Tsunami Hazards

FREQUENTLY ASKED QUESTIONS

What does DGGS do to define tsunami hazards in Alaska?

DGGS works directly with tsunami researchers at the University of Alaska Fairbanks Geophysical Institute and Alaska Earthquake Center as part of the National Tsunami Hazard Mitigation Program (NTHMP). The goal is to reduce tsunami impacts in at-risk Alaska communities by identifying, modeling, and mapping tsunami hazards. DGGS publishes community-specific scientific reports and map sheets depicting tsunami inundation zones (dggs.alaska.gov/pubs/tsunami), and coordinates with the AK Division of Homeland Security and Emergency Management (DHS&EM) to disseminate results to local emergency planners and at-risk communities--both in person and through the published reports. The tsunami inundation maps can all be viewed via the online Alaska Tsunami Hazard Map Tool (tsunami.alaska.edu).

What is a tsunami?

A tsunami is a series of waves in a water body caused by a large and sudden displacement of water. The most common cause of a tsunami is an earthquake that disturbs the ocean floor. See DGGS Information Circular 85 (doi.org/10.14509/30199) for more information about tsunamis in Alaska.

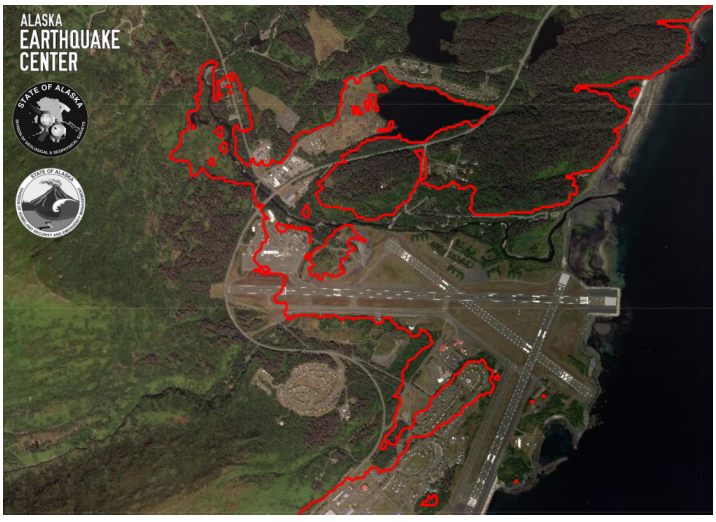
How do I know if I live in the inundation zone?

The **tsunami inundation zone** is the maximum extent of the flooded area over the course of a tsunami event

Knowing the exact extent of the inundation zone (the area flooded by a tsunami) is a great challenge and we can only provide guidance and recommendations on how far a tsunami can go inland.

Typically, the inundation zone is estimated by using computer models to simulate flooding of dry land as a result of different types of earthquakes. There are several significant assumptions used in computer models, and these lead to uncertainties in the results. Assumptions include the location, magnitude, and depth of an earthquake, elevations of the dry land, ocean depths, and how water will interact with buildings and other objects near shore and on land. We use the best-available data, though at times these data can be incomplete. These uncertainties should be kept in mind when using modeled inundation results to inform community planning or response. Most communities address this uncertainty by adding a safety buffer to these results when creating a tsunami hazard zone or evacuation zone.

The tsunami hazard maps are not intended for the pixel-scale analysis of tsunami inundation and should be viewed as guidance regarding how far the tsunami can go inland at the community-wide scale. Current, local, on-the-ground conditions may differ from what is represented in the elevation data depending on the age and quality of the original data.



Estimated tsunami extent in Kodiak, Alaska.

How do I determine tsunami extent at my location?

Visit the online Alaska Tsunami Hazard Map Tool (tsunami.alaska.edu), select your community from the menu and check the box for “Inundation Extent.”

Another option is to download an electronic copy of inundation map sheets from dggs.alaska.gov/pubs/tsunami.

The red line shows maximum potential tsunami inundation based on a suite of tsunami scenarios from the Tsunami Hazard Map Tool at tsunami.alaska.edu.

Note that tsunamis are laden with debris and can move quickly. Even shallow flood waters can be deadly.

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REMEMBER!
If you are near the coast and feel an earthquake that lasts more than 20 seconds (or is strong enough to knock you down), ***SEEK HIGHER GROUND IMMEDIATELY. DO NOT WAIT*** *for official tsunami warnings or sirens!*

Is there an emergency radio channel to listen to in my area to get the correct information about the incident as it is happening?

NOAA encourages all communities to be prepared with a **portable, battery-powered or hand-cranked " All Hazards" NOAA Weather Radio** in the event of an earthquake or tsunami. NOAA Weather Radios come in many sizes with a variety of functions and costs, but are suitable for the household, schools, hospitals, or other public gathering places. Visit the National Weather Service webpage for more information about radios, broadcast frequencies, and coverage for your community. https://www.weather.gov/nwr/index

What are the best resources for information during an earthquake and potential tsunami event? Which of these services will provide the most reliable information?

The **Alaska Earthquake Center** (AEC) and the **National Tsunami Warning Center** (NTWC) are reliable sources for minute-by-minute updates following an earthquake and potential tsunami event. Information from these organizations can be found on their web pages, as well as their respective Facebook and Twitter accounts.

In the event of a major earthquake and potential tsunami, be prepared that websites might initially be inaccessible due to a large number of page visitors. Similarly, be aware that checking social media posts about the tsunami warning can reduce your available time for a safe evacuation. We strongly advise waiting to check social media platforms until you have reached safe ground.

Are there subscription services available for earthquake and tsunami alerts/information?

Nixle (www.nixle.com) is a free subscription service that allows verified government agencies (including local public safety departments, emergency management offices, and municipal government agencies) to send emergency notifications through telephone, e-mail, and social media networks.

The USGS Earthquake Notification System (ENS) earthquake.usgs.gov/ens provides customizable notifications about earthquakes in any part of the world.

Similarly, the **National Tsunami Warning Center** (NTWC) disseminates information several ways following an earthquake. For the most up-to-date information, you can sign up for tsunami information bulletins via text: ntwc.ncep.noaa.gov/?page=productRetrieval

What will generate a bigger tsunami: A deep or a shallow earthquake?

The answer depends on a multiude of factors including the magnitude, location, and style of earthquake, as well as the location of the community—how close it is to the subduction-zone trench, what side of the land mass it is on, and whether it is at the mouth or the head of a fjord, among others. Shallow earthquakes can displace a large amount of water, but if the community is far away the wave can dissipate while traveling to the community. Deeper earthquakes may potentially make huge regions of land rise or fall. If a community is within a region that drops down in an earthquake, there could also be a significant tsunami. Also, if there is significant ground shaking, chances of triggering a submarine or subaerial landslide increase.

The earthquake parameters and amount of displaced water (due to the deformation of the seafloor and/or a landslides) extremely difficult to determine in the minutes following an earthquake. For these reasons we strongly discourage people from second-guessing tsunami warnings based on the depth of an earthquake (or for any other reason).

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