# 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**

Shun-ichi Koshimura\* and Harold Mofjeld

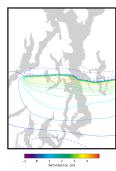
Center for Tsunami Inundation Modeling Efforts (Frank González and Vasily Titov, Co-Directors) NOAA/Pacific Marine Environmental Laboratory

\* also, Japan/JSPS

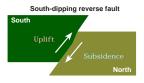
### **Seattle Fault Source**

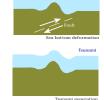


Seattle Fault during a reverse thrust earthquake. Uplift occurs south of the fault and subsidence north of the fault



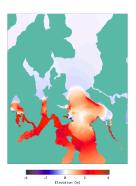
Initial pattern of vertical displacement resulting from a Magnitude Mw 7.6 earthquake on the Seattle Fault. The ed tidal stage is mean sea level



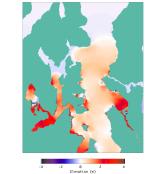


### **Organizing Agencies**

Washington State EMD and DNR NOAA/PMEL **USGS FEMA** 



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



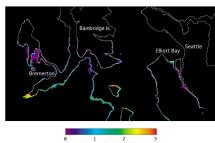
Goals and Approach

Develop GIS, HAZUS and Other Products

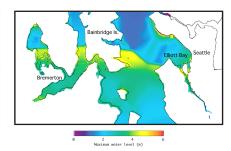
**Identify Vulnerable Areas Using Computer Models** 

**Estimate Maximum Credible Event Scenarios** 

Wave pattern 5 minutes after the earthquake Wave pattern 7.5 minutes after the earthquake



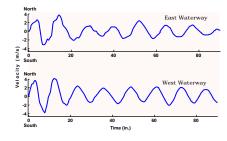
Maximum Inundation Depths (meters) relative to the local land elevation



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)

### 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** 

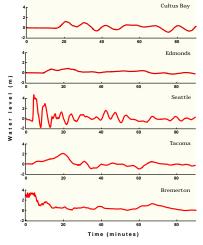
Develop an action plan to generate tsunami inundation maps and other mitigation products for Puget Sound communities

# Organizing Committee:

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

