

NTHMP – USGS Collaboration

Assistance in Developing Consistent Tsunami Sources Nationally

National Academy of Science Recommendation: NTHMP should reduce unnecessary and costly disparities in inundation modeling approaches among states and territories. NTHMP should conduct modeling efforts consistently across political boundaries and execute efforts through a cooperative partnership among NOAA, USGS, and NTHMP members .

* tsunami sources are an important area where USGS can help provide support/guidance.

Tsunami Sources Presently Used by States and Territories

Hawaii

1946 Aleutian, 1952 Kachatka, 1957 Aleutian, 1960 Chile, and 1964 Alaska earthquakes
M9.4 and M9.6 hypothetical Aleutian earthquakes with 35 m average slip.

American Samoa

2009 Samoa tsunami

Hypothetical tsunami from Tonga Trench modeled after the 2011 Tohoku tsunami.

East Coast

Biggest source is Cumbre Vieja volcanic cone collapse, Canary Islands.

Distant seismic sources and local landslide sources also used everywhere on the coast, but Cumbre Vieja event overwhelms these scenarios almost everywhere.

Gulf of Mexico

Local landslide sources around Gulf of Mexico: East Breaks (15k years old), Mississippi Canyon, 7k years old, West Florida Margin (early Holocene: 11k to 8k). Other LS sources considered.

California

M9 Cascadia (17m slip) for north coast local source

M9.2 Aleutians (25m slip), M9.5 northern Chile (25m slip), and dozen other local/distant scenarios for central and southern state

Tsunami Sources Presently Used by States and Territories

Alaska

M9.2-9.1 Alaska tectonic source with up to a 25-40m maximum slip, a SAFRR-type event with up to a 50-60m slip near the trench

Landslide sources in areas where applicable

Oregon

M9.1 Cascadia (41 m peak slip) as maximum local source scenario

M9.2 Alaska-Aleutians (30 m peak slip) as maximum distant source scenario

Washington

M9.1 Cascadia as maximum local source scenario

M9.2 Alaska-Aleutians as maximum distant source scenario

M7.4 Seattle fault with about 6-7m of uplift

Puerto Rico and Virgin Islands

M8-9 on local Puerto Rico trench

M7.5-8.0 events in extension zones in Mona Canyon and the Anegada passage, those were the ones that generated tsunami in the past. And to the south the Muertos trench.

Guam and CNMI

Large magnitude events on local subduction zones

Emergency Management and Evacuation Maps

- Local entities (cities/counties) have ultimate responsibility and decision making for evacuation planning
- States/Territories provide input to local entities through consistent state-wide hazard analysis and guidance on evacuation mapping and planning
- States/Territories work together through NTHMP to try to create consistency hazard analysis products across state boundaries
- No definition or oversight exists for maximum expected or probable event for use in evacuation planning

Potential Areas of Collaboration/Assistance

NTHMP subcommittees will work on a statement of cooperation requesting assistance. As an overview, this is where a USGS “working group” can help:

- **Individual consultation with state/territories and a consistent national approach to source identification and review**
 - What is the maximum event states should plan for?
 - How can consistency in source characterization be achieved?
- **Update of TWC forecasting source database to better align with SLAB1.0 and identify other potential sources**
- **Working towards probabilistic characterization of sources for multiple uses (building codes, land-use planning, and evacuation planning)**