

Surviving a Cascadia Earthquake



Lori Dengler

Humboldt State University

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lori.dengler@humboldt.edu

The ground shaking story

- Effective Communication to promote action
- The Disaster Management Cycle and earthquake hazards
- Survival lessons from past North Coast earthquakes
- How a Cascadia quake will differ from historic quakes
- Seven steps
- Government responsibility
- Personal responsibility



Effective preparedness communication

- Keep messages positive
- Values-based messaging
 - Peace of mind
 - Accomplishment
 - Security
 - Happiness
- Consistent messages
- Repeated messages
- Credible sources
- Best currently available information
- Tailored to audience



2013 Seddon, New Zealand

The Disaster Management Cycle

Save lives
Reduce losses
Facilitate recovery
Promote resilience



Earthquake Hazards

Ground Shaking
Due to the passage of seismic waves

Fault Rupture
Permanent displacement of land on either side of fault

Uplift/subsidence
Permanent raising or lowering of the land

Natural hazard

↓
Landslides → **Tsunami Flooding**

Strong ground motion
Tree fall
Soil amplification
Liquefaction
Seiche

↓
Landslides
Differential settling
Amplify acceleration

↓
Tsunami Flooding
landslides

Human-caused hazard

Collapse of structures
Falling/moving objects
Fire
Contamination

Damage to infrastructure
Roads
Utilities
Communications
Medical-fire-public safety

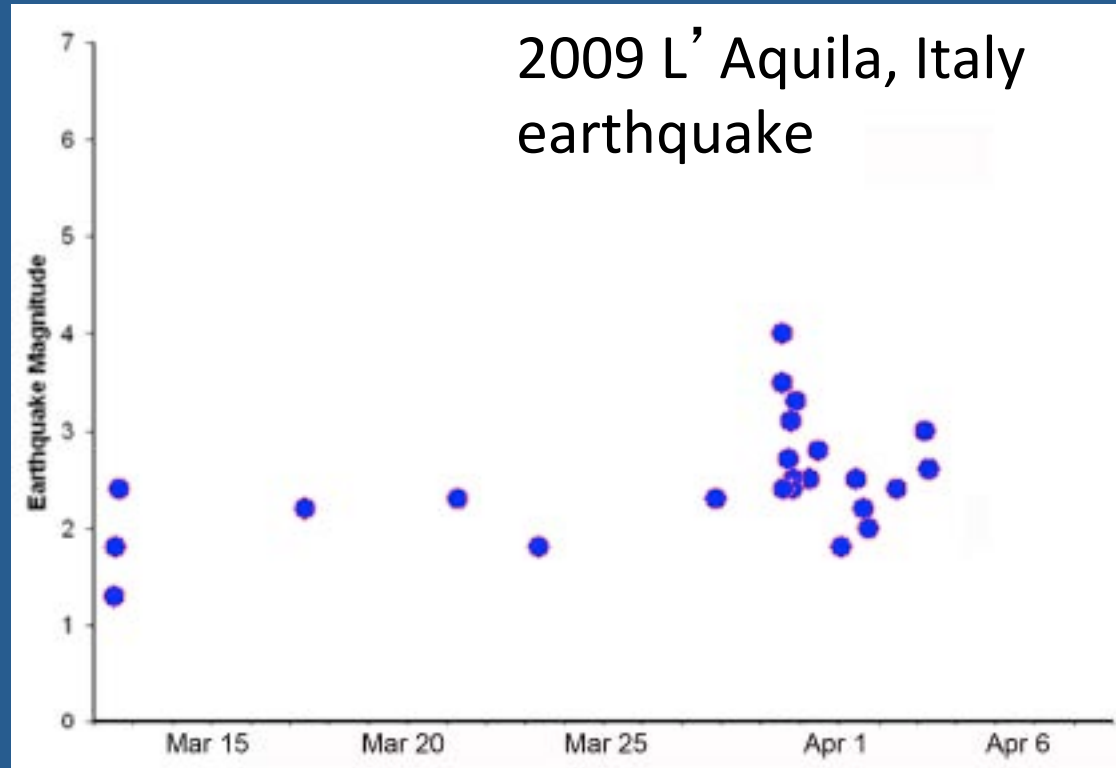
Anxiety, long term physical and mental duress, economic hardship, reduced productivity

Foreshocks – Mainshocks - Aftershocks

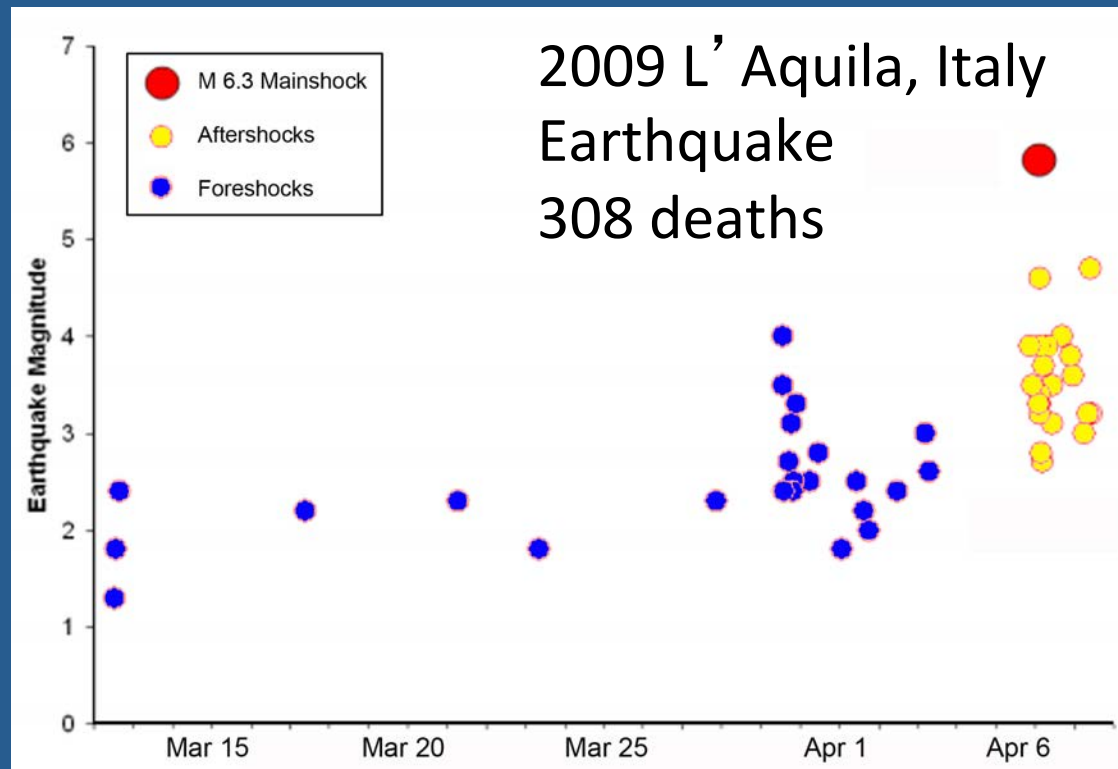


Earthquakes occur in groups

Sequences can be confusing



Sequences can be confusing



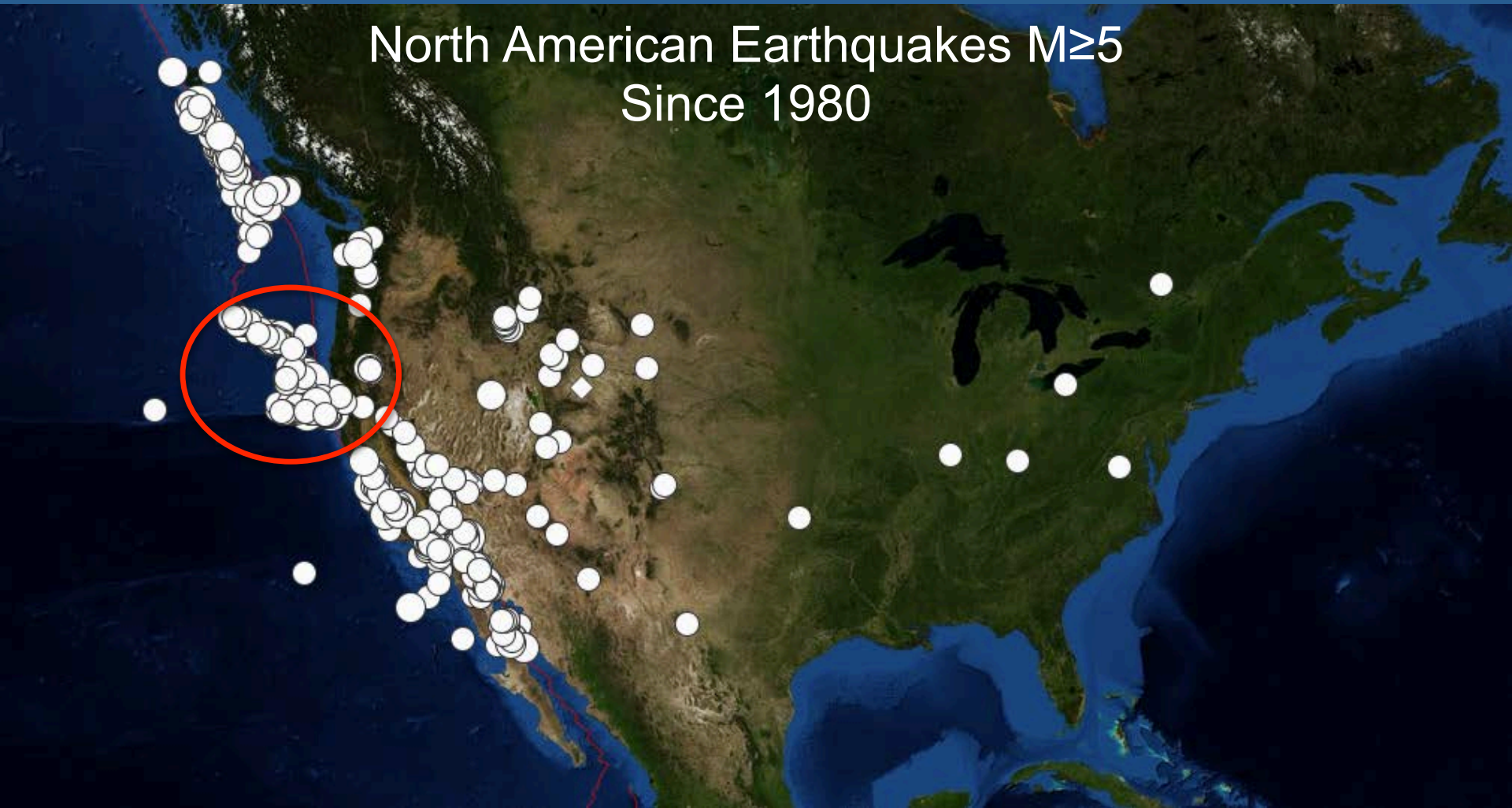
Foreshocks, mainshocks and aftershocks are all earthquakes. What separates them is magnitude and when they occurred. All have the potential to cause damage. Long sequences fray nerves and provide fodder for misinformation and rumors.

OVERWHELMED?



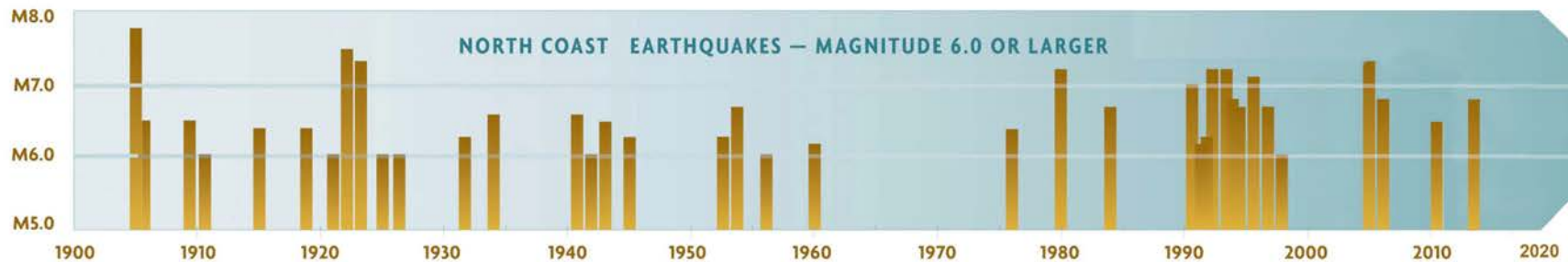
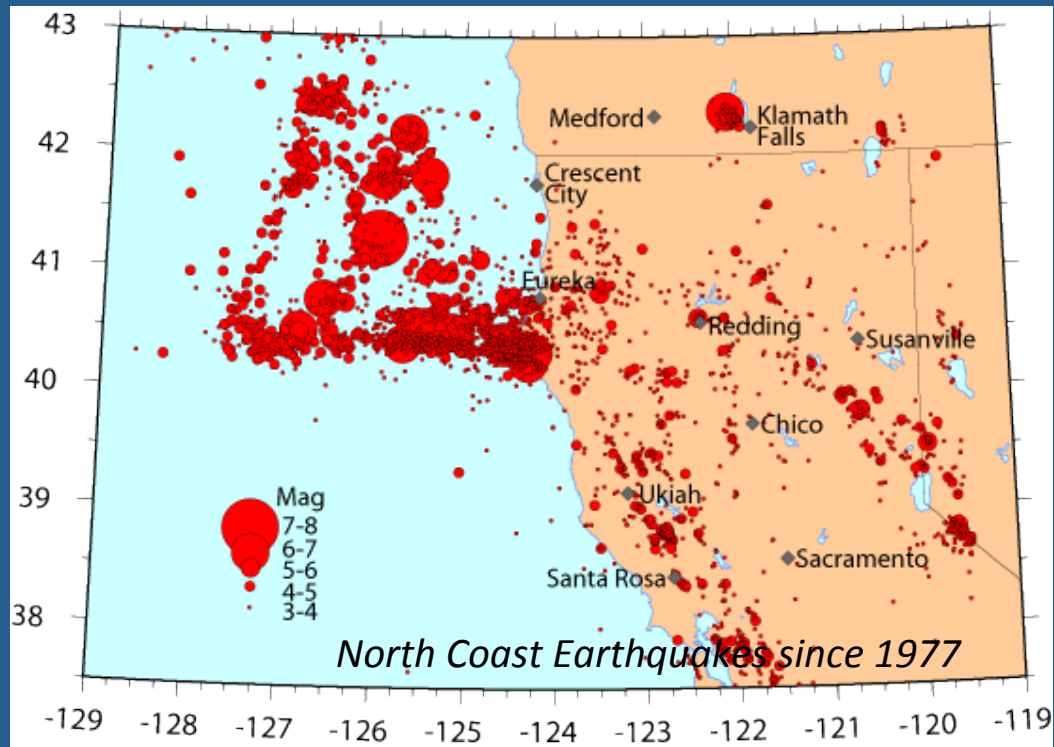
TAKE IT ONE STEP AT
A TIME. EVERY LITTLE BIT
HELPS! **START** BY TALK-
ING TO YOUR FAMILY,
FRIENDS, CO-WORKERS
AND NEIGHBORS.

Lessons from past North Coast Earthquakes

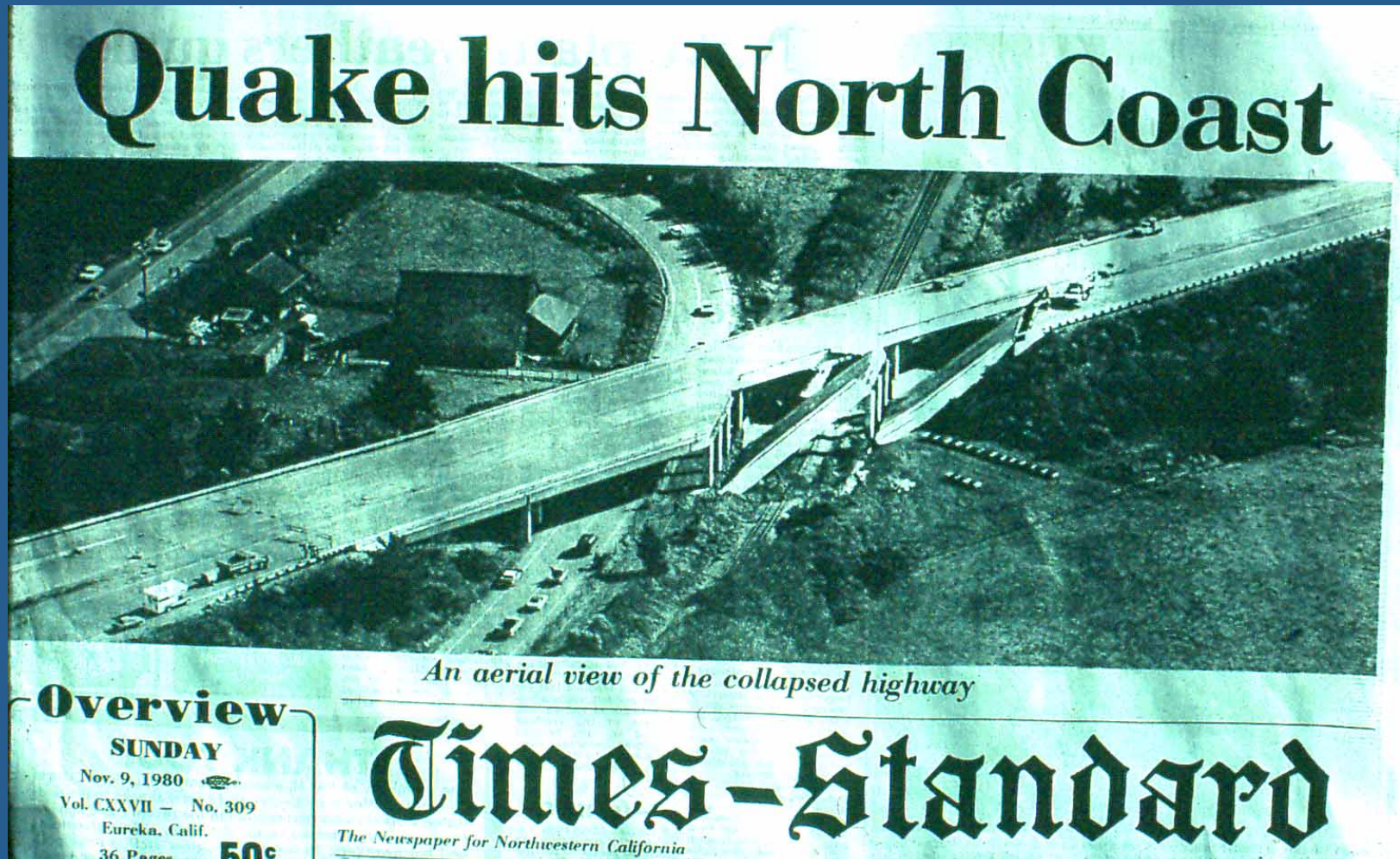


The most seismically active region of the contiguous 48 states
~ 46 % of seismic energy release in the lower 48

Historic earthquakes



Damaged infrastructure



1980 M 7.2 Offshore Trinidad

Disrupted utilities, communications, transportation

Fire



1992 M 7.2 Cape Mendocino

Liquefaction



Liquefaction near Port Kenyon, Eel River. 1906 San Francisco, photograph by Edna Garret

Large Falling items



1992 M 7.2 Cape Mendocino

Smaller Falling Items



2010 M 6.5 Offshore Eureka

Toppled, displaced items



Ferndale, 1906 M 7.8 San Francisco

Houses Off Foundations



Ferndale 1906 M 7.8 San Francisco

Unreinforced Masonry Damage



Ferndale, 1906 M 7.8 San Francisco



Ferndale, 1992 M 7.2 Cape Mendocino

Chimneys



1992



1992



2010

Deaths?

Not many

1932

Near Arcata

One death in Eureka



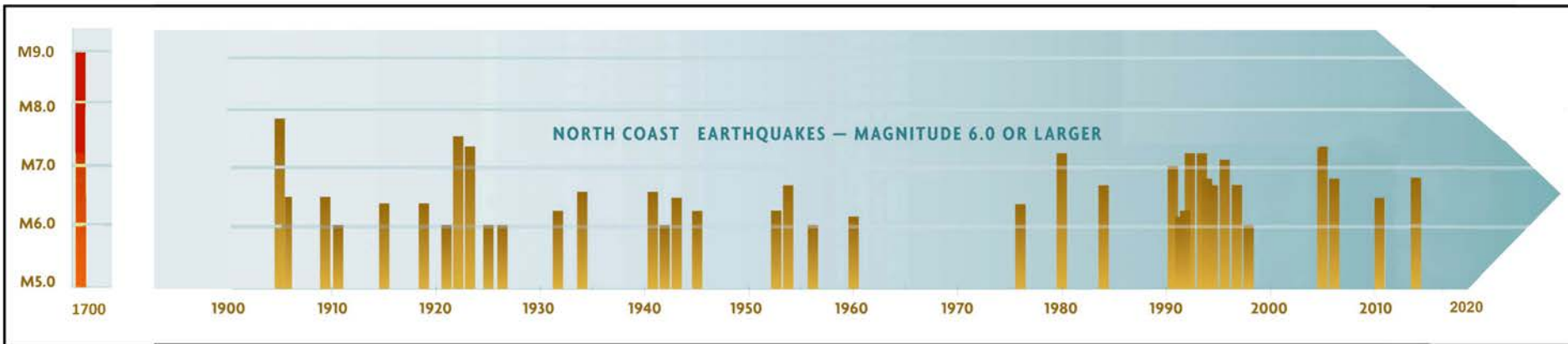
1954

East of Blue Lake

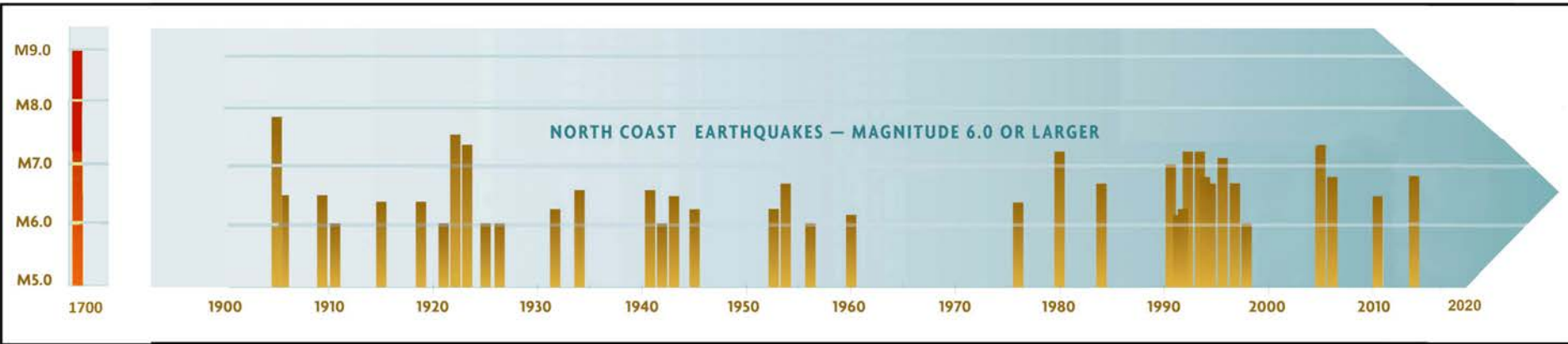
One death in Korbel



How would a Cascadia earthquake differ from historic earthquakes?



How would a Cascadia earthquake differ from historic earthquakes?



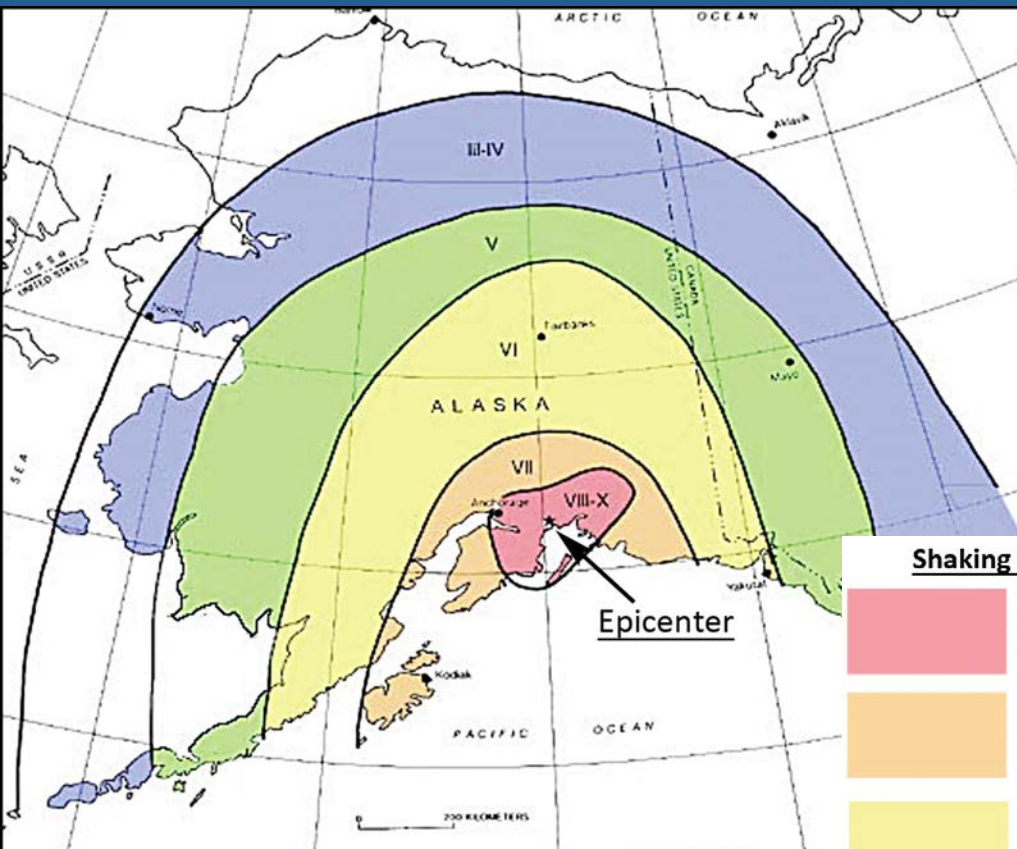
Shaking will last much longer



http://www2.humboldt.edu/rctwg/images/uploads/March1964_Alaska.mp3

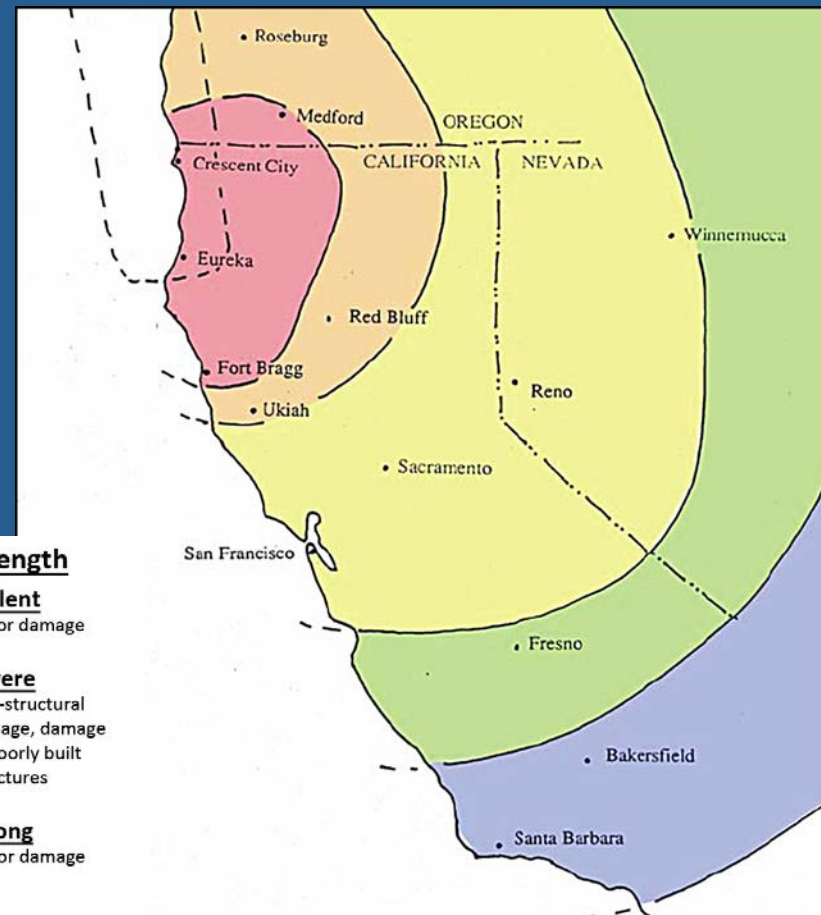
Longer but not necessarily stronger!

Much larger area of strong shaking and damage



*Isoseismal map of the 1964
Alaska earthquake*

<u>Shaking Strength</u>	
	<u>Violent</u> Major damage
	<u>Severe</u> Non-structural damage, damage to poorly built structures
	<u>Strong</u> Minor damage
	<u>Moderate</u> Little damage Widely felt
	<u>Light</u> Felt lightly by many No damage



*1964 Alaska map
superimposed on California*

Plan to be on your own for a long time

Rescue Mission

U. S. NAVY DESTROYER HERE

CARRIER BENNINGTON COMING

Tornadoes Tear Across Southland

MOBILE, Ala. (UPI) — A tornado ripped through the small Florida panhandle town early today and other twisters lashed Alabama, Georgia and Tennessee.

The high winds and heavy rains hit the southland during an unseasonably warm Christmas Eve.

At least two persons were injured when the tornado touched down in a Niceville trailer village, flipping the mobile homes over and knocking down power lines.

Police began a block-by-block search of homes and trailers for injured persons. Officers reported a woman was injured when pinned under the wreckage of a trailer and a two-year-old boy also was hurt.

A rescue squad from nearby Eglin Air Force Base sped to Niceville, about 15 miles northeast of Fort Walton Beach.

In Alabama, tornadoes injured three persons and inflicted heavy property damage at Foley and in a sparsely populated area near Greenville.

The twisters were aggravated by severe thunderstorms which ripped the southern half of Alabama with winds, rain and hail.

Five private planes were crushed at Wilson Airport at Foley. Five homes, a warehouse and a restaurant all were destroyed or heavily damaged.

The first tornado cut a path of destruction about 15 miles west of Greenville, ripping roofs off two homes, damaging at least two other residences and demolishing several barns and a church.

Cluttered lots were knocked down and trees uprooted in the area and also north of Greenville along U.S. 91.

Telephone and power service was interrupted in a wide area and had not been restored early Christmas morning.

Foley Police Chief B. D. Cobb said the tornado touched down in that small Gulf Coast town at about 9:30 p. m. and tore through real estate

California, Oregon Roads Still Blocked

SAN FRANCISCO (UPI) — River road closed in the vicinity of the main highway of Woodland.

Interstate 50 the main highway to Reno, State route 39 — Closed west from San Francisco to Reno. State route 39 — Closed west from San Francisco to Reno. State route 39 — Closed west from San Francisco to Reno.

Thousands Homeless In Oregon

PORTLAND, Ore. (UPI) —

Christmas Day Attack Falls To Materialize

LEONOLVILLE, The Congo —

Snows Clog Plains Roads

Thunderstorms In South-More Rain

Flood Covers Downtown Greenville


Perishables To Be Flooded Here Daily

Floods Threaten In Five States

Link Left Of Klamath Bridge Out

Humboldt Standard

Vol. 94—No. 308—Phone 442-1711 EUREKA, CALIF., FRIDAY EVENING, DECEMBER 25, 1964 10c Per Copy 16 Pages Today



The Humboldt Times

EUREKA, CALIF., FRIDAY EVENING, DECEMBER 25, 1964 10c Per Copy 16 Pages Today

Deal to President for Flood Aid

Designate Region Disaster Area

Bennington Bringing In Helicopters

Kuchel Urges Aid For Flood Victims

Flood Covers Downtown Greenville

Perishables To Be Flooded Here Daily

Floods Threaten In Five States

Link Left Of Klamath Bridge Out

It may be similar to what happened in 1964

Preparing for a Cascadia Earthquake

PREPARE

Before the next big earthquake we recommend these four steps that will make you, your family, or your workplace better prepared to survive and recover quickly:

Step 1:

Secure your space by identifying hazards and securing moveable items.



Step 2:

Plan to be safe by creating a disaster plan and deciding how you will communicate in an emergency.



Step 3:

Organize disaster supplies in convenient locations.



Step 4:

Minimize financial hardship by organizing important documents, strengthening your property, and considering insurance.



SURVIVE AND RECOVER

During the next big earthquake, and immediately after, is when your level of preparedness will make a difference in how you and others survive and can respond to emergencies:

Step 5:

Drop, Cover, and Hold On when the earth shakes.



Step 6:

Improve safety after earthquakes by evacuating if necessary, helping the injured, and preventing further injuries or damage.



After the immediate threat of the earthquake has passed, your level of preparedness will determine your quality of life in the weeks and months that follow:

Step 7:

Reconnect and Restore
Restore daily life by reconnecting with others, repairing damage, and rebuilding community.

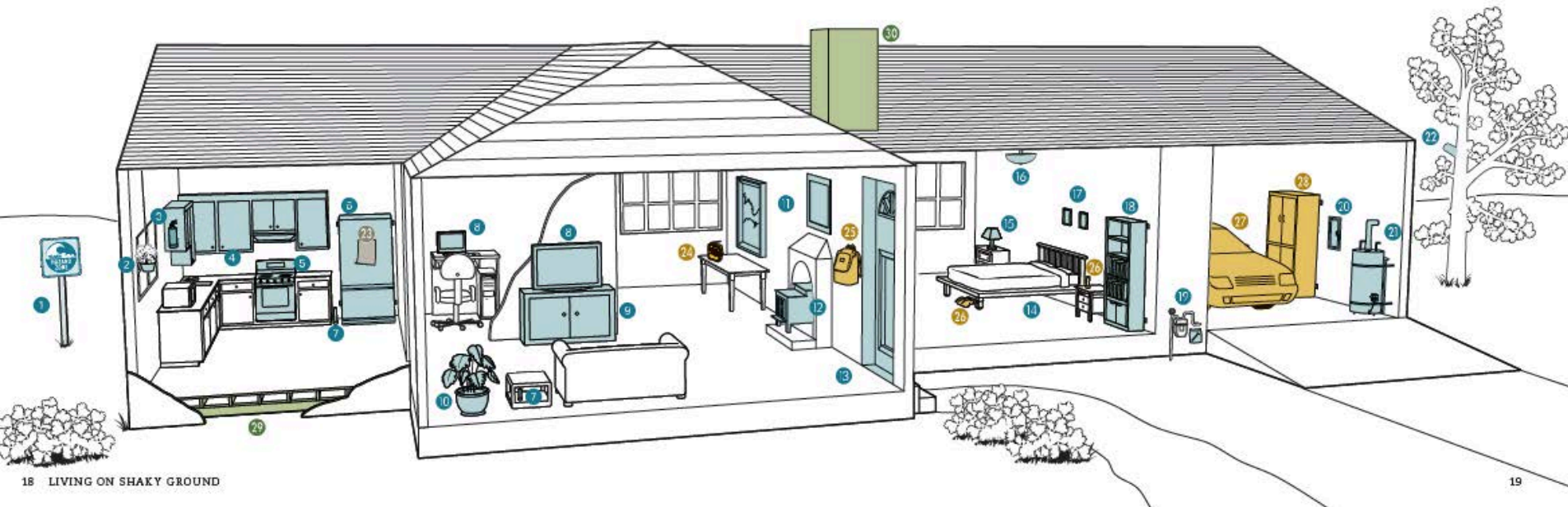


Preparing for a Cascadia Earthquake

Start Here!

PREPARE

1. Secure Your Space (see illustration below and page 20)
2. Plan to be Safe (page 22)
3. Organize Disaster Supplies (page 23)
4. Minimize Financial Hardships (page 24)



Surviving the Cascadia Earthquake



After the Cascadia Earthquake

- Know your zone – evacuate if necessary

Don't wait for an official warning

- Check for injuries
first aid training
CERT training
- Check for hazards

Check for damage

FIRE If possible, put out small fires in your home or neighborhood immediately. Call for help, but don't wait for the fire department.

GAS LEAKS Shut off the main gas valve only if a leak is suspected or identified by the odor of natural gas. Wait for the utility company to turn it back on once the damage is repaired.

DAMAGED ELECTRICAL WIRING Shut off power at the breaker box. Leave the power off until damage is repaired.

UNPLUG BROKEN LIGHTS AND APPLIANCES
They could cause fires when power is restored.

DOWNED POWER LINES Consider all downed lines as potentially hazardous and stay well away from them. Never touch downed lines or any objects in contact with them even if you think they may be dead.



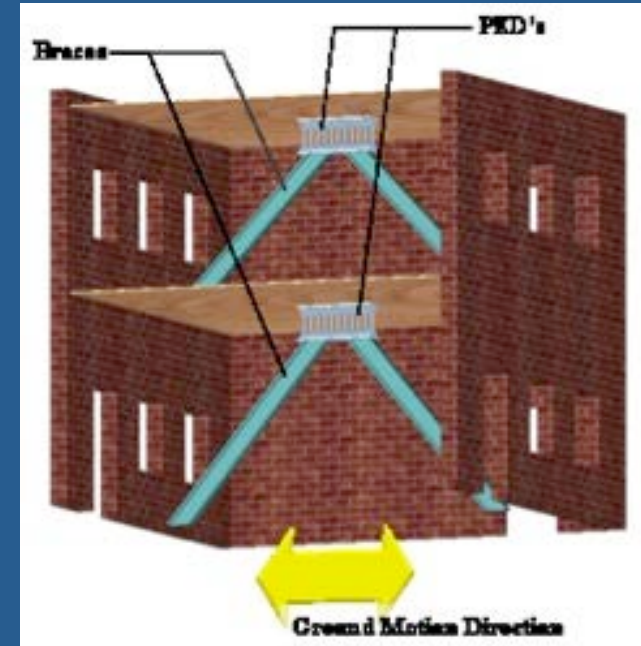
Getting credible information



Consider the source before passing on what you have heard

After the Cascadia Earthquake – recovery

Rebuilding better



Finding the new normal

Individual and government responsibilities

Who is responsible in first 12 hours?

2015 2012 2010 2009 2006 2001 1996 1996

