

Modeling the historical tsunami in Puget Sound, Washington

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This study aims to reproduce and verify the tsunami that occurred 1100 years ago in Puget Sound, Washington reported by recent paleoseismological and geological studies, using a finite difference model based on nonlinear shallow water theory. The study estimates tsunami height, extent of inundation zone, and current velocity at Cultus Bay, where the tsunami deposit was found, considering the late Holocene sea level and tidal range in Puget Sound. The model results, with the assumption of late Holocene Mean High Water (1.2 m above MSL) as the background water level, demonstrate that the tsunami penetrated through the marsh of Cultus Bay to deposit the sand.