

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.

Basics



A tsunami is a series of waves formed in a body of water by the sudden displacement of the entire water column. Most large tsunamis are caused by undersea earthquakes, though landslides, volcanic eruptions, explosions, and even meteorite impacts can also cause them. Tsunamis commonly appear on shore as a rapidly receding tide or rapidly rising flood. Tsunamis sometimes provide natural warning signs to people living on coasts, especially close to the tsunami-causing event, such as a rapidly receding tide prior to the waves' arrival. Global monitoring systems also provide critical early warning to coastal populations.[1] [Read more](#)

Frequently Asked Questions

How are tsunami early warnings issued?

American Geosciences Institute

What are the natural warning signs for a tsunami?

National Oceanic and Atmospheric Administration

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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.



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.



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.



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.

Maps & Visualizations



Interactive map of tsunami evacuation information for Washington
Washington Division of Geology and Earth Resources

The Tsunami Evacuation Map from the Washington Division of Geology and Earth Resources provides a large amount of information about tsunami evacuation procedures for the state of Washington. Each of the shaded areas in the image above can be zoomed in on for more detailed information including...

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Webinars & Forums



Communicating Cascadia's Earthquake Risk

Geoscience research is at the forefront of characterizing the earthquake risks associated with the Cascadia subduction zone in the Pacific Northwest. This webinar informs listeners of the science and its implications for policy decisions and resiliency efforts. During the webinar, the three...

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