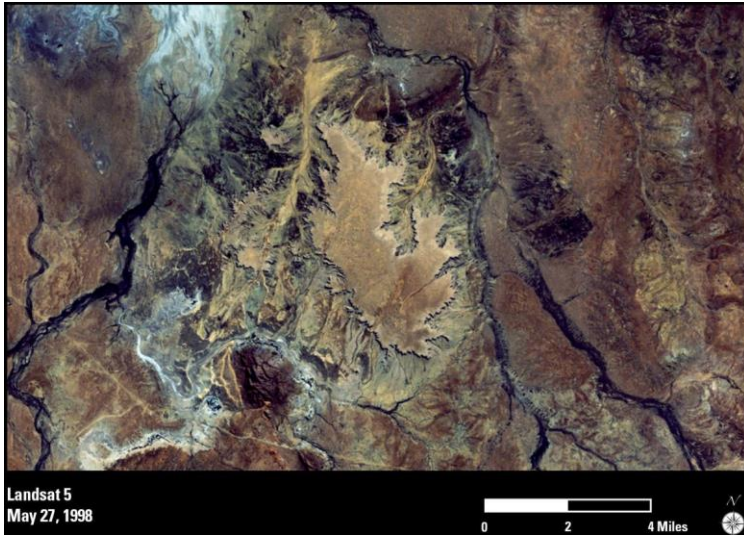
In 2015, rainfall in the area measured 325 mm (12.8 inches)—normal annual rainfall there is 515 mm (20.3 inches). After that, the drought only got worse. Rainfall totaled just 157 mm (6.2 inches) in 2017. Rainfall this low for three straight years is extremely rare. Even with water use restrictions, the city could run out of water by mid-April 2018.

If the rainy season, which is from April to September, brings adequate rainfall, then Landsat can help monitor the extent of the reservoir as it begins to refill.



<https://remotesensing.usgs.gov/gallery/gallery.php?cat=3#735>

Marree Man Geoglyph in Australia Does Reappearing Act



Irma Churns Up Sediment in the Florida Keys



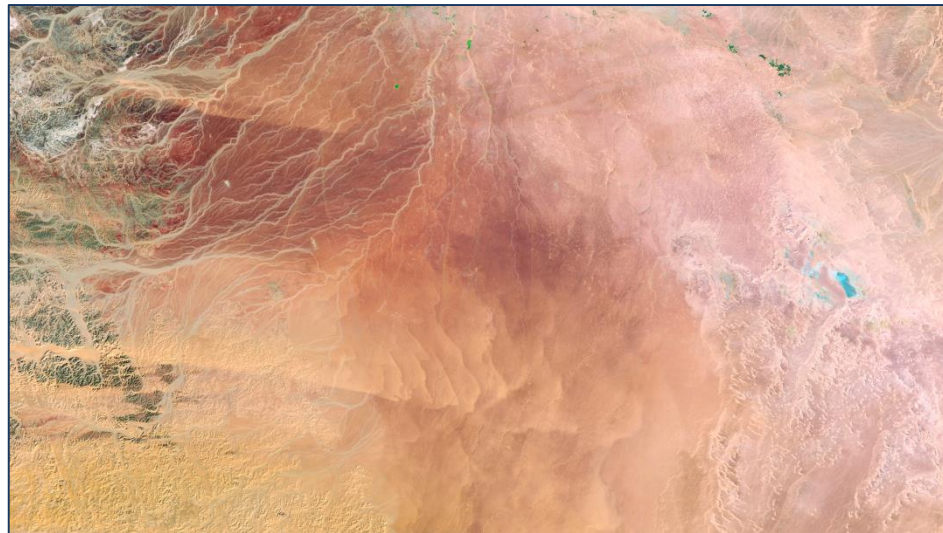
March 22, 2017

September 14, 2017

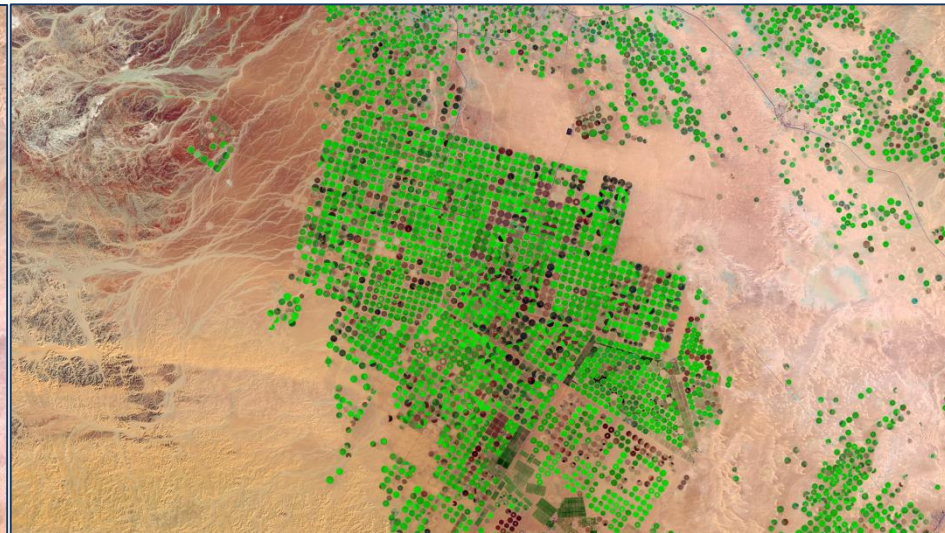


<https://remotesensing.usgs.gov/gallery/gallery.php?cat=3#723>

Saudi Wheat Experiment Relied on Fossil Water



February 2, 1986



February 21, 2016

In the mid-1980s, Saudi Arabia embarked on an ambitious agricultural plan to grow crops in its desert areas using ancient fossil water deep beneath the sand, and installed center-pivot irrigation systems in the barren Wadi As-Sirhan basin in the northwest part of the country. The water, which was once used to grow fruit, vegetables and wheat, was buried deep underground for thousands of years.

These [Landsat](#) images show the remarkable transformation of desert sand in 1986 into green, circular fields—some as large as 1 kilometer across—by 2016.

The drawback with center-pivot irrigation lies in the fact that water in these aquifers is not recharged. Rainfall here only averages 100 to 200 millimeters per year, making groundwater in the area a nonrenewable resource.

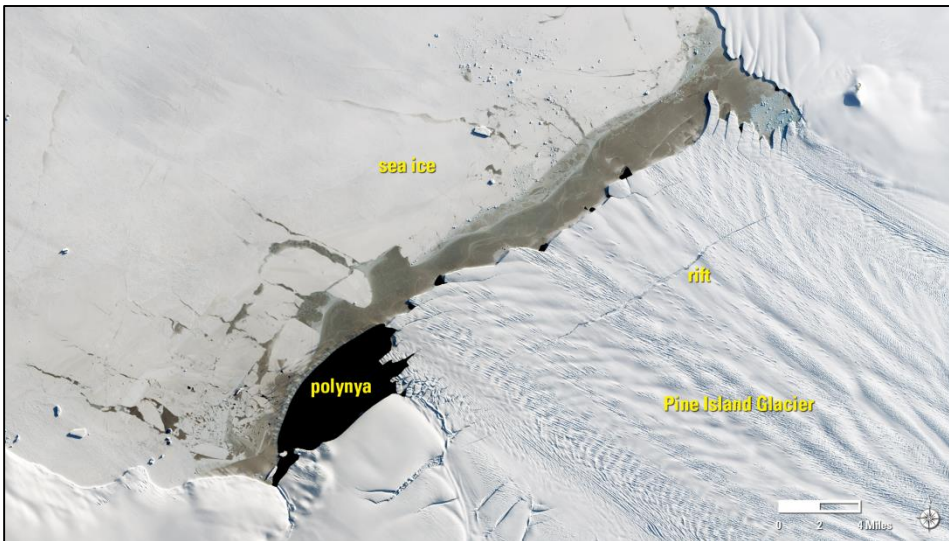
Hydrologists predict it will only be feasible to pump the groundwater for another 50 years, so domestic wheat production will be phased out. Local farmers are being encouraged to engage in alternative sustainable agricultural activities, such as greenhouse farming using advance drip irrigation techniques, to produce fruits and vegetables.

Future Landsat data acquisitions will be useful in monitoring and seeing how the changes in farming techniques affect the landscape.

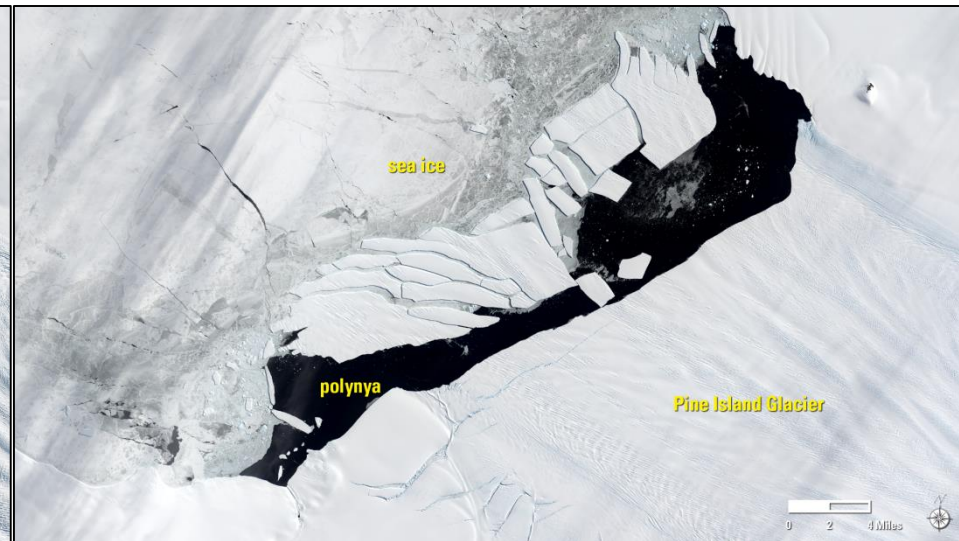


<https://remotesensing.usgs.gov/gallery/gallery.php?cat=3#571>

Update on Pine Island Glacier



September 12, 2017



January 2, 2018

A massive iceberg broke off Pine Island Glacier, Antarctica, in September 2017. Instead of drifting out to sea after calving, sea ice impeded the iceberg's movement, and it cracked up into countless pieces nearly on the spot. Even though it broke up relatively quickly for an iceberg, it is more of a slow-motion shattering.

These [Landsat](#) images show the change at the end of the glacier. The September 21 image was acquired days before the iceberg broke off. A rift is visible running across the glacier almost 8 kilometers from the calving face.

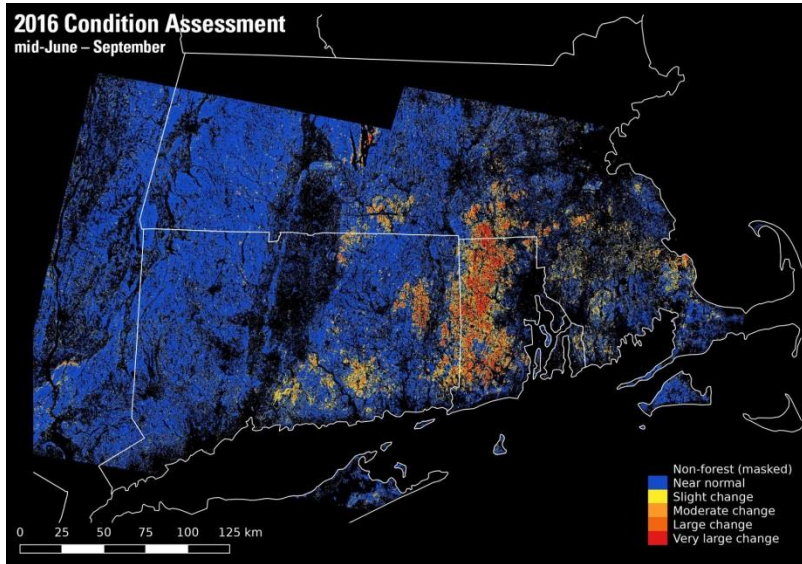
By January 2, 2018, the iceberg had broken into fragments of varying size. The dark feature is a polynya, an area of relatively warmer water, which likely caused the iceberg's breakup.

Landsat 8 has been acquiring observable images roughly every three days from early December to January because of its ability to acquire sunlit nighttime images during Antarctic summer. Frequent acquisitions aid in tracking the movements of the ice pieces and project future behavior of the glacier.

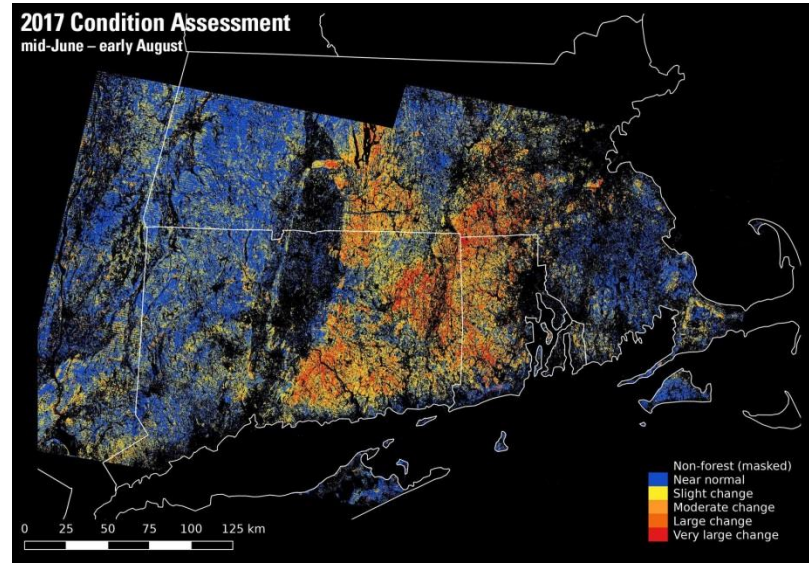


<https://remotesensing.usgs.gov/gallery/gallery.php?cat=3#733>

Gypsy Moth Infestation Continues in New England



September 1, 2016



August 1, 2017

A large outbreak of gypsy moth (*Lymantria dispar*) caterpillars attacked the hardwood forests of the northeastern United States in 2016. A fungus (*Entomophaga maimaiga*) introduced from Japan has kept gypsy moth populations at relatively low levels since the late 1980s. However, abnormally low rainfall during May and June in 2014, 2015, and 2016 reduced the effectiveness of the fungus, resulting in the worst outbreak seen in New England in over 30 years.



Gypsy moth caterpillars devour the leaves of hardwood trees, causing the greatest damage in late June as the larvae reach maturity. While the gypsy moth caterpillars thrived in the 2016 drought conditions, this spring's rainfall made the fungus effective again and caused high levels of mortality. However, mortality reached a peak at the end of the larval stages, after the caterpillars had already caused most of the damage. Oak-dominated forests in Rhode Island and eastern Connecticut were hit particularly hard this year.

Gypsy Moth Records



Citizen Science: iCoast, Did the Coast Change?

<https://coastal.er.usgs.gov/icoast/>

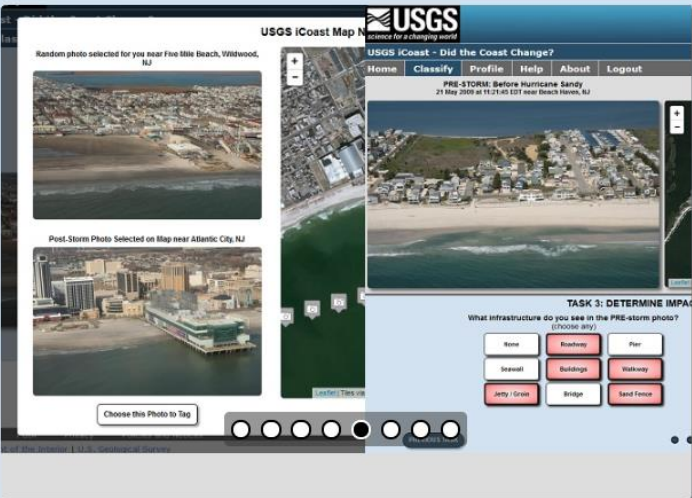


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USGS iCoast - Did the Coast Change?

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OMB Control Numbers: 1028-01
Expiration Date: 12/21



Welcome to USGS iCoast!

Help scientists at the U.S. Geological Survey (USGS) annotate aerial photographs with keyword tags to identify changes to the coast after extreme storms like Hurricanes Ike and Sandy. We need your eyes to help us understand how our coastlines are changing from extreme storms.

Click the button below to *Login* or *Register* using Google.

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Note: Any Google based account, including standard Gmail accounts or those managed by you or your organization, can be used to create an iCoast account.
(Examples: `aperson@gmail.com`, `aperson@usgs.gov`, `aperson@university.edu`)

[Why Google?](#)

What's New in iCoast

Hurricane Joaquin - We are excited to announce that a new data set has been added to iCoast. In early October, Hurricane Joaquin and a Nor'easter combined to create waves and elevated water levels that caused extensive erosion to beaches and dunes along the U.S. east coast from South Carolina through New York. We would like your help classifying this new set of images as part of our response to these storm impacts.


Hurricane Sandy - Hurricane Sandy made landfall along the New Jersey coast more than three years ago on October 29, 2012. You can continue to help us identify the impact of that storm. Your efforts are directly helping to evaluate and improve our prediction models of coastal change at the USGS. Thank you for taking the time to classify all the images from Hurricane Sandy.

Help us classify the remaining 387 photos in the Hurricane Joaquin Project!

It takes an average of 2 minutes 0 seconds to classify one photo!

8,305 of 8,692 photos have been classified!

95.5% Of Photos Complete



Citizen Science: North American Bird Phenology Program

<https://www.pwrc.usgs.gov/bpp/index.cfm>

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Verified Observation Locations

Total verified observations: 626698

Map Satellite

Google



Migration Cards are categorized by species and locality



Citizen Science: Nature's Notebook

https://www.usanpn.org/natures_notebook

Become an Observer

When you participate in the program, you'll go outside to observe nature in your backyard or nearby area weekly and enter this information online.

Time commitment to...

Become an observer: About 10 minutes

Observe: About 2 minutes per

individual plant or animal (once you've familiarized yourself with the program and learned how to observe).

For assistance with getting started visit our [Learn How to Observe](#) page where you will find step-by-step instructions and video tutorials to help you through the process.

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10 year anniversary nature's notebook

OBSERVE ▾ EDUCATE ▾ FOR GROUPS ▾ MORE WAYS TO CONNECT ▾

Status of Spring

Cool weather across the east has halted the further spread of spring leaf out, for now. In the west, spring leaf out arrived one week early in Salt Lake City, UT and two weeks early in Boise, ID.

SEE THE MAPS

TRACKING Seasonal CHANGES IN PLANTS AND ANIMALS

GO TO YOUR OBSERVATION DECK

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Observation Record Goal:

HOW TO PARTICIPATE IN THE PROGRAM

Become an observer in 3 steps:

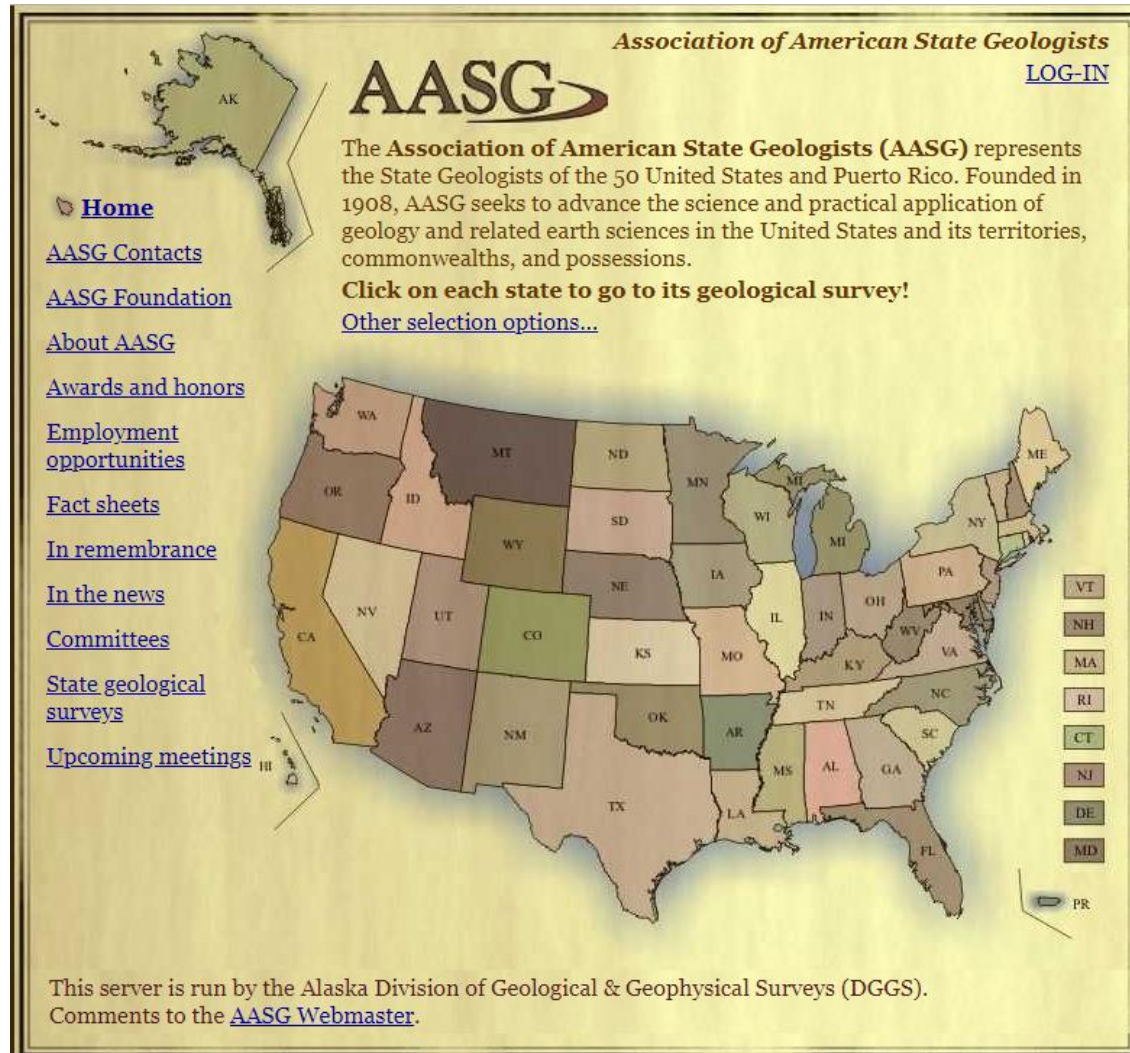
- 1 Join the program
- 2 Set up your account
- 3 Go outside and observe!

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More information about hazards in your state

<http://www.stategeologists.org/>



Association of American State Geologists

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The **Association of American State Geologists (AASG)** represents the State Geologists of the 50 United States and Puerto Rico. Founded in 1908, AASG seeks to advance the science and practical application of geology and related earth sciences in the United States and its territories, commonwealths, and possessions.

Click on each state to go to its geological survey!

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Additional USGS Projects that may be of interest:

Yellowstone National Park Integrated Studies



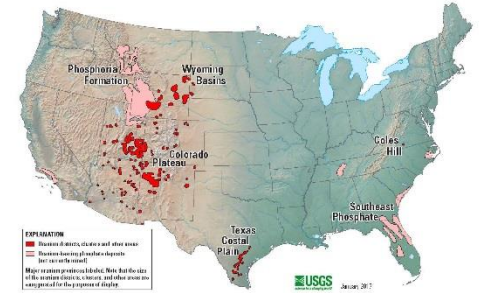
Fifty-gallon barrel containing uranium oxide (U_3O_8), or yellowcake, produced by the Hobson Processing Plant in southern Texas. (Photo used with permission from Uranium Energy Corporation.)

Critical Analysis of World Uranium Resources



Uranium Resources and the Environment - National Uranium Assessment

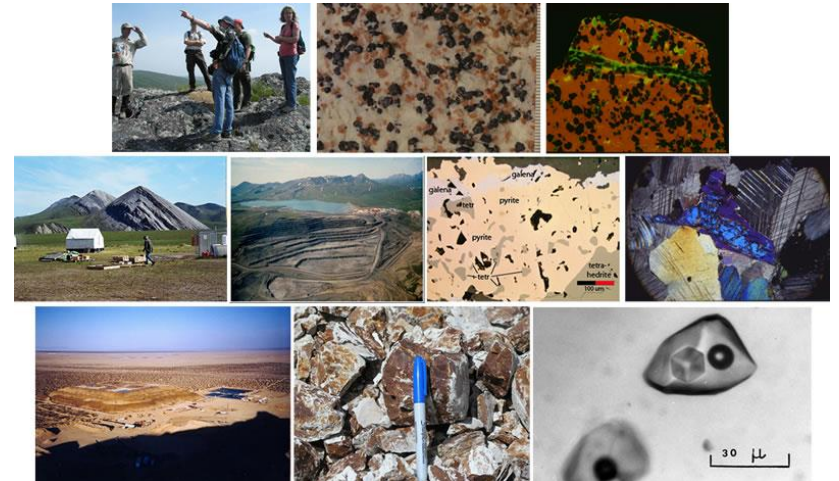
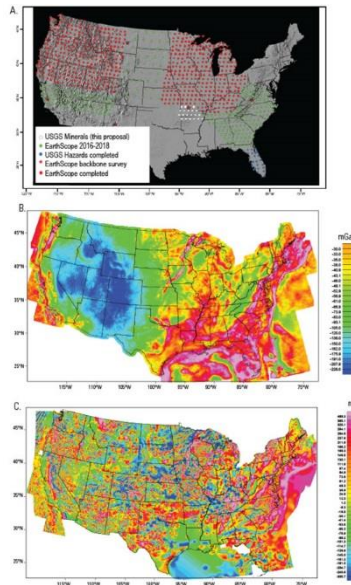
Uranium Resources of the United States



USGS Fact Sheet 2015-3069

Isotope and Chemical Methods for Mineral and Geoenvironmental Assessments and Support of USGS Science Strategy Project

Continental Scale Geophysics — Integrated Approaches to Delineate Prospective Environments for Critical Metals



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Sunrise over the Atlantic Ocean



<https://www.usgs.gov/media/images/sunrise-over-atlantic-ocean>