



Map Explanation

The Ring of Fire is also called the Circum-Pacific Belt, is the zone of earthquake activity surrounding the Pacific Ocean. It is an arc stretching from New Zealand, along the eastern edge of Asia, north across the Aleutian Islands of Alaska, and south along the coast of North and South America (Figure 1). The Ring of Fire is located at the borders of the Pacific Plate and other major tectonic plates. The Pacific Plate is colliding with and sliding underneath other plates creating subduction zones that eventually release energy in the form of an earthquake rupture. This rupture causes a vertical displacement of water that creates a tsunami. When these events occur around the Ring of Fire but do not directly off the Oregon coast, they take more time to travel the Pacific Ocean and arrive onshore in Oregon (Figure 2). Distant earthquake/tsunami events have affected the Oregon coast; for example, offshore Alaska in 1964 and offshore Japan in March 2011.

Alaska-Aleutian Model Specifications: DOGAMI modeled two distant tsunamigenic and tsunami scenarios involving M9.2 earthquakes originating near the Gulf of Alaska. The first scenario attempts to replicate the 1964 Prince William Sound event, and the second scenario represents a hypothetical maximum event. This maximum event is the same model used by the U.S. Geological Survey (USGS) in their 2006 tsunami hazard assessment of Seaside (TPSW, 2006). This model uses extreme fault model parameters that result in maximum seafloor uplift of 10 m, as large as in the 1964 earthquake. The selected coastal location on the Aleutian chain of islands also shows higher energy directed toward the Oregon coast than other Alaskan source locations. For these reasons the hypothetical "Alaska Maximum" scenario is selected as the worst case distant tsunami scenario for Oregon. Detailed information on fault geometries, subsidence, computer models, and the methodology used to create the tsunami scenarios presented on this map can be found in DOGAMI Special Paper 42 (Witter and others, 2011).

[illegible]

		Entire Map		Unincorporated	
		Alea2	Walport	Areas	
Total Buildings		1,427	3	1,424	
Buildings within Tsunami Zones*					
	Alaska M9.2 (1964)		5	0	5
	Alaska Maximum		26	0	26
Percent of Buildings within Tsunami Zones					
	Alaska M9.2 (1964)		0.4%	0.0%	0.4%
	Alaska Maximum		1.8%	0.0%	1.8%

*Building counts shown are based on polygon centroids and are cumulative within the map



Figure 3: The table and chart show the number of buildings inundated for the Alaska M9.2 (1964) and the Alaska Maximum tsunami scenarios for cities and unincorporated portions of the map.

Change in water level for two tsunami scenarios at the simulated gauge station shown on the map

Legend:
— Alaska M9.2 (1964)
— Alaska Maximum

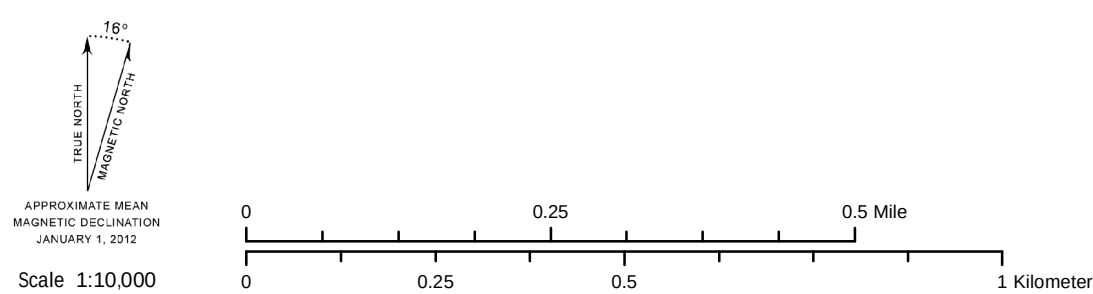
Y-axis: Elevation, feet (NAVD83)
 X-axis: Time since Earthquake (hours)

Location: Holly Beach (Station B31)

Figure 4: This chart depicts the tsunami waves as they arrive at the selected reference point (simulated gauge station). It shows the change in wave heights for the two Alaska tsunami scenarios over an 8-hour period. Wave heights vary through time, and the first wave will not necessarily be the largest as waves interfere and reflect off local topography and bathymetry. Any absence of data indicates periods for which tsunami inundation has not yet reached or has receded from the station location and dry land is exposed.

[illegible]

Figure 5. These profiles depict the expected maximum tsunami wave elevation for the two Alaska tsunami scenarios along lines A-A' and B-B'. The tsunami scenarios are modeled to occur at a static (no flow) tide and equal to the Mean Higher High Water (MHHW) high tide.



Earthquake Size	Slip / Deformation	Earthquake Magnitude	
	Alaska M9.2 (1964)	Vertical seafloor deformation estimate	-9.2
	Alaska Maximum	Uniforms slip on 12 subfaults with each assigned values ranging from 49 to 98 feet.	-9.2
	Alaska Maximum Wet/Dry Zone		
	Urban Growth Boundary		Fire Station
	Building Footprint		Police Station
	Simulated Gauge Station		School
	Profile Location		Hospital/Urgent Care Clinic
	Senate Bill 379 Line		U.S. Highway
	State Park		State Highway
	Elevation Contour (25 ft intervals up to 200 ft)		Improved Road

Legend:

01	Lincoln City North	09	Yaguira River
02	Lincoln City South	10	Sea Ranch
03	Lincoln City	11	Driftwood Beach
04	Glenn Beach - Sunset River	12	Midgirt
05	Glenn Beach - Sunset River	13	Tombert
06	Clayton Bay	14	Ocean Shores
07	Other Rock - Beverly Beach	15	Yachats
08	Newport North		
09	Newport South		
10	Tellico		

[illegible]