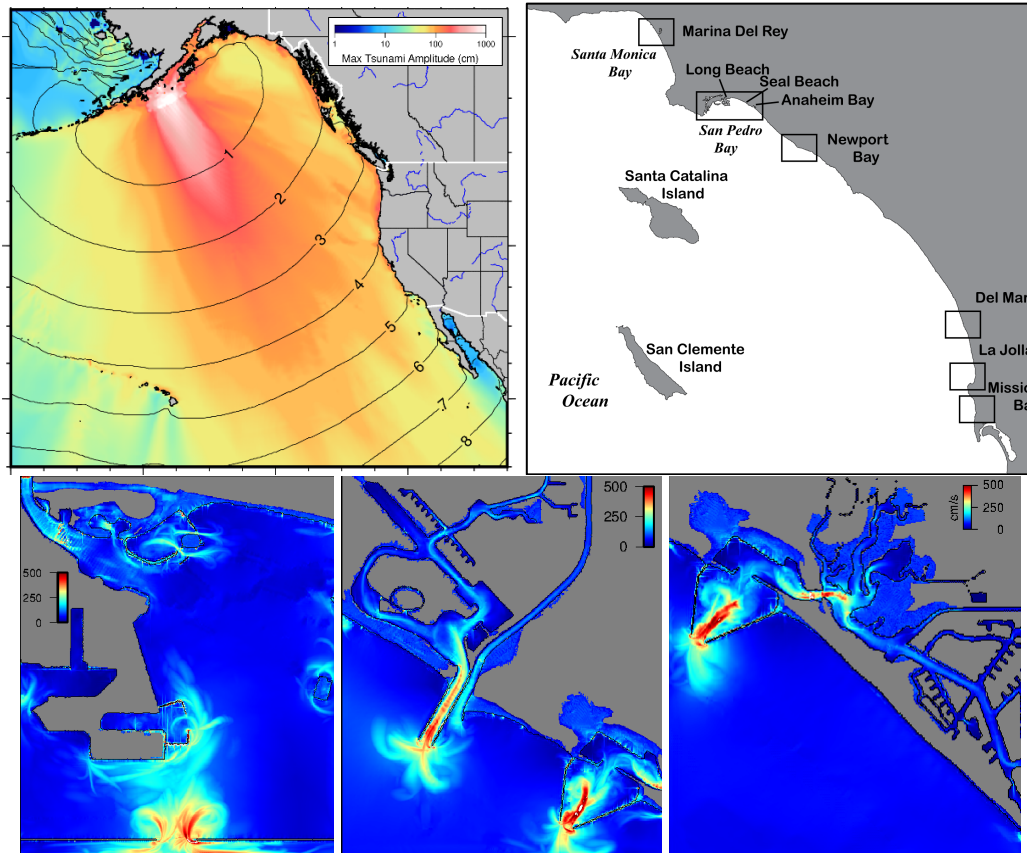


TSUNAMI HAZARD IN SOUTHERN CALIFORNIA FROM SOURCES IN THE ALEUTIAN ISLANDS

SOUTHERN CALIFORNIA, USA



(top left) Maximum computed tsunami height in the NW Pacific from the design scenario event. **(top right)** Areas that were modelled in detail. **(bottom)** Modelled maximum tsunami current speeds at maritime and port facilities in Los Angeles.

PROJECT INFORMATION:

Location: Southern California, USA

Client: US Geological Survey

Project Date: 2013

SCOPE OF WORK:

- Review of historical tsunami events
- Tsunami source characterization
- High resolution numerical modelling of tsunami inundation and currents

PROJECT DESCRIPTION:

ORCAS Director Dr. Jose Borrero took part in the US Geological Survey's (USGS) SAFRR (Science Application for Risk Reduction) Multi-Hazards Demonstration Project. The objective of the study was to describe in detail, and using the best available science, the effects of a hypothetical, but possible, large tsunami generated by a magnitude 9.0 earthquake in the eastern Aleutian Islands on the coast and infrastructure of Southern California. The earthquake scenario was defined to occur at 11:50 am PDT (10:50 am Alaska time) on Thursday, March 27th, 2014, the 50th anniversary of the great 1964 Alaska earthquake which generated California's most destructive tsunami in recorded history. The model results will be used to help educate emergency responders as well as port officials and engineers to better understand the potential impact of this type of event and will also be disseminated through a wide variety of media outlets and formats as educational material and experiences for the public.

Study sites for this project included Marina del Rey, the ports area of San Pedro Bay (Long Beach, Seal Beach, Alamitos Bay and Anaheim Bay), Newport Bay, Del Mar, La Jolla and Mission Bay. Tsunami waves from the tsunami source begin to affect the southern California coast in approximately 6 hours with the largest wave occurring within the first hour of the tsunami event. At sites in Santa Monica and San Pedro Bays, there is a resurgence in the tsunami energy that occurs approximately 4.5 to 7 hours after the tsunami first arrival. This resurgence is evident at the other sites; however, it is not as big nor as long lasting as in Santa Monica or San Pedro Bays. Overall, the strongest tsunami effects were seen to occur in San Pedro Bay, an area that coincides with some of the most significant developments in terms of infrastructure. Thus, the strongest tsunami effects affect an area most vital to commerce and economics in Southern California.