Tsunami!
Are you Prepared?

"People rush to beaches and wharves for a good view of the expected tidal wave."

"I'll never get a shot like this again!"
Tsunami!
Local Tsunami from Cascadia Earthquake

Earthquake starts tsunami

Overriding Plate

Dowgoing Plate

Stuck area ruptures, releasing energy in an earthquake
How do we know?

Evidence of Cascadia earthquakes: Land-level changes

Dead forest along the Copalis river in western Washington.
How do we know?
Evidence of past tsunamis: Sand deposits

Time series: Aerial view

Before tsunami

Tsunami inundates land and goes upstream

Sand deposits left by tsunami

Tsunami sands

A.D. 1700 ground surface

Subsided marsh along the Niawiakum River, southwest Washington
Local (Cascadia) Tsunami

Waves & Surges

Arrive in 25+ minutes

Continue 10-12+ hours

Back & Forth
The Destructive Surge

TSUNAMI SURGE
Fires

Debris

Inundation of coastal communities with strong currents

Buildings Destroyed
Communication Outages
How will the community be notified?

• Natural cues are the warning notification!
  ➢ What are the Natural cues?

• Your Actions:
  ➢ Drop, Cover and Hold – Head to high ground
    ✔ Do not Drive – WALK!
• 7 Day Forecast
• Watches/Warnings/Advisories
• Hourly Weather Conditions
• Climate and River Information
• Warnings broadcast 24 hours/Day
• Used to Activate EAS for Weather Events that are life threatening
Scheduled Tests

- Weekly - Wednesdays (11am – Noon)
- Monthly
- Annually - in coordination with the Emergency Alert System (EAS) committee.
**Weather/Hydrologic Warning Levels**

- **Warning:** A warning is issued when a hazardous weather or hydrologic event is occurring, imminent or likely. A warning means weather conditions pose a threat to life or property. People in the path of the storm need to take protective action.

- **Watch:** A watch is used when the risk of a hazardous weather or hydrologic event has increased significantly, but its occurrence, location or timing is still uncertain.

- **Advisory:** An advisory is issued when a hazardous weather or hydrologic event is occurring, imminent or likely. Advisories are for less serious conditions than warnings.

You need to take protective action! Poses a threat to life or property.

Have a plan of action and listen for more information.

Could lead to situations that may threaten life or property.
Tsunami Warning Levels

**Warning** – Initially based solely on seismic data, are issued as quickly as possible indicating that a significant inundation may occur.

**Advisory** – Indicates potential beach and harbor danger; significant widespread inundation is not expected.

**Watch** – Tells communities that a potentially dangerous distant event has occurred and to be alert for more information.

**Information Statement** – Issued to reassure those experiencing an earthquake that conditions do not warrant tsunami generation.

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National Tsunami Warning Center [http://wcatwc.arh.noaa.gov/](http://wcatwc.arh.noaa.gov/)
Escape the Tsunami

- Tsunami zones
- Evacuation Routes
- Assembly Areas

Learn

Practice

- Go on Foot
- Assist Others
- Consider Options
Know the community Tsunami Hazard Zone and have a Tsunami Evacuation Map

“Local tsunami evacuation maps developed from inundation modeling, mapping, and community input”
Local Event – WALK!
Don’t Give Up!

Issues:
• No high ground exists
• No time to go inland to high ground
• Special needs populations

Solutions:
• Vertical evacuation
• Vertical evacuation refuge

www.facebook.com/ProjectSafeHaven
Identify High Ground

- Signs
- Evacuation Routes
- Safe Areas
  - Assembly Areas
  - Vertical Evacuation Options

Don’t forget to grab your emergency kit
Practice

Go On Foot ➔ Assist Others ➔ Consider Options
The Discipline to STAY PUT!

WHEN DO YOU RETURN to the Tsunami Hazard Zone?
Cancellation versus All-Clear

Cancellation Message

- Issued by TWCs
- Cancels warning, watch, and advisory messages
- Means that destructive waves have stopped
- Does NOT mean it is safe to return to Tsunami Hazard Zone
All-Clear

- Issued by LOCAL AUTHORITY
- Issued when it is SAFE to re-enter the Tsunami Hazard Zone
Washington’s Distant Tsunami Hazard Source

Due to the various tsunami sources along the “Ring of Fire”, distant source tsunamis are more frequent than local source tsunamis.
**TSUNAMI ALERTS**

[Image of information chart]

**Warning**
- Danger!
- Run to higher ground.
- Follow emergency instructions.

**Advisory**
- Possible strong and dangerous currents.
- Be prepared to take action.

**Watch**
- Potential danger.
- Be alert, listen to your radio.

**Information Statement**
- For information only, no tsunami generated.

[Website: www.emd.wa.gov]
Distant Tsunami Notification

Mass Notification Systems

Social Media

NOAA Alert Radio

TV/Radio

AHAB RADIO
Re-entry
After a Distant Tsunami

• **ALL CLEAR**

• Re-enter with Caution

• Damage
  – Harbors
  – Beaches
  – Low-lying areas
  – Roads, Bridges

• Clean up
SHOULD ANYONE DIE FROM A DISTANT TSUNAMI?

NO