Local Source (Cascadia Subduction Zone) Tsunami Inundation Map
Gearhart - Seaside, Oregon

Introduction
The Northwest Oregon coastal community of Gearhart is located on the Pacific Ocean, approximately 50 miles north of Portland, Oregon. Geologically, the area is part of the Cascadia Subduction Zone (CSZ), where the Juan de Fuca and North American tectonic plates are colliding. This collision is causing a build-up of energy that will eventually be released in the form of a great earthquake. The sudden slip of the locked plate interface will cause a megathrust earthquake rupture. Waves generated by such an earthquake would be highly destructive along the Oregon coast.

Map Purpose
This map shows maximum expected tsunami inundation elevations for Gearhart and Seaside as a result of a megathrust earthquake occurring along the Cascadia Subduction Zone. The inundation elevations were generated using a computer model that reproduces the tsunami wave heights produced by several historical earthquakes and those generated from hypothetical Cascadia and Alaska earthquake scenarios.

Methodology
The inundation elevations were calculated using the Scientific Computing and Imaging Institute (SCI) model, known as TOHUKU. This computer model produces time series data for tsunami modeling in order to prohibit the construction of new essential facilities and infrastructure in high-risk tsunami areas, based on the assumption that the maximum inundation elevation represents the area that would receive the most damage in a worst-case scenario.

Map Specifications
This map reveals the expected maximum tsunami wave elevations for the Gearhart area and the state of Oregon. The map uses color-coded areas to indicate the extent of tsunami inundation for each of the five tsunami scenarios.

References

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