Tsunami hazard map of the southern Washington coast: Modeled and inferred tsunami inundation from a Cascadia Subduction Zone earthquake

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Abstract. We have prepared a map of expected tsunami inundation on the southern Washington (U.S.A.) coast from a Cascadia subduction zone (CSZ) earthquake. Inundation was modeled with a modified version of the finite element model ADCIRC. The initial condition is a scenario M9.1 event that was developed for similar mapping in Oregon. The event parameters were taken from published geophysical models of the elastic slip zone of the CSZ optimized by paleoseismic evidence of land-level changes. Subsidence is incorporated into the model results and in places reaches nearly 2 meters. The modeled inundation is adjusted to honor finer-resolution topographic elements than were used in the model grid and also takes into account paleoseismic evidence of tsunami inundation from the A.D. 1700 CSZ event. Representative time histories are shown along the outer coast and at key locations within Grays Harbor and Willapa Bay. In addition, all available observations of inundation from the 1964 Alaskan tsunami are shown.

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