

# *Earthquake Preparedness and School Emergency Management*

**U.S. Department of Education  
Office of Safe and Healthy Students  
Readiness and Emergency Management for Schools (REMS)  
Technical Assistance (TA) Center**

# ***Earthquake Preparedness and School Emergency Management***



**8:30 AM – 8:45 AM**

**Introductions, Housekeeping, Agenda**

**8:45 AM – 9:45 AM**

**Earthquakes in the Pacific Northwest**

**9:45 AM – 10:45 AM**

**Prevention & Mitigation Measures**

**10:45 AM – 11:00 AM**

**Break!**

**11:00 AM – 12:30 PM**

**Preparedness Strategies**

**12:30 PM – 1:30 PM**

**Lunch!**

**1:30 PM – 2:30 PM**

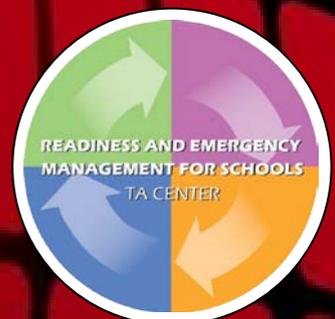
**Response Protocols**

**2:30 PM – 3:15 PM**

**Recovery Phase**

**3:15 PM – 3:30 PM**

**Conclusion, Session Evaluation**



# Preparing for Earthquakes within the Framework of Emergency Management



- **Earthquake Hazards**

Consider the risks and implications of a *Cascadia Subduction Zone* Earthquake to our schools, students, and staff.

- **Prevention-Mitigation**

Identify measures to take in advance of an earthquake to eliminate and/or reduce the loss of life and property at our schools.

- **Preparedness**

Explore how schools and community partners can work together to customize plans and implement training that prepare our schools for an earthquake.

- **Response**

Put your plans into action to efficiently and effectively respond to an earthquake and provide for the immediate needs of students and staff.

- **Recovery**

Team with community partners to restore a healthy and safe learning environment and assist students and staff in the healing process following an earthquake.



Volcanic  
Landslides and  
Debris flows  
Winter  
Tornadoes  
Apocalyptic  
Tropical  
Cyclones





# Earthquakes in the Pacific Northwest

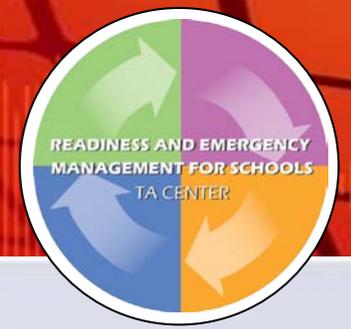
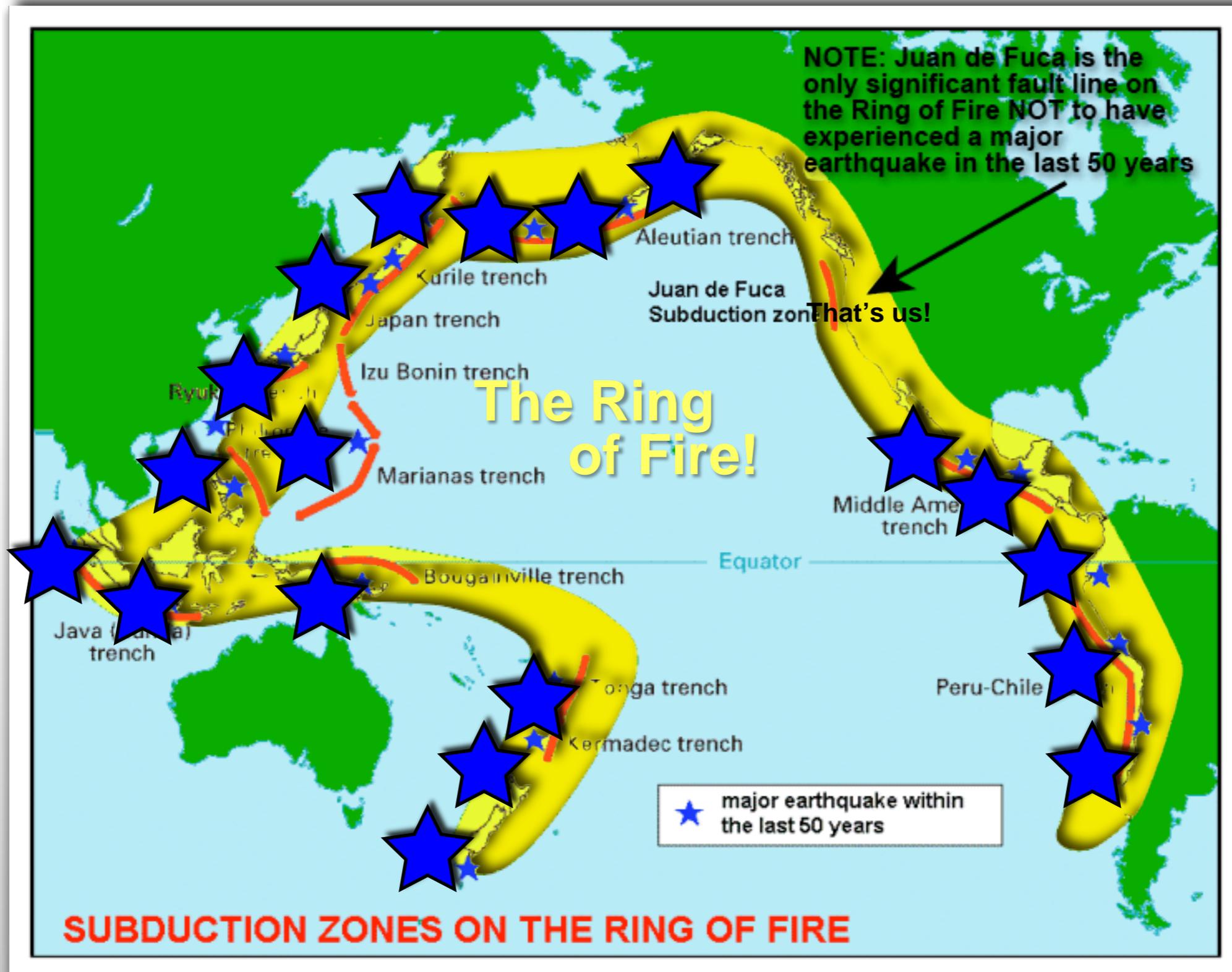
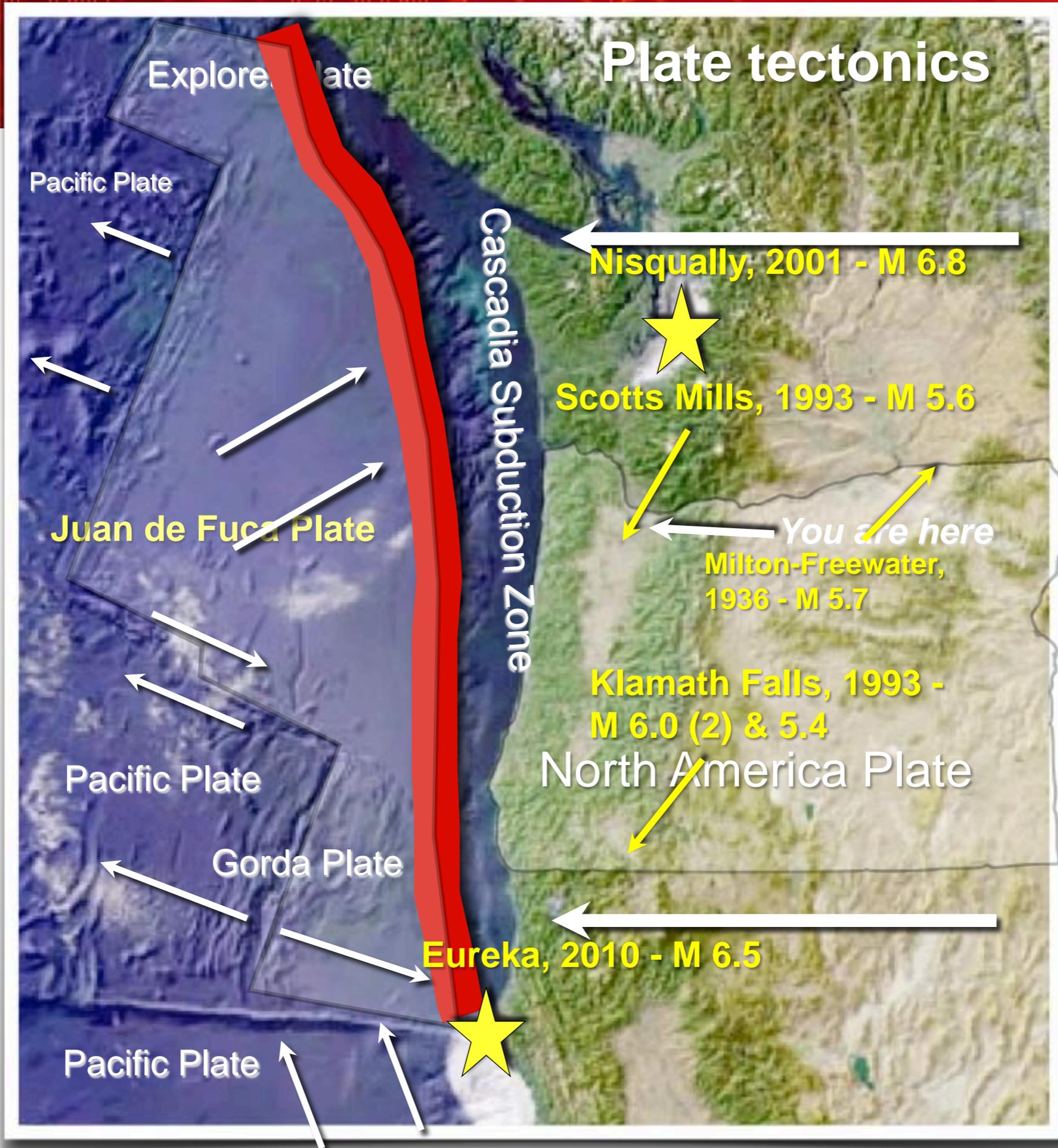


Photo courtesy of Dr. Robert Butler, University of Portland

# Earthquakes in the Pacific Northwest





## Recurrence Interval

*20 times over the  
last 10,000 years*

*30 - 40 times over  
the last 10,000 years*

*Another 10 - 20  
times over the last  
10,000 years*

Juan de Fuca Plate

**Dr. Chris Goldfinger,  
College of Oceanic and Atmospheric Sciences, OSU**

# Cascadia Subduction Zone Earthquakes



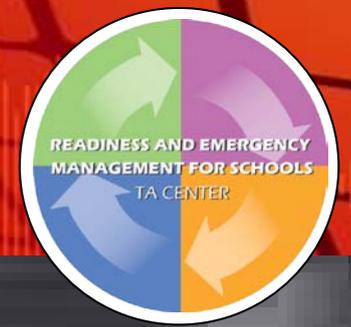
**Can last up to  
five minutes.**

# Cascadia Subduction Zone Earthquakes



Let's clap for Cascadia!





It will simultaneously affect  
**13 million**  
**PEOPLE**

**You will be the first responders.**



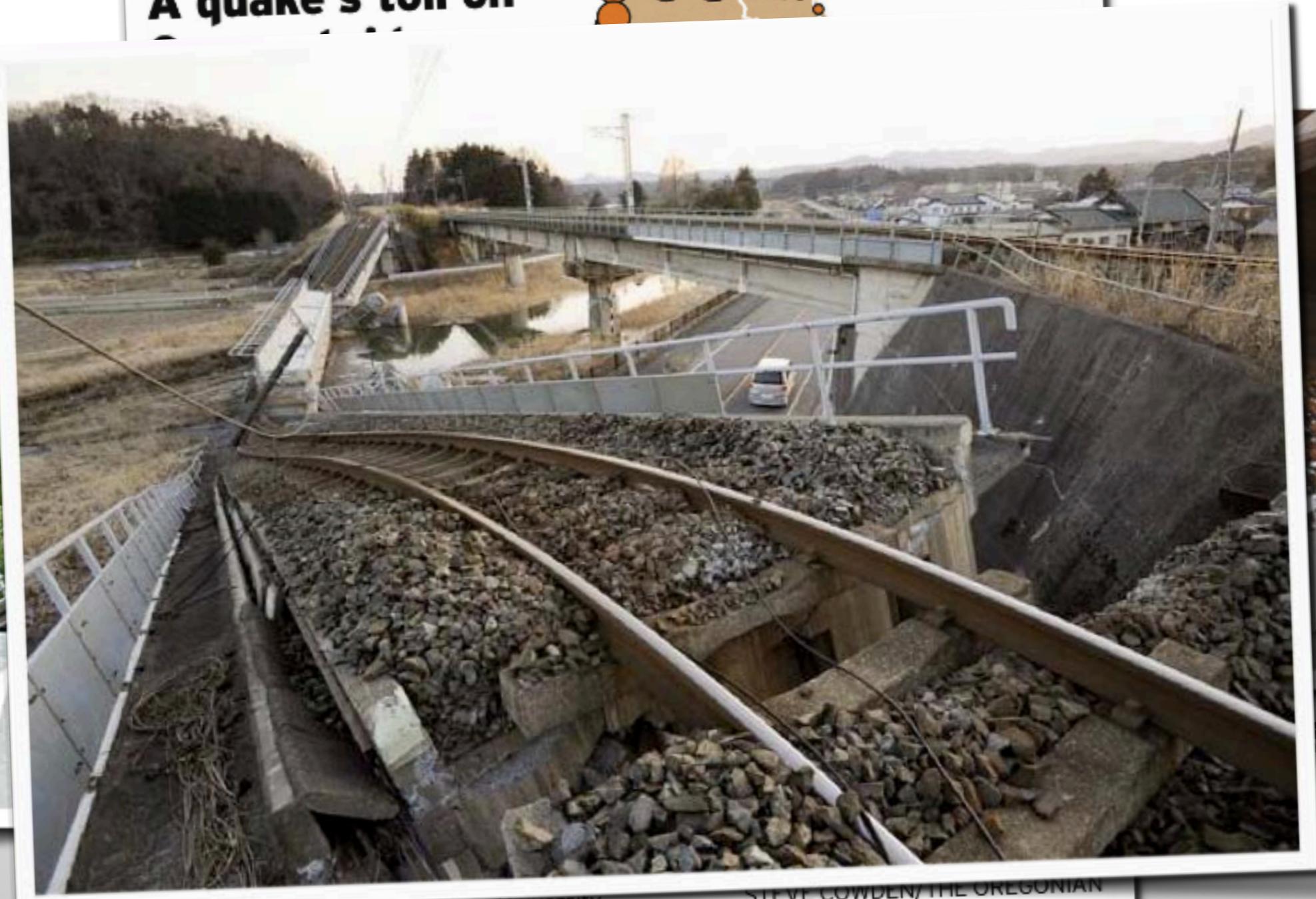
# Cascadia Subduction Zone Earthquakes



A quake's toll on



Tr  
will



suffer

Transportation/Portland State University

STEVE COWDEN/ THE OREGONIAN

Photos courtesy of Japan Meteorological Agency

- **Water lines/ wastewater facilities will be damaged or destroyed.**



# Water Supply Challenges Following Earthquake



## Water/Wastewater Infrastructure Damage - Max

### Wastewater Facilities

- Complete
- Extensive
- Moderate

### Potable Water Supply

- Complete
- Extensive
- Moderate

This map shows an estimate of the damage to our water and wastewater infrastructure from a major *Cascadia Subduction Zone* earthquake.

# Infrastructure damage



- **Water lines/wastewater facilities**
- **Transportation corridors, including roads, bridges, rail lines and airports**
- **Food delivery to grocery stores**
- **Power generation disrupted**
- **Communications**
- **Natural gas lines and other fuels**

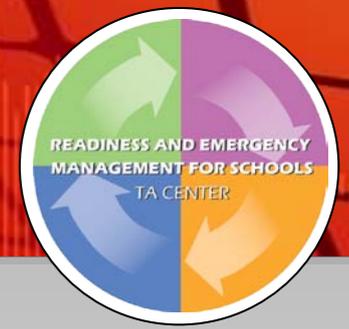


# Buildings Will be Damaged



- **Structural damage... especially to older, brick and mortar buildings.**

# Schools Will Have Damage



- **Non-structural damage**
- **Interior clean up (minimum)**
- **Inspection**
- **Many safety hazards**



# Shelter Needs are Immediate



- **Weather is major factor**
- **Length of time needed for shelter?**
- **Hypothermia is a significant risk**



# Tsunami at the Coast



Animation courtesy of [unclear]

# Tsunamis: Distant vs. Local



## *Distant Tsunami*

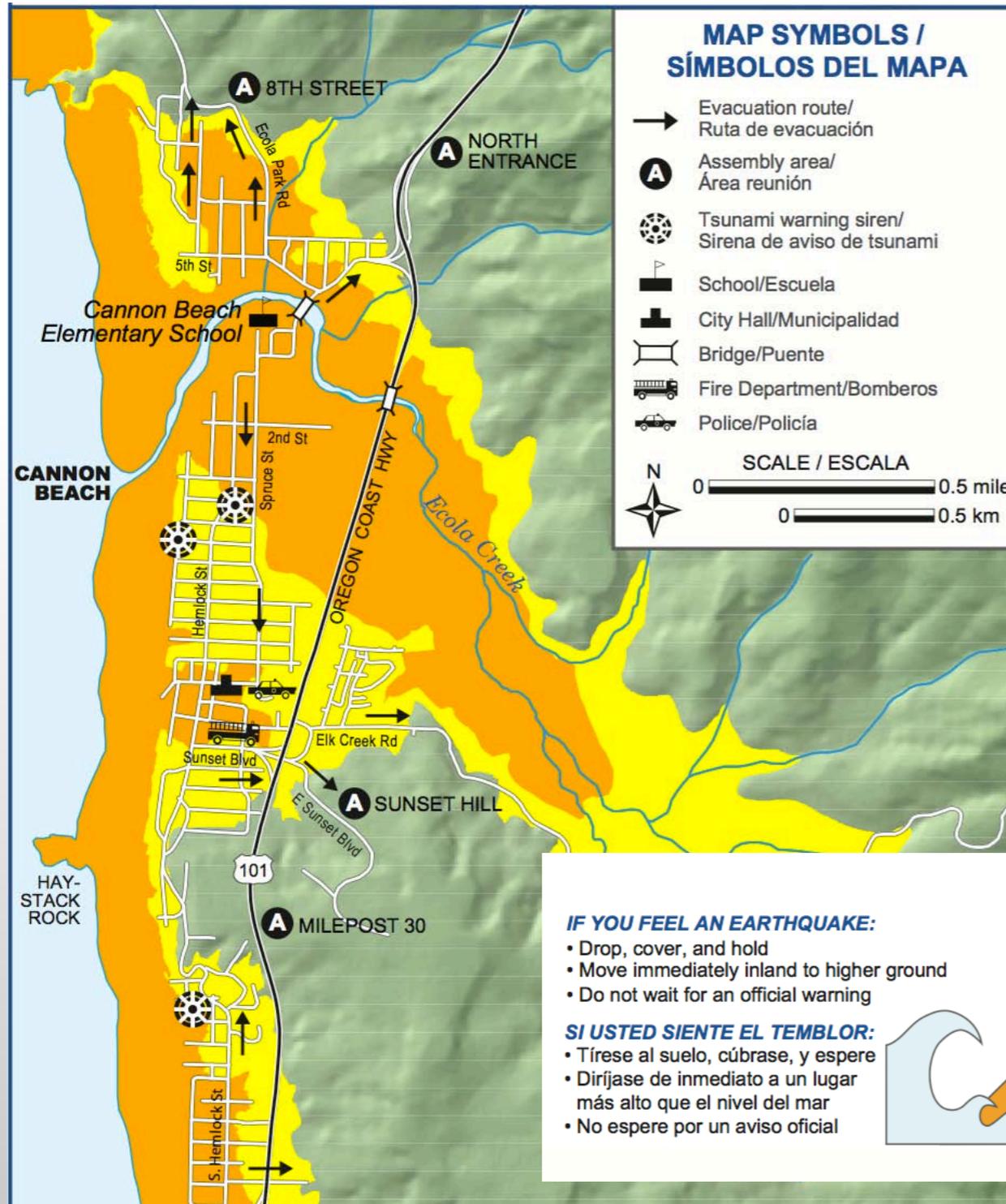
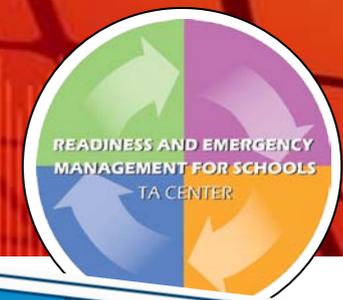
- Earthquake **FAR AWAY** from the Oregon Coast
- 1–4 + hours before waves arrive
- You **won't feel** the earthquake
  - NOAA Alert Radio
  - TV/Radio/Internet
  - Sirens
  - Text Messages/  
E-mail



## *Local Tsunami*

- Earthquake **NEAR** the Oregon Coast
- 10–20 minutes before waves arrive
- You **will feel** the earthquake – **THIS IS YOUR WARNING**

# Tsunami Evacuation Brochures

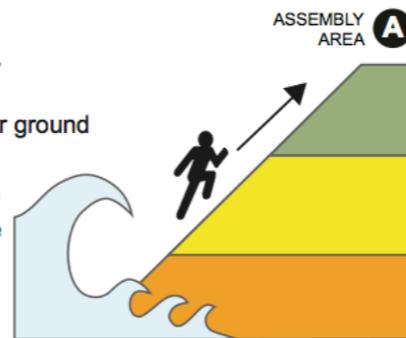


### IF YOU FEEL AN EARTHQUAKE:

- Drop, cover, and hold
- Move immediately inland to higher ground
- Do not wait for an official warning

### SI USTED SIENTE EL TEMBLOR:

- Tírese al suelo, cúbrase, y espere
- Diríjase de inmediato a un lugar más alto que el nivel del mar
- No espere por un aviso oficial



**OUTSIDE HAZARD AREA:** Evacuate to this area for all tsunami warnings or if you feel an earthquake.

**LOCAL CASCADIA EARTHQUAKE AND TSUNAMI:** Evacuation zone for a local tsunami from an earthquake at the Oregon coast.

**DISTANT TSUNAMI:** Evacuation zone for a distant tsunami from an earthquake far away from the Oregon coast.

**ZONA DE PELIGRO EXTERIOR:** Evacue a esta área para todas las advertencias del maremoto o si usted siente un temblor.

**MAREMOTO LOCAL (terremoto de Cascadia):** Zona de evacuación para un tsunami local de un temblor cerca de la costa de Oregon.

**MAREMOTO DISTANTE:** Zona de evacuación para un tsunami distante de un temblor lejos de la costa de Oregon.

# Aftershocks



- **Dozens of magnitude 6.0+ aftershocks in the 2 weeks following Japan's magnitude 9.0 earthquake.**





**We are the first generation in modern history that understands the risks and consequences of great Cascadia earthquakes.**

**How we prepare directly determines the quality of life we'll have after the earthquake is over.**



“Civilization exists by geological consent, subject to change without notice.”

Will Durant (1885 – 1981) American writer, historian, and philosopher