

TSUNAMI

A tsunami is a traveling ocean wave of extremely long length and period generated by disturbances associated with earthquakes, volcanoes, or major sub-marine landslides. Tsunamis are a threat, not because they are so extensive or frequent, but because the destruction they cause can be devastating. The danger is compounded by the fact that the intensity of the wave is unpredictable and the threat is intermittent over many hours.

A seiche is a wave or series of waves which oscillates in an enclosed or partially enclosed body of water as result of seismic or atmospheric disturbances. Seiches typically occur in lakes and bays, and are caused either directly or indirectly by earthquakes or landslides. In a large body of water, wind can set up an oscillation that will send waves above the normal water line. The secondary effects of a seiche can often produce more damage than the seiche itself. Large seiches can overtop the dams of man-made lakes or reservoirs, causing flooding in the areas downstream. This overtopping can also wash out earth-fill dams, causing complete collapse.

Warnings of impending tsunamis are generated by the USCGS (US Coast and Geodetic Survey) Seismic Sea Wave Warning System (SSWWS) and the Alaskan Regional Tsunami System. They issue both seismic sea wave advisories, when an earthquake of significant magnitude has occurred in an area susceptible to tsunami generation, and seismic sea wave warnings, when tide stations confirm the generation of a tsunami. These advisories are transmitted by NOAA Satellite to OES. These warnings are evaluated by the Warning Center Officer and Director of OES and, if necessary, a statewide warning is issued to the Operational Area through Emergency Digital Information System (EDIS) alerts, along with the estimated time of arrival of the wave. The Operational Area will notify coastal jurisdictions of the pending threat.

These jurisdictions will decide whether or not their population will be alerted. Evacuation of the coastal areas is voluntary. The alerting agencies can only warn people of the hazard without forcing evacuation. Reentry into the area, however, can be controlled.

All of the coastal areas in Orange County are susceptible to tsunamis. A tsunami from the south Pacific or from South America could strike the County coastal areas from the south to southwest. The Channel Islands do not provide adequate protection.

The worst recorded tsunami to hit California was in 1812. A landslide occurred in the Santa Barbara Channel, and the resulting waves are reported by some disputed sources to have been up to 15 feet above sea level in Ventura. Wide spread damage and some loss of life occurred in 1964 following the Alaskan earthquake. Tsunamis from the earthquake also destroyed a number of towns in Alaska and damaged the Los Angeles-Long Beach harbors as well as harbors in Ventura County.

Historic records indicate that there is a small probability of occurrence of a major tsunami in Orange County. The last major tsunami was over 170 years ago.

The immediate or primary effects of a tsunami are easily visualized but the secondary effects can be unanticipated. Water systems can be contaminated, power disrupted, and transportation systems blocked or dislocated. There may be an increased number of fires from broken oil and gas tanks or lines, flooding from blocked rivers, and possible damage to personal property along coastal areas. Coastal areas may be inundated creating increased traffic from evacuating populations that may require emergency sheltering and care. Refer to the Tsunami Annex.