

# Puget Sound Tsunamis - A New Partnership to Model and Map the Hazard

## Who Would be Impacted?

- Shore-side Homes, Schools and Businesses
- Port, Harbors, and Marinas
- Transportation/Utility Lifelines and Facilities
- Coastal Ecosystems
- Toxic Waste Sites

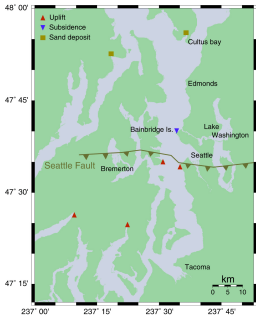
## Puget Sound Tsunami Model

Developers:  
Shun-ichi Koshimura\* and Harold Mofjeld

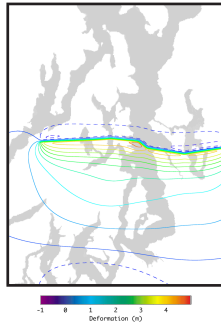
Center for Tsunami Inundation Modeling Efforts  
(Frank González and Vasily Titov, Co-Directors)  
NOAA/Pacific Marine Environmental Laboratory

\* also, Japan/JSPS

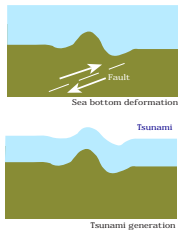
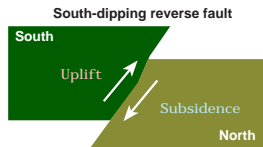
## Seattle Fault Source



Seattle Fault during a reverse thrust earthquake. Uplift occurs south of the fault and subsidence north of the fault



Initial pattern of vertical displacement resulting from a Magnitude Mw 7.6 earthquake on the Seattle Fault. The assumed tidal stage is mean sea level.



## Organizing Agencies

Washington State EMD and DNR  
NOAA/PMEL  
USGS  
FEMA

## Goals and Approach

Identify Vulnerable Areas Using Computer Models  
Estimate Maximum Credible Event Scenarios  
Develop GIS, HAZUS and Other Products

## The Next Step...

Puget Sound Tsunami/Landslide Workshop

January 23 - 24, 2001  
NOAA/Sand Point, Bldg. 9  
Seattle, WA

## Purposes:

Create additional partnerships to address tsunami and landslide hazards in the Puget Sound Region

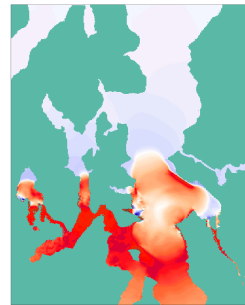
Develop an action plan to generate tsunami inundation maps and other mitigation products for Puget Sound communities

## Organizing Committee:

George Crawford (Washington EMD)  
G.Crawford@emd.wa.gov  
253 512-7067

Harold Mofjeld (NOAA/PMEL)  
mofjeld@pmel.noaa.gov  
206 526-6819

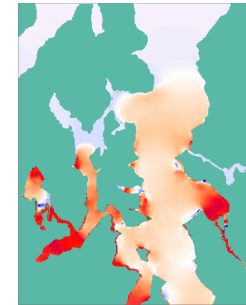
Craig Weaver (USGS/Project Impact)  
craig@geophys.washington.edu  
206 553-0627



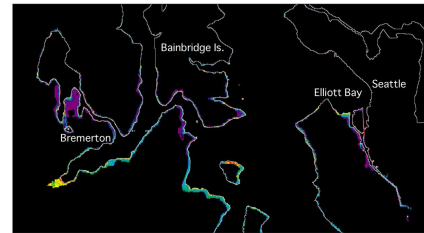
Wave pattern 2.5 minutes after the earthquake  
Elevated water levels: Red  
Lowered water levels: Blue



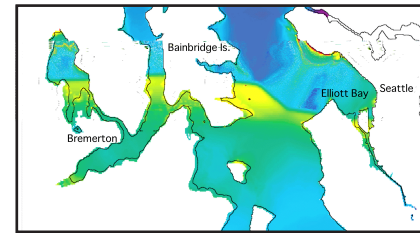
Wave pattern 5 minutes after the earthquake



Wave pattern 7.5 minutes after the earthquake



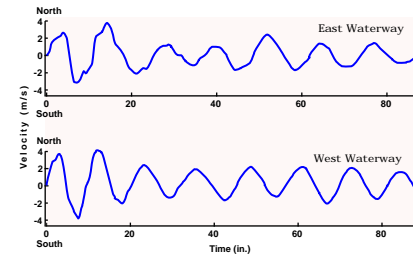
Maximum inundation Depths (meters)  
relative to the local land elevation



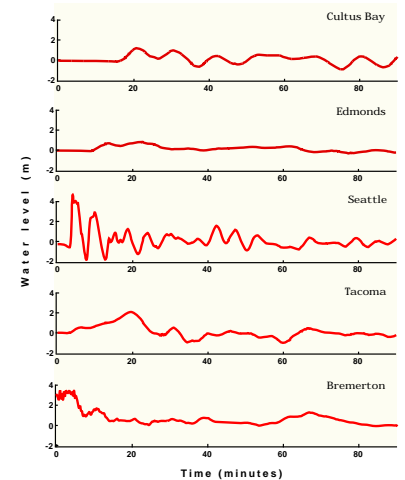
Maximum Wave Levels (meters)  
relative to mean sea level

## Model Extensions and Refinements

Fine-Resolution Sub-Models for Communities  
Additional Tsunami Sources (Planned)  
Landslide Sources of Tsunamis  
Bluff  
Submarine  
Other Earthquake Faults



Tsunami currents in the Duwamish Waterway  
(4 m/s = 8 knots)



Water levels at Selected Locations  
(4 m = 13 ft.)

