Tsunamis are infrequent high-impact events that have the potential to cause fatalities and damage on the coast. Since the beginning of the 19th century, tsunamis have caused more than 700 deaths and approximately $2 billion in damage to U.S. coastal states and territories.

To better understand the U.S. tsunami hazard and prepare for the impacts of tsunamis on U.S. coasts, the National Tsunami Hazard Mitigation Program assessed the hazard for nine broad coastal regions. While a tsunami can strike any U.S. coast, the hazard level varies. Hazard levels reported here are qualitative and based largely on the historical record (through 2014), geological evidence, and location relative to tsunami sources, all of which provide clues to what might happen in the future.

The hazard is greatest for coastlines near subduction zones, which are particularly active seismic zones, where large earthquakes can produce damaging waves that threaten nearby and distant coasts. Dangerous subduction zones ring the Pacific Ocean and can also be found around the Caribbean.

The West Coast states of Washington, Oregon, and California have experienced tsunamis from as far away as Alaska, South America, Japan, and Russia. The most damaging on record is the tsunami caused by the 1964 Great Alaska earthquake. More recently, harbors in the region were damaged by events in Japan (2011) and Chile (2010). Other tsunamis in the region were produced by local earthquakes and landslides (both underwater and from land). Locally, the greatest threat is from the Cascadia subduction zone, which stretches from northern California to southern Canada. Large Cascadia earthquakes occur every 500 years, on average. According to geological data in the Pacific Northwest, the last great Cascadia earthquake occurred in 1700. It produced a tsunami that crossed the Pacific Ocean and caused damage and deaths in Japan. The next Cascadia event will significantly impact the region and the nation.

Reported tsunamis: Earliest: 1812 | Total events: 94 | Events with runups above one meter: 17 | Total damage: $249 million | Total deaths: 25

Hawaii has a long history of damaging tsunamis. Its tsunami record includes events caused by earthquakes both near and far. Significant tsunamis were produced locally in 1868 and 1975, but the majority of Hawaii’s destructive tsunamis were produced by distant subduction zone earthquakes. Notable distant tsunamis came from Chile (1837, 1877, 1960), Russia (1923, 1952), Alaska (1946, 1957), and Japan (2011). Underwater landslides also pose a threat, and volcanic activity was responsible for a tsunami in 1919.

Reported tsunamis: Earliest: 1812 | Total events: 134 | Events with runups above one meter: 30 | Total damage: $680 million | Total deaths: 293

All dollar figures adjusted for inflation (2018)
Understanding the hazard is an important first step in understanding risk. More research remains to be done to better understand the hazard and the potential losses. These hazard levels are based on brief and incomplete historical records. Events may have been unreported or underreported or may have happened in unpopulated areas and gone undetected. The tsunami hazard exists for all coastal U.S. states and territories.

Given the large number of people who live, work, and play on the coast, even where the hazard level is low, the consequences are high. So, it is vital that we understand these consequences as well as how to prepare for and respond to tsunamis, both local and distant and big and small.

This information is based on the national tsunami hazard assessments conducted for the National Tsunami Hazard Mitigation Program by the National Oceanic and Atmospheric Administration and the U.S. Geological Survey. The assessments are available at https://nws.weather.gov/nthmp/ushazard.html.

This program is a partnership of federal and state agencies that works to protect lives and reduce economic losses from tsunamis through hazard assessment, warning guidance, and mitigation. Learn more at https://nws.weather.gov/nthmp/.