

Hazards

Natural hazards such as earthquakes, landslides, hurricanes, floods, and wildfires endanger public health and safety, threaten critical infrastructure, and cost our economy billions of dollars each year. Geoscientists study these hazards to provide information and warnings to populations at risk.

Frequently Asked Questions

How does 3D geologic mapping benefit society?

Alberta Geological Survey

How do pyrite and pyrrhotite damage building foundations?

American Geosciences Institute

What is Lidar and what is it used for?

National Oceanic and Atmospheric Administration

Why and where do earthquakes happen?

American Geosciences Institute

Can floods be predicted?

U.S. Geological Survey

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Drought

Since 1980 the United States has experienced more than 24 major droughts, resulting in almost 3,000 deaths and economic impacts exceeding \$225 billion. All areas of the U.S. have some drought risk.



Earthquakes

Since 1900, earthquakes in the United States have resulted in over 1300 deaths and direct damages totaling more than \$51 billion. While the West Coast and Alaska have the highest risk, history shows that major earthquakes can also affect the Central and Eastern United States.



Floods

Flooding is the most common and costliest natural hazard facing the United States. Each year, flooding causes billions of dollars in damages and dozens of deaths nationwide.



Landslides

Landslides affect all 50 states and U.S. territories, where they cause 25 to 50 deaths and more than \$1 billion in damages each year. Geoscientists study and monitor landslides to identify at-risk areas, prepare populations, and improve our understanding of why, when, and where landslides happen.



Sinkholes

Sinkholes have both natural and artificial causes. They tend to occur most often in places where water can dissolve the bedrock (especially limestone) below the surface, causing overlying rocks to collapse. Florida, Texas, Alabama, Missouri, Kentucky, Tennessee, and Pennsylvania are most sinkhole-prone.



Tsunamis

Tsunamis are destructive waves caused by sudden displacement of ocean water. Tsunamis most often appear on shore as a rapidly receding tide or rapidly rising flood. In the United States, the Pacific coastal states – Oregon, Washington, California, Alaska, and Hawaii – are at greatest risk for destructive tsunamis.



Volcanoes

Volcanoes pose many hazards to their surroundings, from ashfall, mudflows, lava flows, landslides, and associated earthquakes. At least 54 of the United States' 169 active volcanoes pose major threats to public health and safety and to major industries such as agriculture, aviation, and transportation.



Waste Management

Although our industrial society produces a variety of solid wastes and waste waters, over the past 50 years we have made progress in disposing of them safely in landfills, by incineration, and in underground injection wells. Many wastes are also increasingly recycled or reused.



Weather Hazards

Weather hazards impact the entire country, with enormous effects on the economy and public safety. Since 1980, weather/climate disasters have cost the U.S. economy more than \$1.5 trillion. In an average year, the United States will be affected by six billion-dollar weather/climate disasters, but this number has increased in recent years: from 2013-2017 the average was 11.6 events.



Wildfires

Wildfires are causing more frequent and wider-ranging societal impacts, especially as residential communities continue to expand into wildland areas. Since 2000, there have been twelve wildfires in the United States that have each caused damages exceeding \$1 billion; cumulatively, these twelve wildfires have caused a total of \$44 billion in damages.

Maps & Visualizations



Interactive map of California earthquake hazard zones

California Geological Survey

The California Geological Survey's Earthquake Hazards Zone Application (EQ Zapp) is an interactive map that details the risk of earthquakes and related hazards for different areas of the state. The map is searchable by address, and it maps three main hazard zones: Fault zones Landslide zones...

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Case Studies & Factsheets



Induced Seismicity from Oil and Gas Operations

Manmade Earthquakes Any activity that significantly changes the pressure on or fluid content of rocks has the potential to trigger earthquakes. This includes geothermal energy production, water storage in large reservoirs, groundwater extraction, underground injection of water for enhanced oil...

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Webinars & Forums



Disaster Risk Reduction: The role of geological survey organizations in understanding risk and informing risk reduction actions



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