State of Oregon
Department of Geology and Mineral Industries
John D. Beaulieu, State Geologist

IMS-13
Tsunami Hazard Map of the
Gold Beach Area, Curry County, Oregon
By G.R. Priest and others
Text

How to Use the Map

Mapped boundaries may be viewed as guides for evacuation planning in the event of an earthquake and tsunami. *If an earthquake occurs with 20 seconds or more of shaking that is strong enough to make standing difficult, plan on going immediately to the lowest risk site available. A tsunami could arrive within a few minutes of the earthquake.* Such nearby earthquakes and associated tsunamis occur at intervals of approximately 300–600 years. Distant tsunamis (teletsunamis) occur more often, are generally smaller than tsunamis from nearby earthquakes, and arrive hours after a distant earthquake. The West Coast and Alaska Tsunami Warning Center issues warnings for all teletsunamis affecting the West Coast of the United States.

Map Hazard Categories

White — **Low to negligible risk zone for tsunami flooding (300- to 600-year events)**

Yellow — **Moderate risk zone for tsunami flooding (300- to 600-year events)**

Elevations within and below this zone would be flooded by a Cascadia subduction zone tsunami from a magnitude 9.1 earthquake with doubling of the fault slip immediately offshore. See “Model 1A Asperity” in Priest and others (1997) for a complete explanation of this model earthquake and tsunami.

Orange — **High risk zone for tsunami flooding (300- to 600-year events)**

Elevations within and below this zone would be flooded by a Cascadia subduction zone tsunami from a magnitude 9.1 earthquake. See “Model 1A” in Priest and others (1997) for a complete explanation of this model earthquake and tsunami.

Red — **Extreme risk zone for tsunami flooding (300- to 600-year events)**

Elevations within and below this zone would be flooded by a Cascadia subduction zone tsunami from a magnitude 8.6 earthquake. See “Model 2Cn” in Priest and others (1997) for a complete explanation of this model earthquake and tsunami.

The following figure illustrates timing of waves as they arrive after a large earthquake on the nearby Cascadia subduction zone fault system. Note the sequence of water elevation changes and the length of time during which significant tsunamis continue to strike the coast. See "Model 1A" in Priest and others (1997) for a complete explanation of this model earthquake and tsunami.

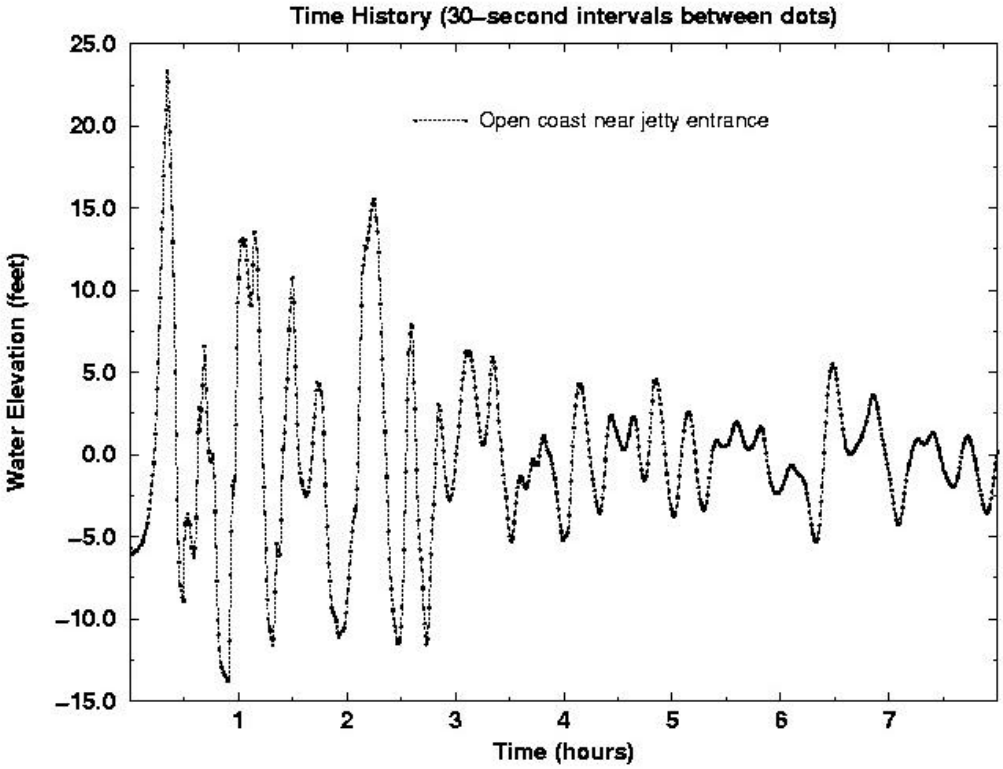

Figure 1. Time history of wave arrivals after a magnitude 9.1 earthquake on the nearby Cascadia subduction zone fault system. Negative wave elevations correspond to surges of water heading seaward; positive elevations correspond to surges up the estuary channels. Observation point is immediately offshore from the main jetties at the mouth of the Rogue River. Note that the first major surge of flooding does not strike this area until about 15–20 minutes after the earthquake. Current direction in the estuary channels could be either seaward or landward during the first few minutes after the earthquake, depending on how the fault rupture process occurs. Actual tsunami wave elevation at shoreline sites will be much higher than shown in the diagram. This illustration should be used to understand approximate timing and relative wave elevation, not absolute wave elevation at the shoreline. It is based on a moderately high tsunami run-up scenario (Model 1A in Priest and others, 1997).

When planning evacuation routes and destinations, check with local officials for guidance. In general, one should go to the least hazardous site (noncolored area or the coolest color) on the map by the shortest route, making sure that the route is not compromised by other earthquake hazards such as liquefaction or earthquake-induced landslides. Bridges may fail in the event of an earthquake. Consult with transportation authorities about the seismic stability of bridges used for evacuation.

Additional Detailed Information

See Oregon Department of Geology and Mineral Industries Open-File Report O–97–34 (Priest and others, 1997) for a detailed explanation of the mapping techniques.

Funding Source

Funds for the project were primarily from Federal Emergency Management Agency Cooperative Agreement Number EMS–97–CA–0058 from funds originally given to the National Oceanic and Atmospheric Administration for tsunami hazard mitigation. Funds were also provided by the Oregon Department of Geology and Mineral Industries.

Reference Cited

Priest, G.R., Myers, E., Baptista, A., Fleuck, P., Wang, K., Kamphaus R.A., and Peterson, C.D., 1997, Cascadia subduction zone tsunamis: Hazard mapping at Yaquina Bay, Oregon: Oregon Department of Geology and Mineral Industries Open-File Report O–97–34, 144 p.

Note

The Oregon Department of Geology and Mineral Industries is publishing this map because the information furthers the mission of the Department. The map is not intended to be used for site-specific planning. It may be used as a general guide for emergency-response planning.