

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 coasts 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 not directly off the Oregon coast, they take more time to travel the Pacific Ocean and arrive onshore in Oregon (Figure 2). Distant earthquakes/tsunami events have affected the Oregon coast; for example, offshore Alaska in 1964 and offshore Japan in March 2011.

Alaska-Aleutian Model Specifications: DUGAMI modeled two distant tsunami and tsunami scenarios involving 592 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 Seattle (TFSW, 2006). This model uses extreme fault model parameters that result in maximum seafloor uplift, and the largest waves as large as in the 1964 earthquake. The selected scenario is located on the Aleutian chain of islands also shows higher energy directed toward the Oregon coast than other Aleutian 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 DUGAMI Special Paper 43 (Witter and others, 2011).

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Figure 1: 1 of active e that rings including the and earthquakes caused by plates. One subduction plates, such rock beneath beneath the make up Earthquake subduction

Figure 2: The actual initial tsunami wave height, around the 1964 earthquake. The earthquake caused 125 deaths in Alaska in property loss. The tsunami devastated the Gulf of Alaska in British Columbia and the west coast of the United States and was recorded in Cuba and Puerto Rico.

		Entire Map Area	Unincorporated Areas
Total Buildings:		38	38
Buildings within Tsunami Zones*			
Alaska M9.2 (1964)		2	2
Alaska Maximum		3	3
Percent of Buildings within Tsunami Zones			
Alaska M9.2 (1964)		5.3%	5.3%
Alaska Maximum		7.9%	7.9%

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

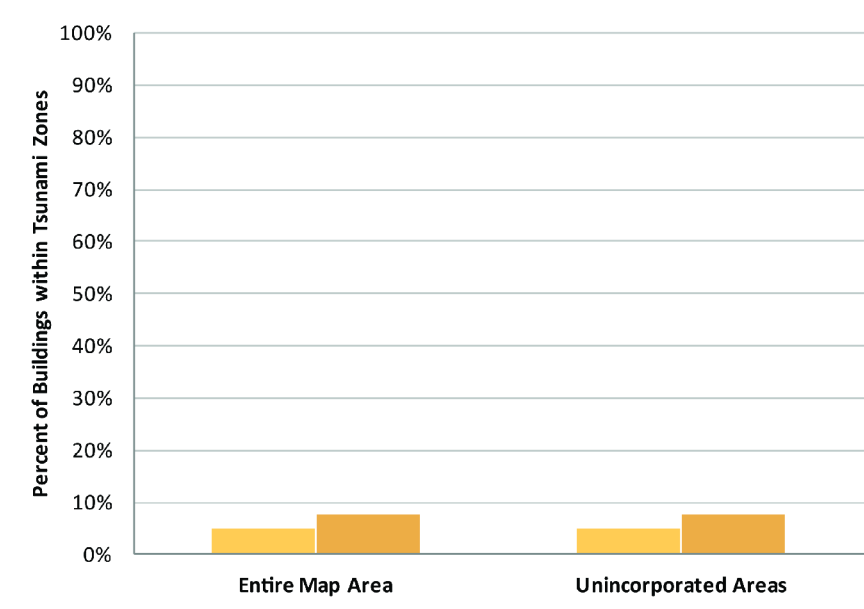


Figure 3: The table and chart show the number of buildings inundated for the Alaska M9.2 (1964) and the Alaska Maximum tsunami scenarios for cities and unincorporated portions of the map.

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

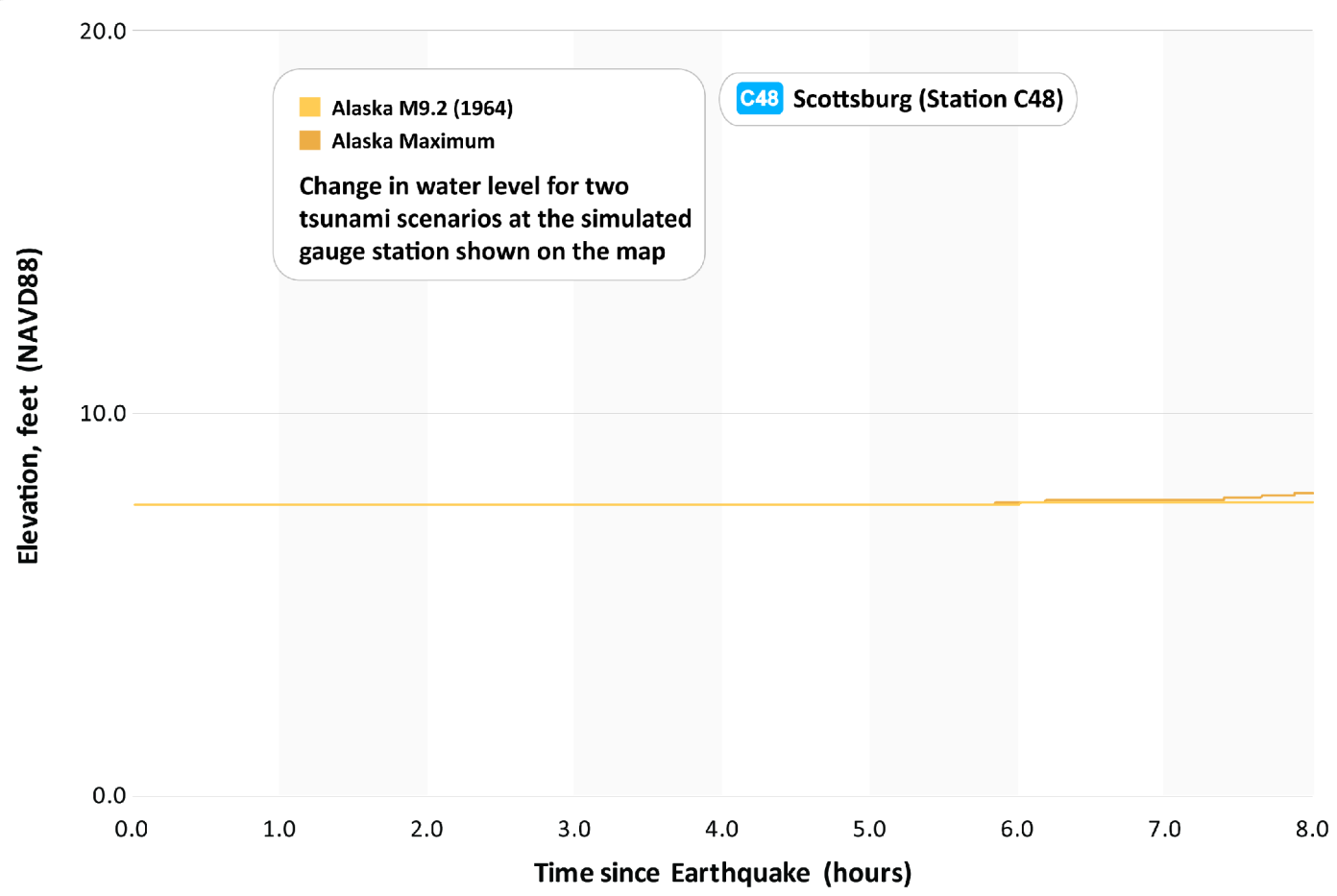
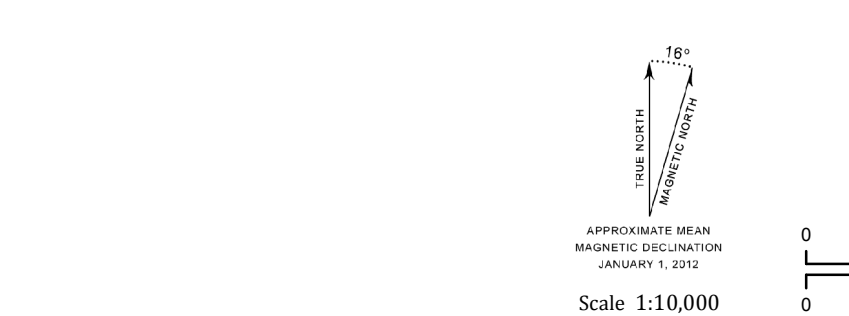


Figure 4: This chart depicts the tsunami waves as they arrive at the selected reference point (simulated gauge station). It shows the change in wave heights for the two Alaska tsunami scenarios over an 8-hour period. Wave heights vary through time, and the first wave will not necessarily be the largest 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 receded from the station location and dry land is exposed.

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
	Alaska Maximum	Uniform slip on 12 subfaults with each assigned values ranging from 45 to 98 feet
	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

Map of the Douglas area in Oregon, showing 10 numbered locations (01-10) and their corresponding names. The map includes the Douglas Douglas Coos border and the Douglas Douglas Coos border. A legend at the bottom lists the names for each number: 01 Silroos Lake, 02 Tahkenitch Lake, 03 Gardiner, 04 Bredport, 05 East Gardiner, 06 Umpqua River West, 07 Sulphur Springs, 08 Umpqua River East, 09 Clear Lake, and 10 (unlabeled).

Number	Location Name
01	Silroos Lake
02	Tahkenitch Lake
03	Gardiner
04	Bredport
05	East Gardiner
06	Umpqua River West
07	Sulphur Springs
08	Umpqua River East
09	Clear Lake
10	(Unlabeled)

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