Development of “MES Guideline for Maritime Tsunami Mapping"

Tuesday, 10:55-11:10 AM

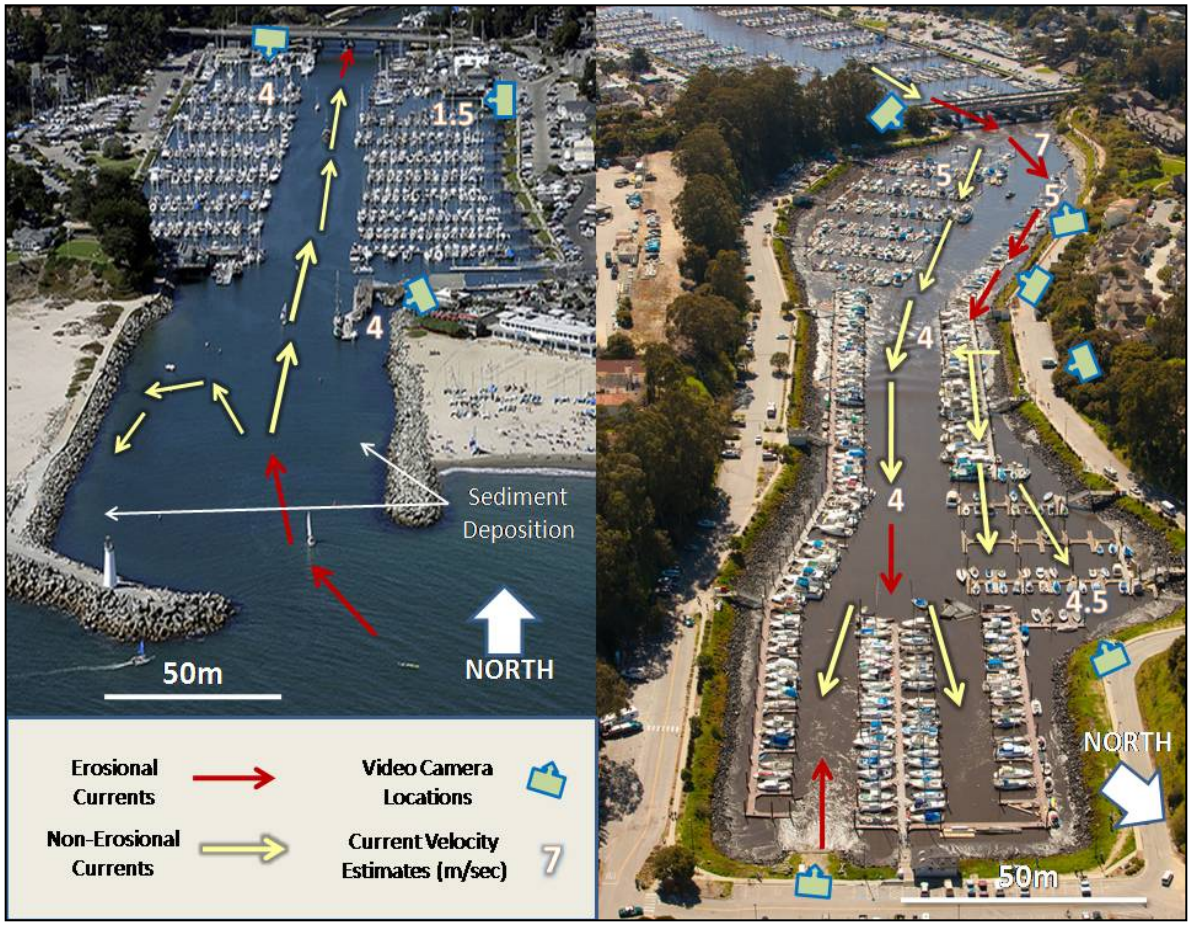
Guidelines and Best Practices for Tsunami Hazard Analysis, Planning, and Preparedness for Maritime Communities

- Tsunami hazard analysis, modeling, and mapping (MMS) – Draft 8/14
- Tsunami response, preparedness, and education (MES and WCS)
- Tsunami mitigation and recovery (MMS and MES)

Potential Maritime Map Products:

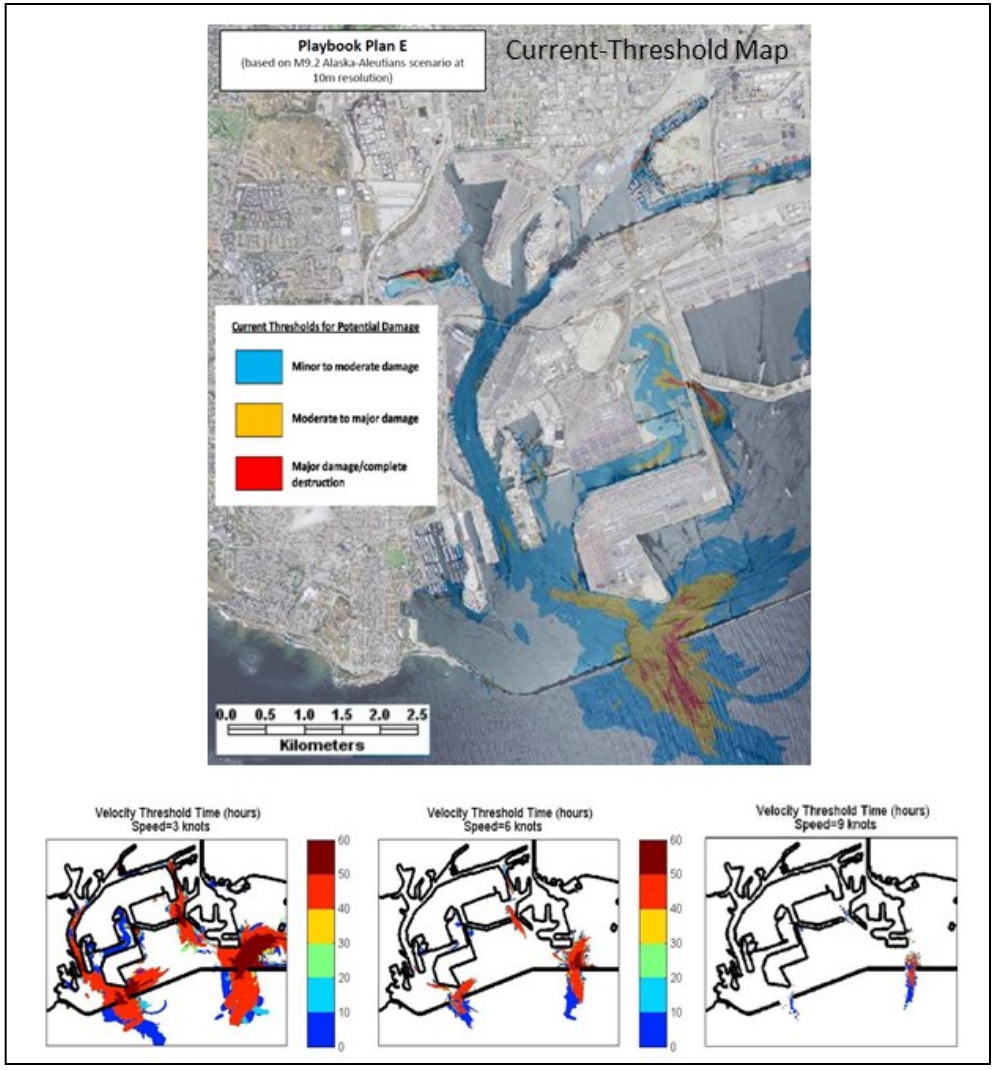
1. Past tsunami damage and strong currents
2. Tsunami current velocities and relationship to damage
3. Peak-to-trough water-level fluctuations
4. Bores or amplified waves
5. Length of time damaging currents are active
6. Safe offshore depth

1. Past tsunami damage and strong currents (observed)



Location of strong and erosional currents inside Santa Cruz Harbor during the 2011 Japan tsunami (from Wilson and others, 2012a).

2. Tsunami current velocities and relationship to damage (modeled)

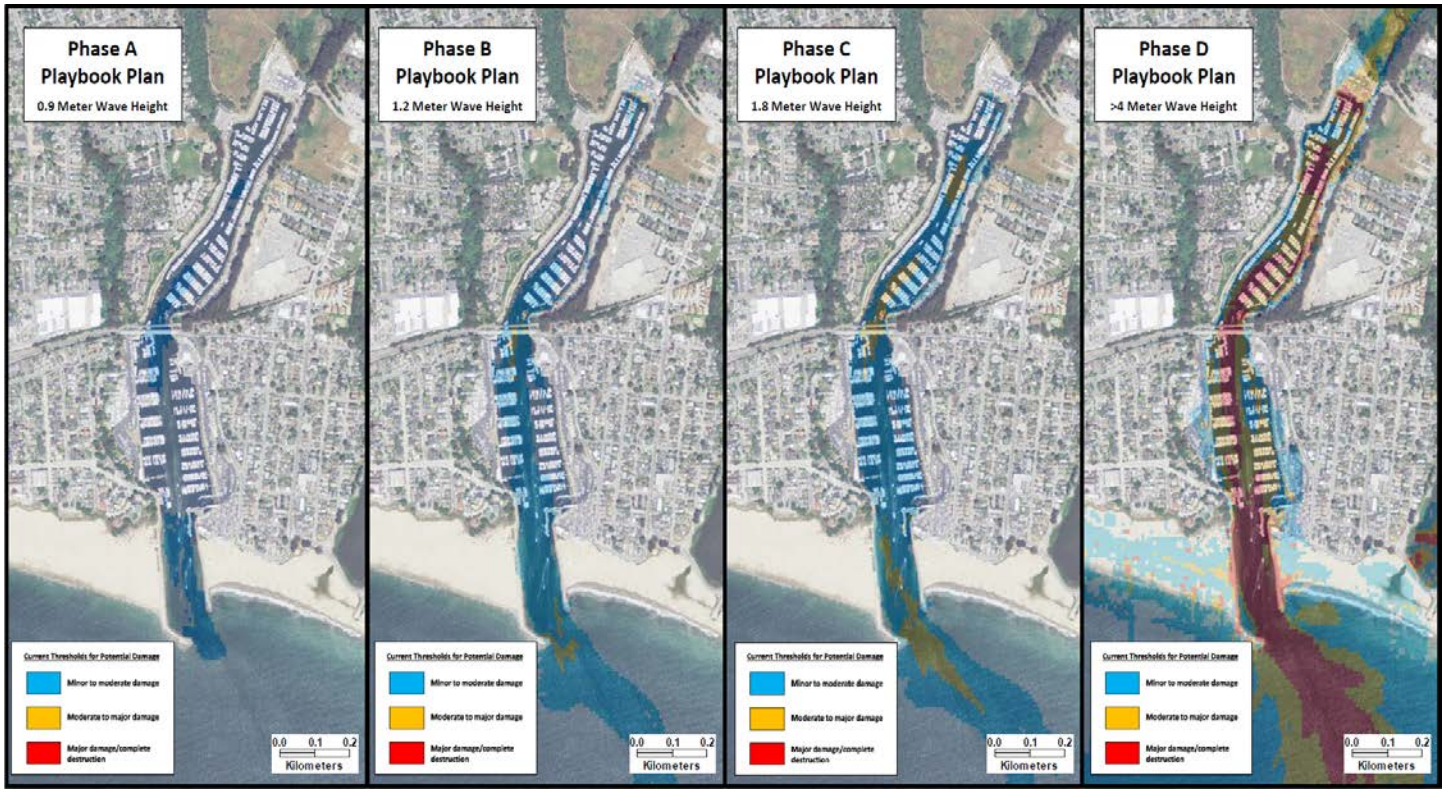


Example of current velocity-damage threshold map (3/6/9 knots), and time-threshold maps for each of the current-damage thresholds in the Port of Los Angeles (from Tsunami Planning Playbook for Port of Los Angeles, 2014).

Current Thresholds for Potential Damage

- Minor to moderate damage
- Moderate to major damage
- Major damage/complete destruction

3. Peak-to-trough water-level fluctuations

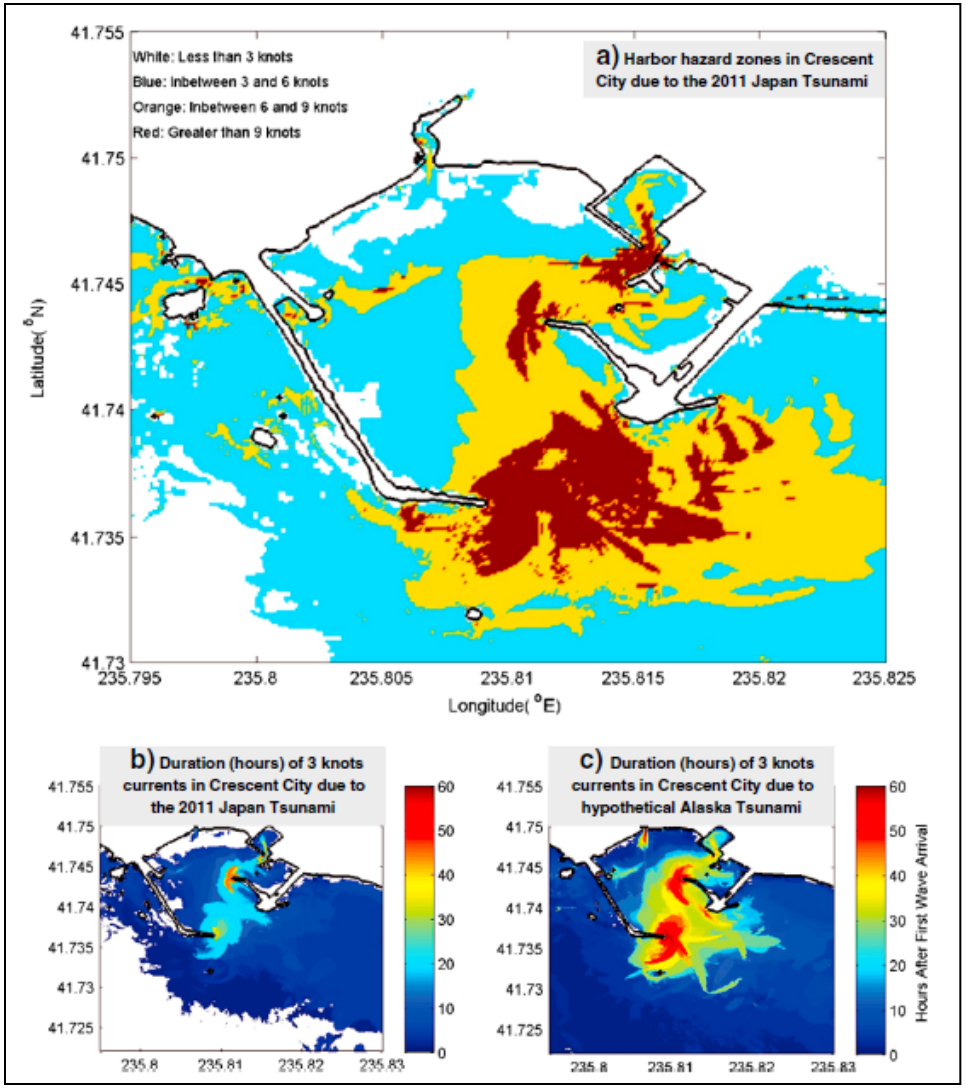


Example maps from Santa Cruz Harbor showing potential damage based on strong currents generated by a tsunamis of different amplitudes (Tsunami Planning Playbook for Santa Cruz Harbor, 2014).

4. Bores or amplified waves

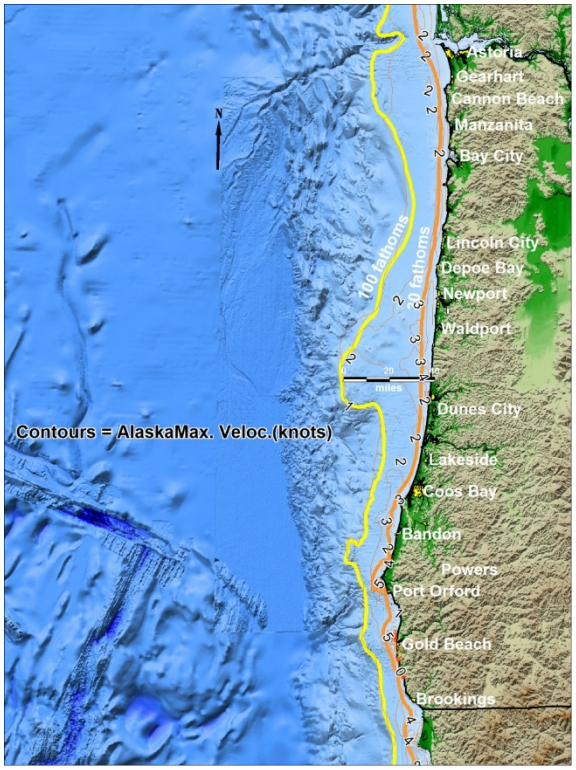
Photo showing one of several single, amplified waves that entered into the back half of Santa Cruz Harbor, causing damage to a number of docks and boats (from Wilson and others, 2012a).

5. Length of time damaging currents are active

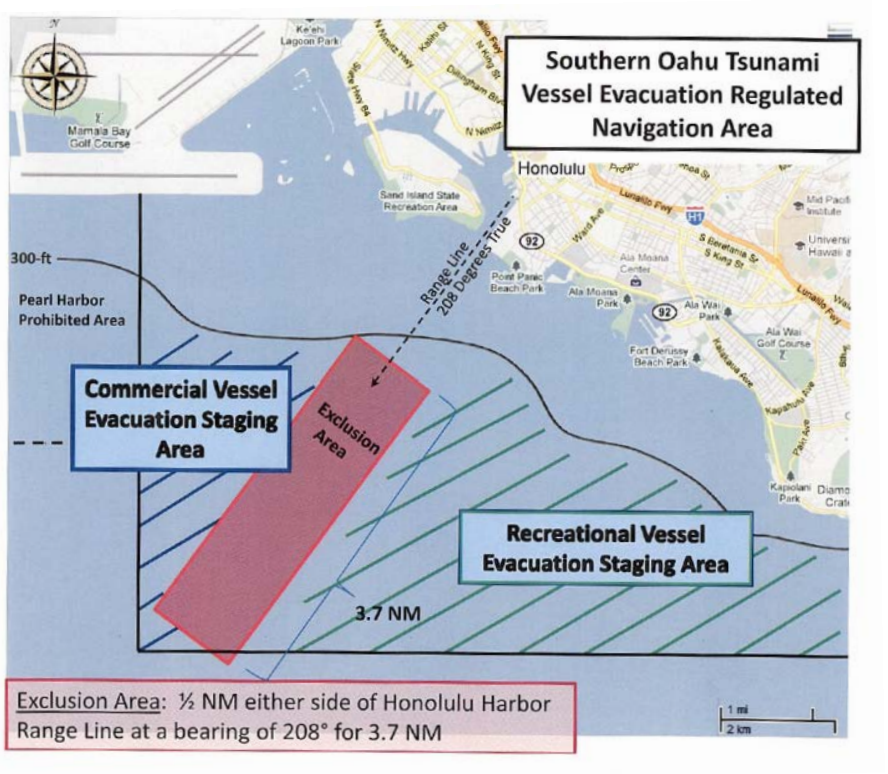


Example of the current speed hazard zones for 3/6/9 knot zonation, and time-threshold maps for two different sources in Crescent City Harbor (from Lynett and others, 2013).

6. Safe offshore depth



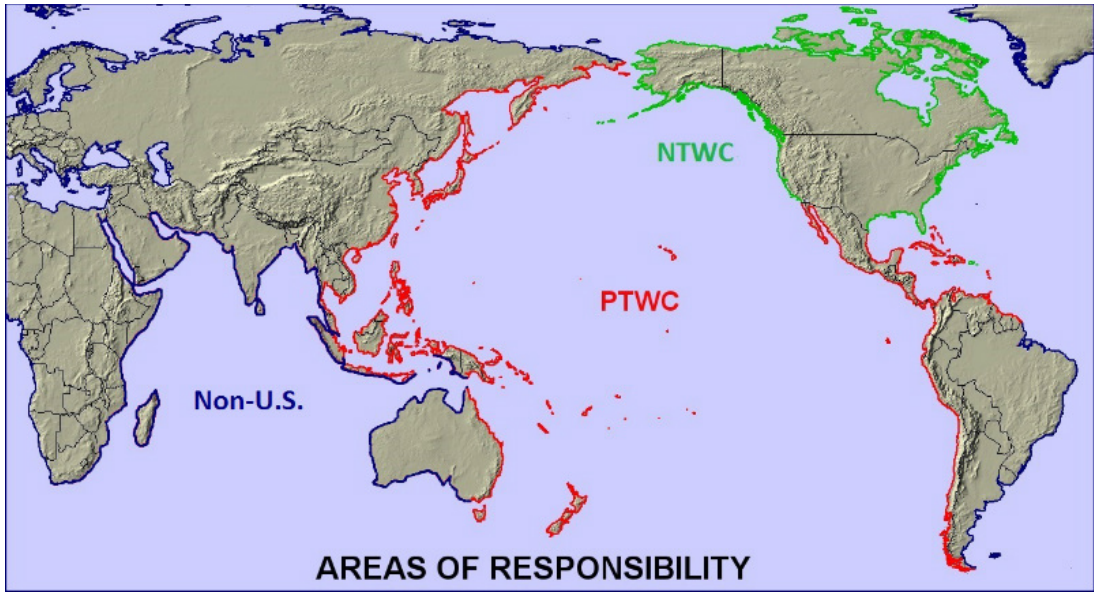
Maximum tsunami current maps for a modeled large Alaska scenario (Oregon MAC, 2013).



Map showing maritime evacuation plan for vessels in the port at southern Oahu (from Coast Guard, 2013).

Guidelines for developing products with consistent look/feel across states & territories:

1. West Coast (California, Oregon, Washington)
2. Hawaii / Pacific
3. Alaska
4. Caribbean
5. East Coast
6. Gulf Coast



Offshore Safe Depth considerations

Offshore maritime depth recommendation presented at the summer meeting was 30 fathoms for distant tsunamis, 100 for near-source tsunamis.

- Number of states still wanted to evaluate the offshore depth recommendation and those states and territories still evaluating plan to plan to report at the NTHMP annual meeting.
- Need to get input from the Navy and Coast Guard.
- A work group convened to develop a plan for the timing of data coming forward for an official national recommendation. Discuss it at the annual meeting and request a vote at that time.
- NTWC/PTWC: would be very beneficial to have one number for the whole coast. Encourage to frame this for the recommended depth nationally for what to use. Unless there was some compelling reason to have a variance, everyone should be the same.
- Issue in Washington is not that 30 fathoms isn't the right number, but 30 fathoms is not available where they have boats afloat, such as state ferries. Recommendation should really be for only open coastal sites, but not for inland waterways like the Puget Sound.
- Those numbers are problematic for the East Coast.