• Tsunami Evacuation Wayfinding
  – Up and out wayfinding research
  – Large format evacuation map signs
  – Cannon Beach pilot project
  – Blue line project

• 2016 Oregon Tsunami Conference
• DarkHorse tsunami comic book
• Tsunami evacuation drill guidance
• Hospitality outreach
Maritime Guidance for Distant Source Tsunami Events

Ports of Newport and Toledo
Lincoln County, Oregon

Oregon Maritime Tsunami Response Guidance (MTRG) No. 2015-OR-01

Maritime response guidance in this document is based on anticipated effects of a maximum-considered distant tsunami event, scenario AKmax of the Oregon Department of Geology and Mineral Industries (see www.oregon tsunami.org for more information on this scenario). Smaller distant source tsunamis will occur more commonly and are likely to cause significantly less damage than this maximum considered scenario. Check with local authorities for more specific guidance that may be appropriate for smaller distant tsunami events.

NOTABLE HISTORICAL TSUNAMIS IN NEWPORT AREA

The table provides basic information about historical tsunami events; very minor tsunamis are not shown. The largest, most damaging distant-source tsunamis in Newport area have come from large earthquakes in the Alaska-Aleutian Islands region. The peak amplitude and damage information may help provide port authorities background for comparing future Advisory and Warning level tsunamis in the area. For example, the 2011 Japan tsunami may provide a threshold for no damage occurring below a forecast amplitude (wave height) of 0.43 m (1.4 ft).

<table>
<thead>
<tr>
<th>Location</th>
<th>Event</th>
<th>Peak Amplitude Observed</th>
<th>NTWC Tsunami Alert Level Assigned</th>
<th>Tides During First 5 Hours</th>
<th>Damage Summary</th>
</tr>
</thead>
<tbody>
<tr>
<td>Newport area</td>
<td>1964 M9.2 Alaska</td>
<td>3.5, 11.5</td>
<td>Warning</td>
<td>High*</td>
<td>light damage to ships and docks*</td>
</tr>
<tr>
<td>South Beach</td>
<td>2009 M8.0 Samoa</td>
<td>0.08, 0.3</td>
<td>Advisory**</td>
<td>High</td>
<td>no damage reported</td>
</tr>
<tr>
<td>South Beach</td>
<td>2010 M8.8 Chile</td>
<td>0.16, 0.5</td>
<td>Advisory**</td>
<td>Low</td>
<td>no damage reported</td>
</tr>
<tr>
<td>South Beach</td>
<td>2006 M8.3 Kuril</td>
<td>0.17, 0.6</td>
<td>—</td>
<td>Low</td>
<td>no damage reported</td>
</tr>
<tr>
<td>South Beach</td>
<td>2011 M9.0 Japan</td>
<td>0.43, 1.4</td>
<td>Warning***</td>
<td>Low</td>
<td>no damage reported</td>
</tr>
</tbody>
</table>

*Alaska 1964 arrival on PNW coast was at mean high water flood tide.
**2004 observation by ship captain Tony Thompson communicated February 19, 2015 to George Priest.
***Alert assigned by forecast OUTSIDE of bay.

Presented at the Annual Pacific Northwest Waterways Association Meeting (PNWA)
Current Benchmarking Workshop

Assess a model’s ability to accurately simulate commonly observed velocity patterns in field cases, including the vortex/eddy structure generated by shear instability and high velocity flows in the nearshore.

![Maps showing velocity patterns for different grid sizes: Δx=20m, Δx=10m, Δx=5m.](image)

Benchmarking a 3D unstructured-grid model for tsunami current modeling

Yinglong J. Zhang\textsuperscript{a1}, George Priest\textsuperscript{b}, Jonathan Allan\textsuperscript{b} and Laura Stimely\textsuperscript{b}
Tsunami Evacuation Modeling:
Seaside-Gearhart-Warrenton-Hammond

DOGAMI Open-File Report O-15-02, Local tsunami evacuation analysis of Seaside and Gearhart, Clatsop County, Oregon

This report evaluates the difficulty of pedestrian evacuation of Seaside and Gearhart, Oregon, in the event of a local tsunami generated by an earthquake on the Cascadia subduction zone (CSZ). The map plates depict minimum evacuation speed needed to stay ahead of the wave for three levels of increasing evacuation difficulty: 1) all bridges intact, 5-minute delay from start of earthquake before starting evacuation, 2) only retrofitted bridges intact, 5-minute delay, and 3) only retrofitted bridges intact, 10-minute delay.
BEAT THE WAVE
LOCAL TSUNAMI EVACUATION MAP
CANNON BEACH, OREGON (NORTH)

Map symbols:
- Evacuation flow zone & routes to safety
- Outside tsunami hazard area
- Outside tsunami hazard area, but not considered
- Bridge failure
- Assembly Area
- Building

START HERE:
1. Find the nearest road and color to your location.
   The farther you are from safety, the faster you have to go.
   DO NOT SLOW DOWN!

2. Maintain this speed until you reach the GREEN "OUTSIDE HAZARD AREA" zone.
3. Use evacuation flow zones and arrows to determine the fastest evacuation route.
4. If you can manage a clear and faster alternative route to safety, take it.
5. DO NOT DELAY, DO NOT SLOW DOWN!

This map assumes a 10 minute evacuation delay due to the earthquake.

This "Beat the Wave" local tsunami evacuation map was developed by OSU/OSRCE for the purpose of evaluating the fastest evacuation routes within the community as well as how quickly the public should move in the event of a tsunami evacuation. The map is based on the best available science at the time of publication and may be used to help guide the public out of harm's way. This map has been reviewed by the Oregon Tsunami Advisory Council, the Oregon Department of Transportation, the Oregon Department of Geology and Geophysical Research, and the Oregon Department of Emergency Management. Funding for this work was provided by the National Tsunami Hazard Mitigation Program (NTHMP).
Entering and Leaving Tsunami Hazard Signs

- 36 installed in early 2000 (now in wrong location) along HWY101;
- Finalized new sign locations;
- Held meeting with ODOT (northern OR coast region); Disseminated locations;
- ~100 new signs going in this year;
- $15k (NTHMP funds), ODOT labor/supplies ~$80k.