



The Oregon Hazards Lab: Advancing Multi-Hazard Monitoring in the Pacific Northwest



Agenda

OHAZ and our Mission

Wildfire Detection Cameras

Break

Seismic Monitoring

Undergraduate
Opportunities

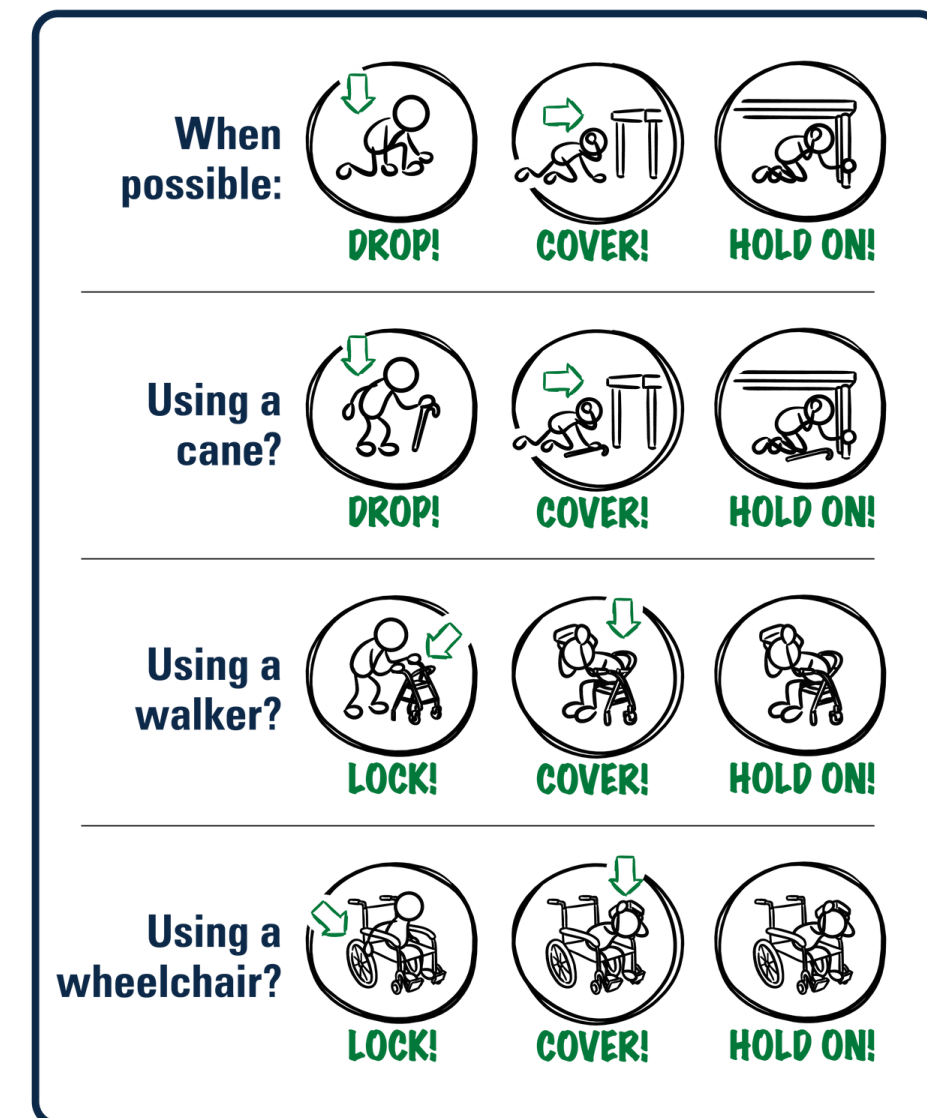
Moving Forward

Q&A

Housekeeping

Locate nearest emergency exits

In the event of an earthquake:

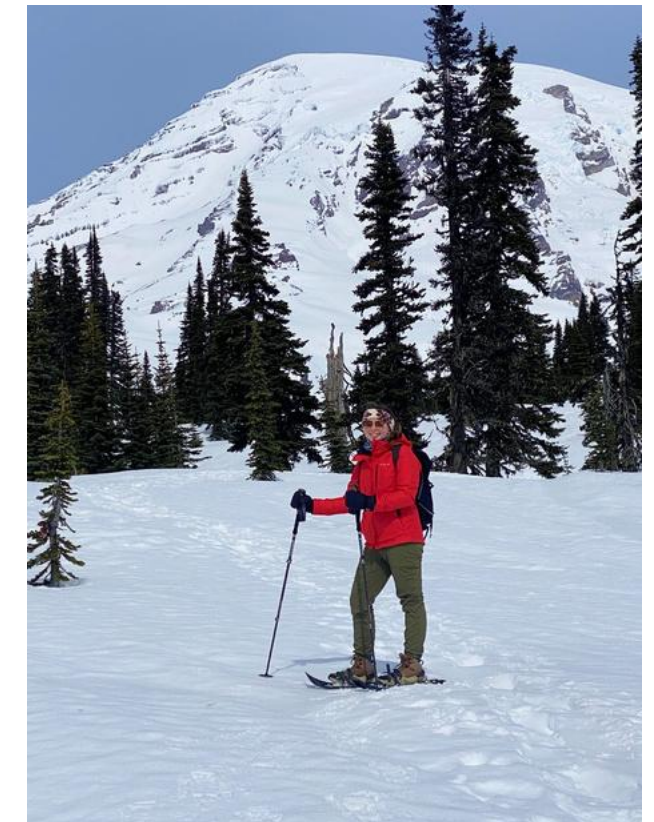


ShakeAlert

About Me

Autumn Lukens, Communications Assistant

- Midwest transplant (Iowa and Chicago)
- Bachelor's in Environmental Studies & Political Science from UO
- Joined OHAZ Fall of 2024



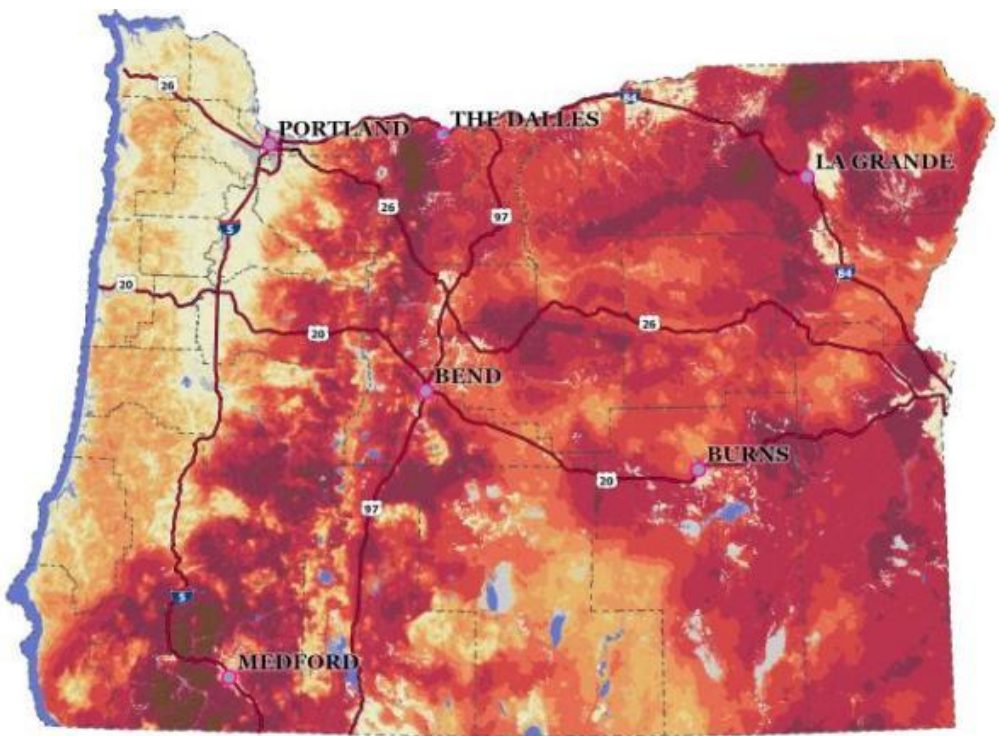
The Oregon Hazards Lab (OHAZ)

OHAZ uses science, technology, and community engagement to understand, detect, and mitigate multi-hazards within the Pacific Northwest.

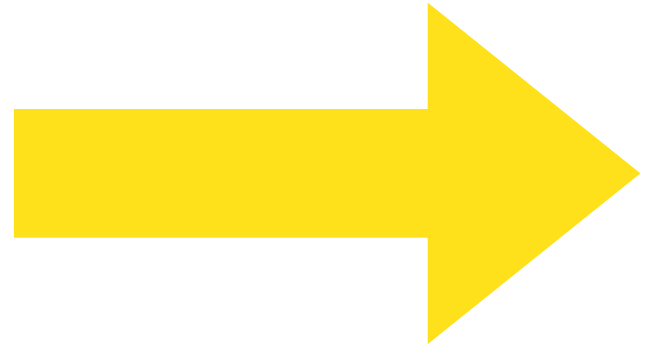
Housed in the Earth Sciences Department at UO.



Oregon Multi Hazards

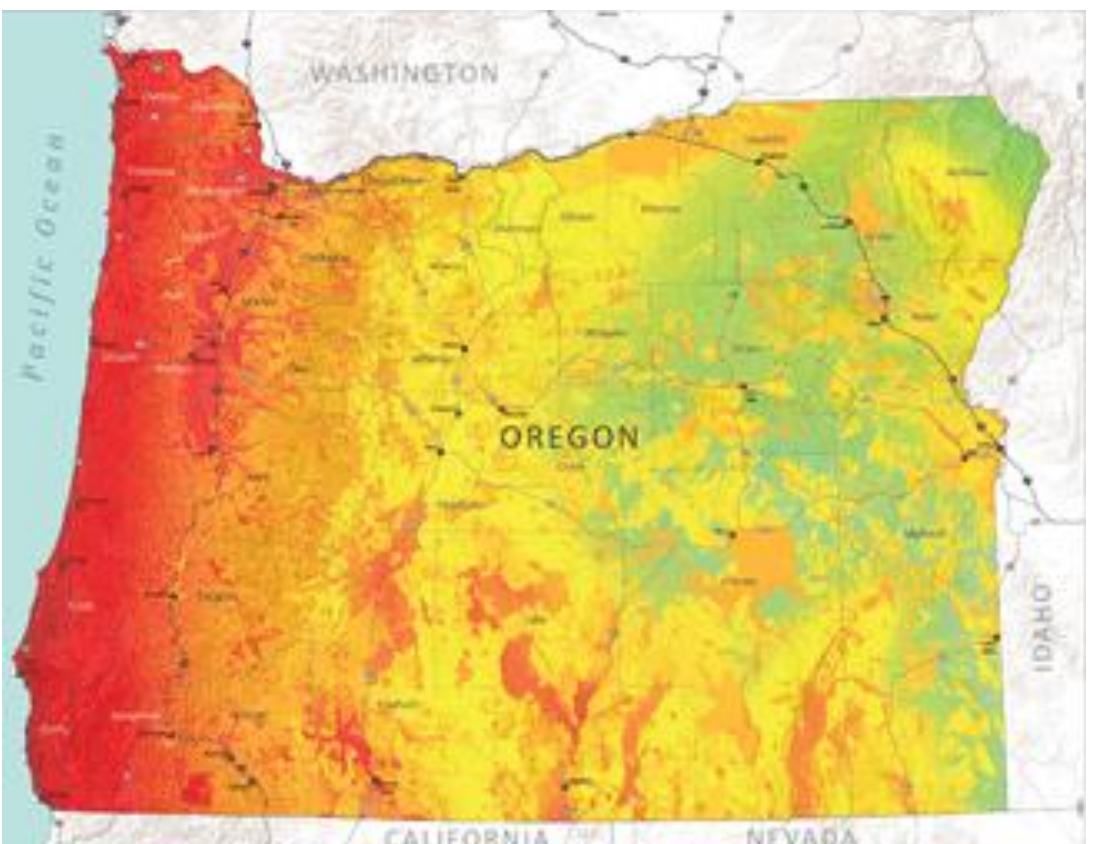


Burn Probability Map

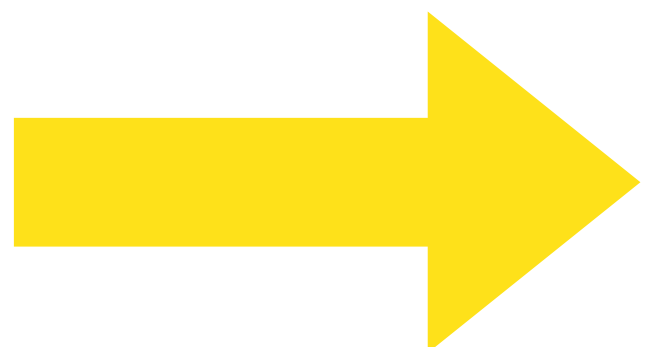


The Really Frequent Ones

Eagle Creek Fire



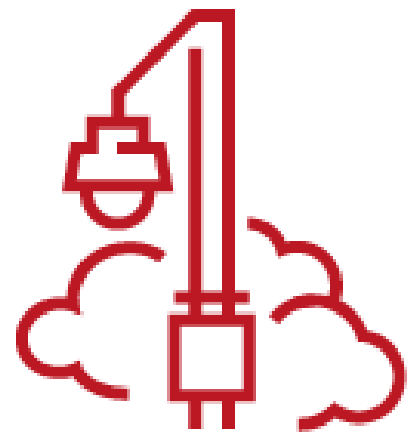
Strong Ground Motion Probability Map



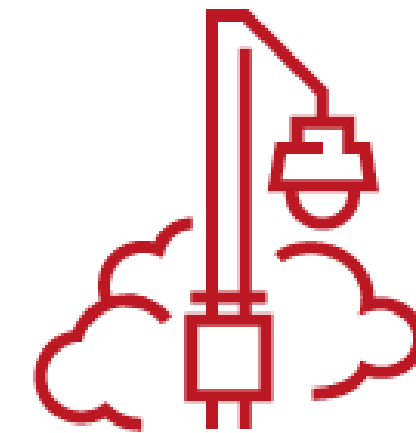
The Really Big One

Tohoku, Japan Earthquake and Tsunami

Wildfire Detection



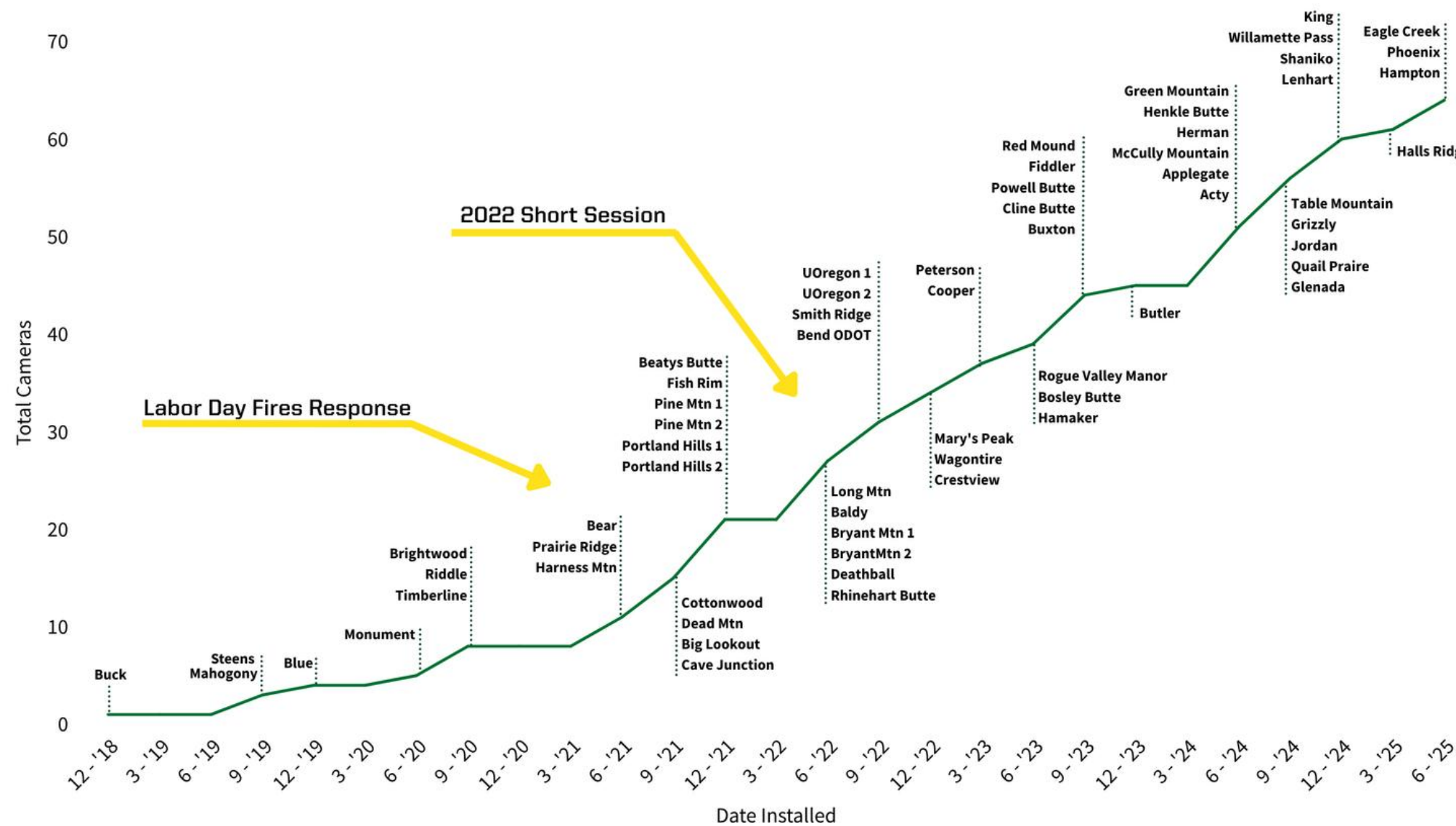
Cameras



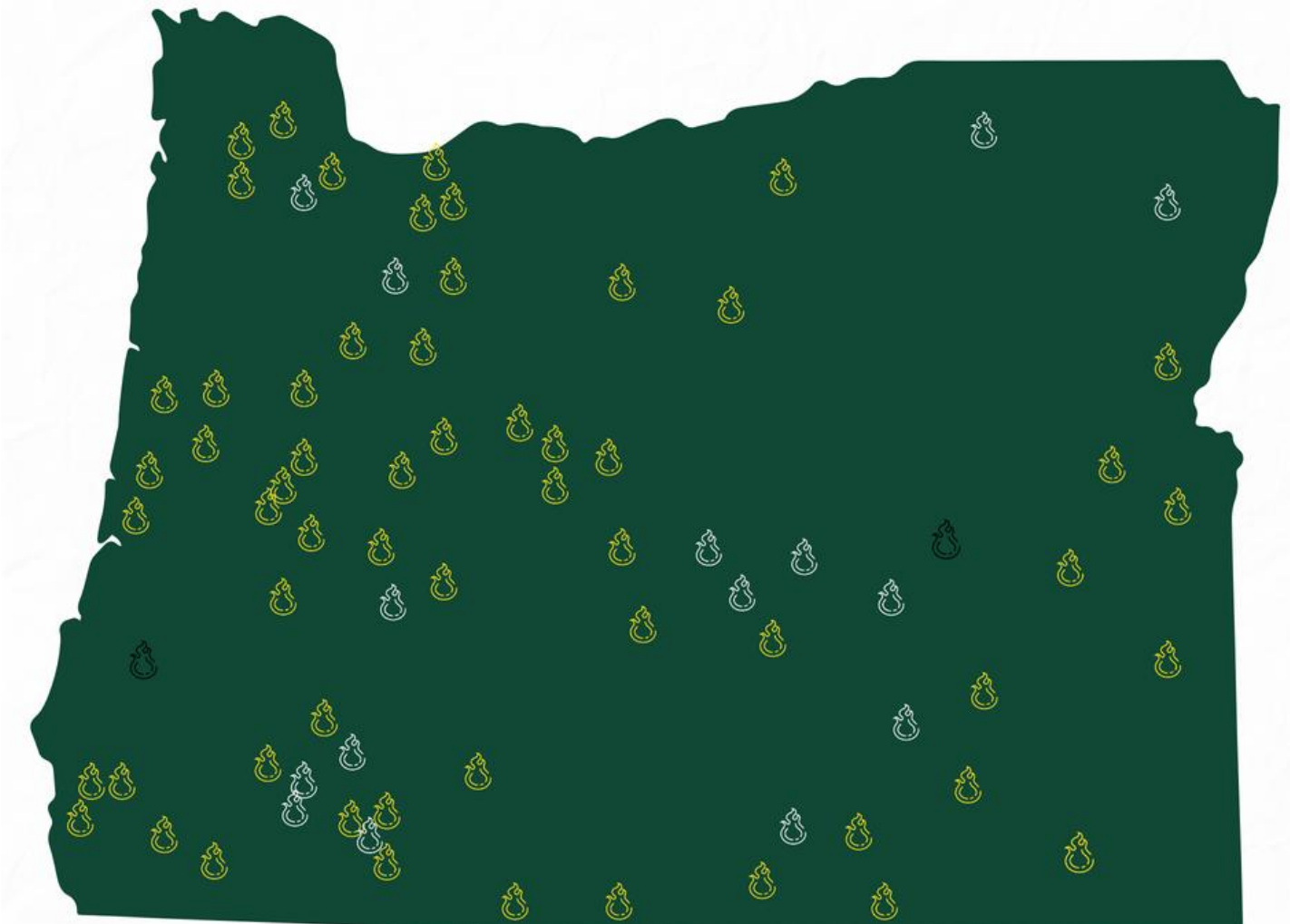
Wildfire Camera system

- 65+ Wildfire Detection Cameras
- 10 additional anticipated by the end of the 2025 field seasons
- 7 mobile camera units

Oregon Hazards Lab Wildfire Detection Cameras



Oregon Hazards Lab Wildfire Detection Cameras



Wildfire Camera Specs



- Utilizing established infrastructure when available
- Solar panels and Starlink when necessary
- 360 degrees of surrounding viewshed
- Magnify x40
- 30 miles during the day, 40 at night

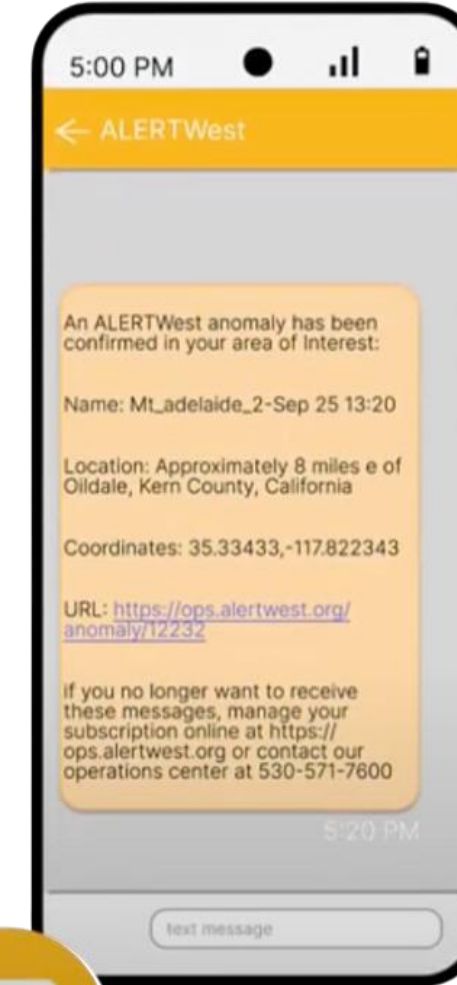
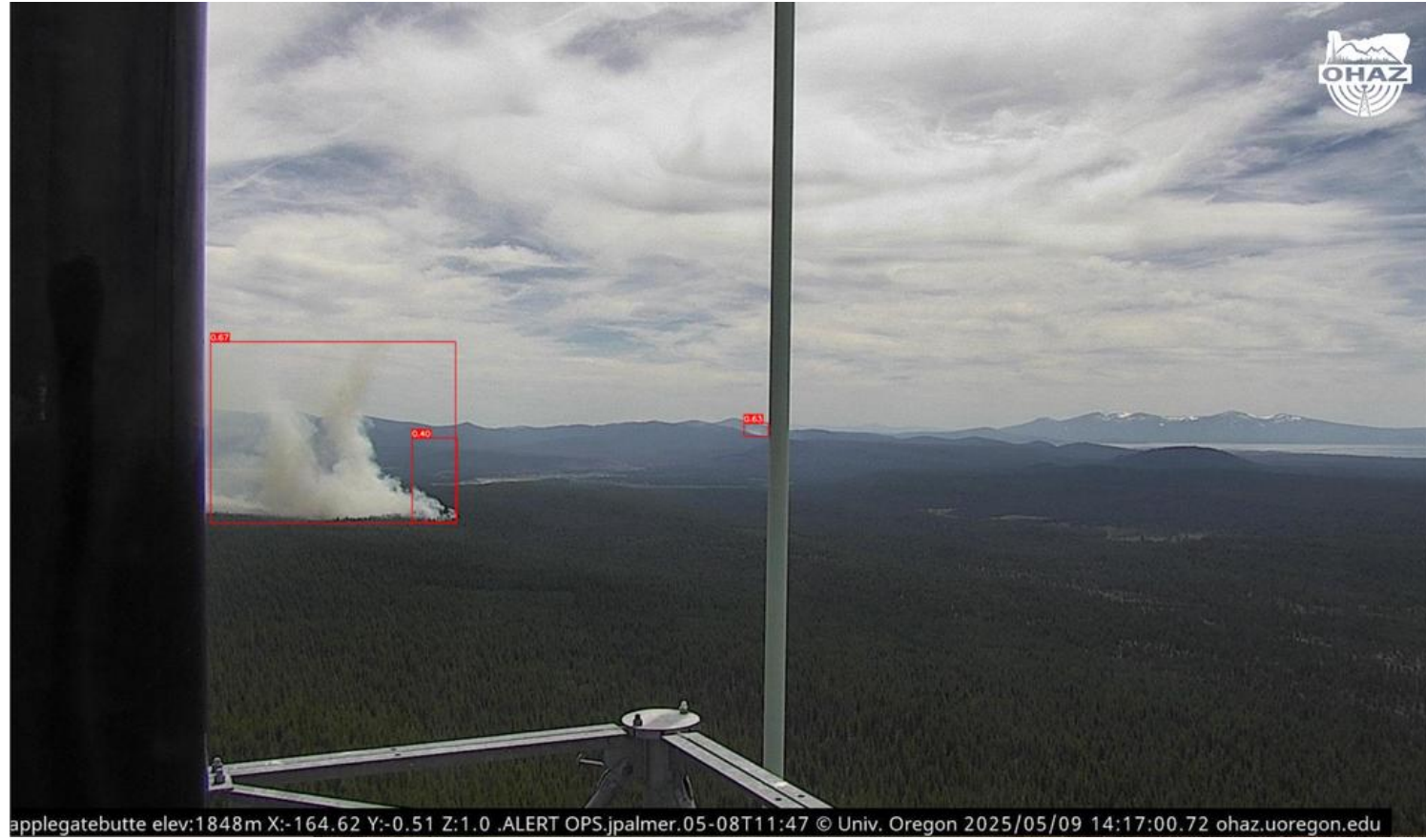




Mobile Detection Units



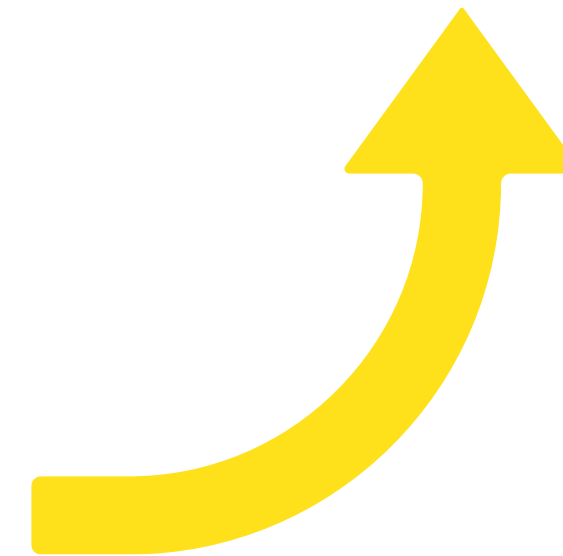
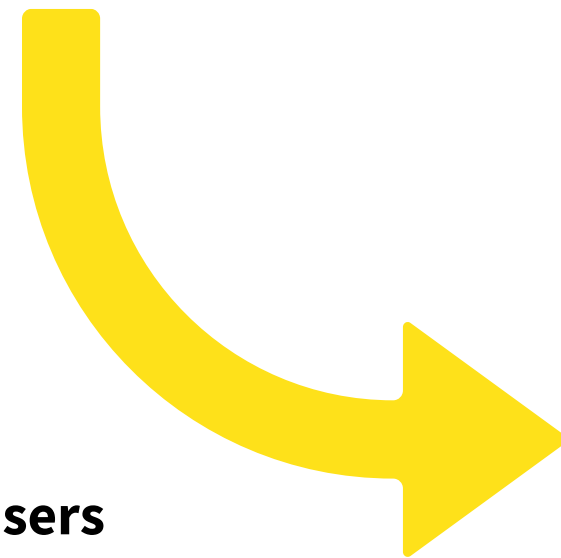
Wildfire Camera system



AI camera detection

24/7 monitoring center

Alerts sent to credentialed users

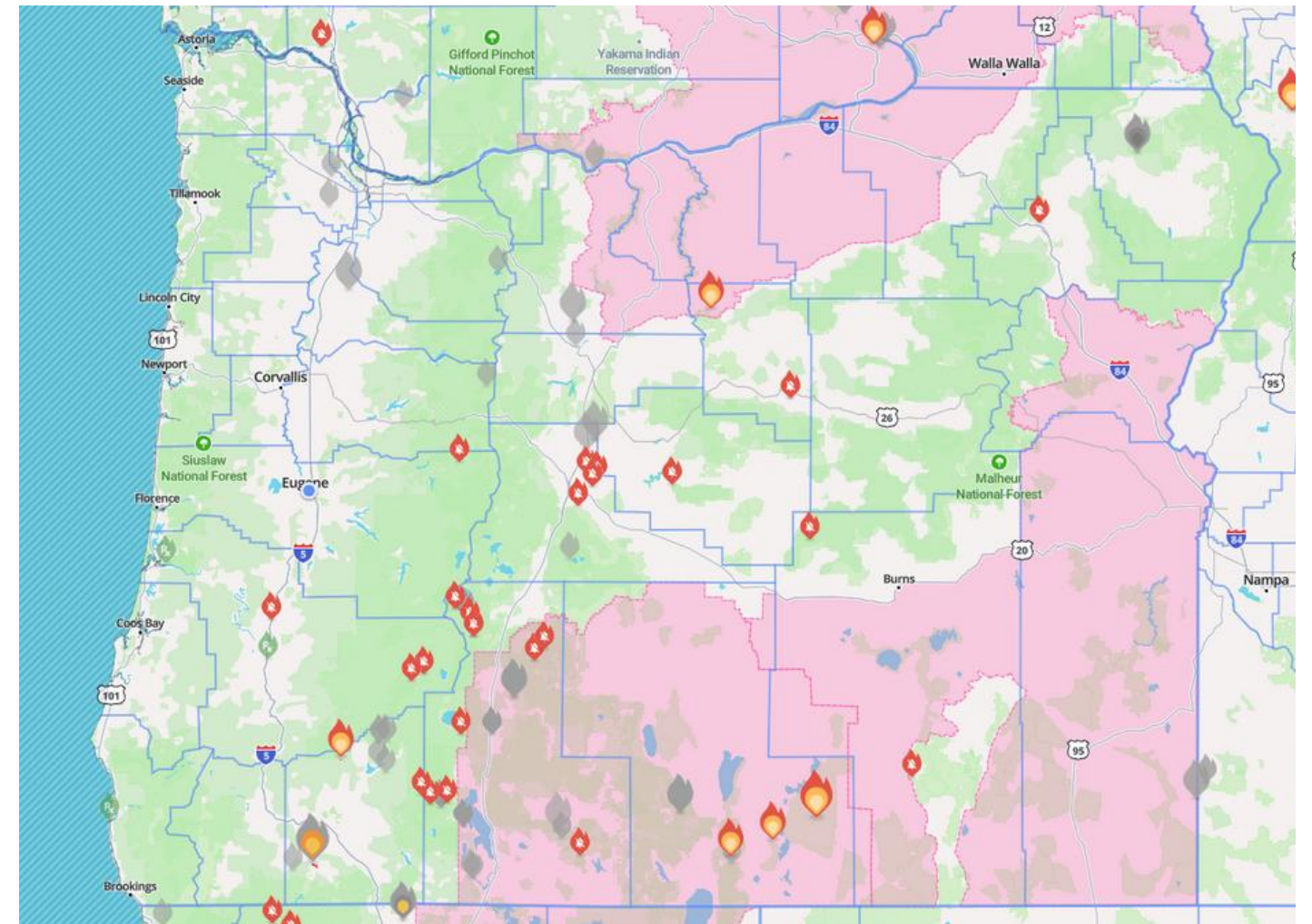




Watch Wildfire Cameras



Alertwest.live



ALERTWest Search cameras All Cameras Active Cameras Menu Login

Search address or coordinates

Zoom in to view cameras

Camera Name	Last Moved
Crestview	18h 46m
Buck Mountain	15m
Prairie Peak	1d 14h 8m
Peterson Butte	3h 28m
Harness Mtn	3h 54m
Dead Mtn	8d 14h 8m
Deathball Mtn	1d 21h 56m
Marys Peak	3h 14m
Herman Peak	14h 57m
Table Mountain	3h 39m
Glenada	3h

Grizzly Flat Fire (391)
Crook & Jefferson Counties

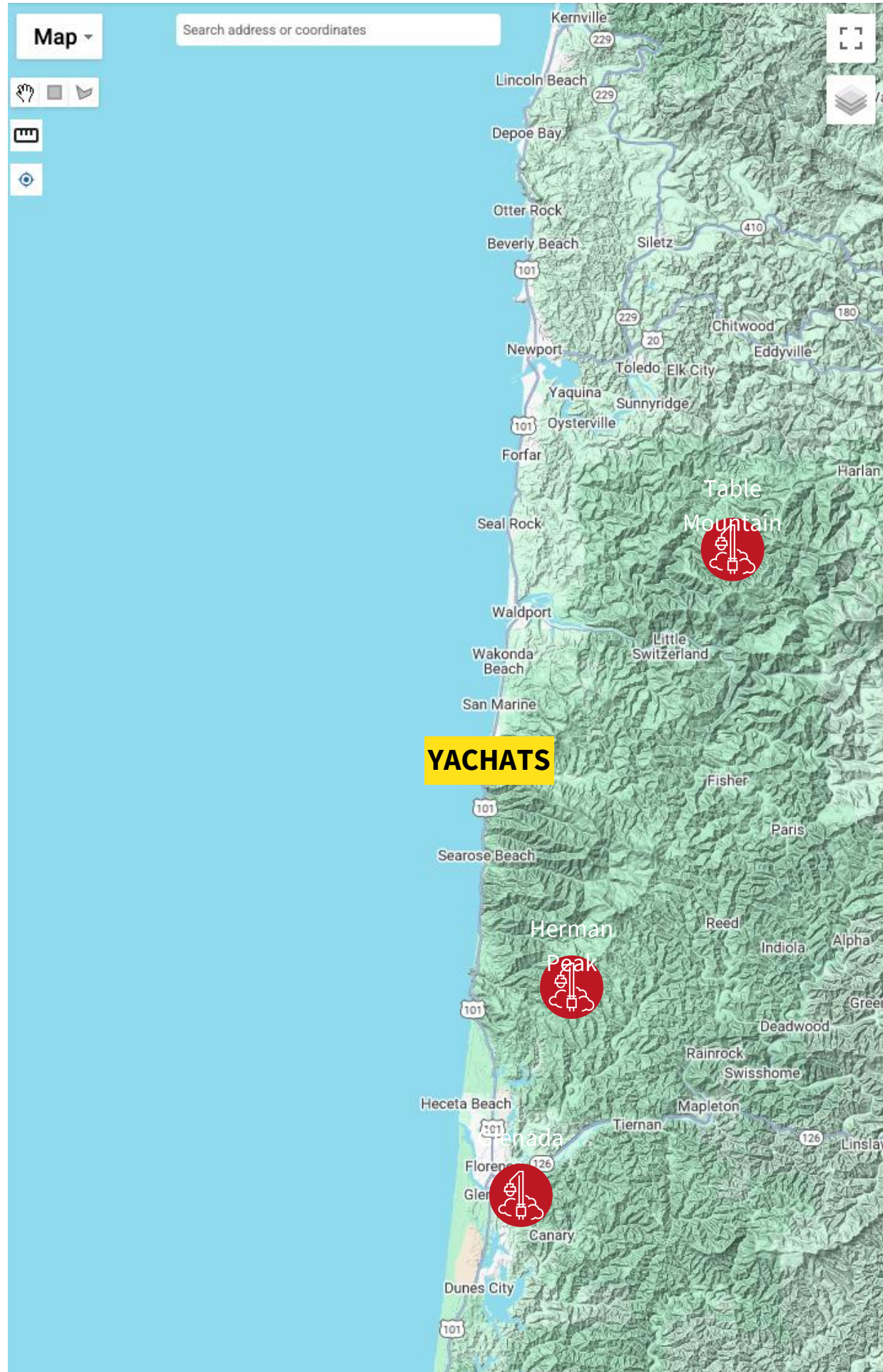
UPDATES

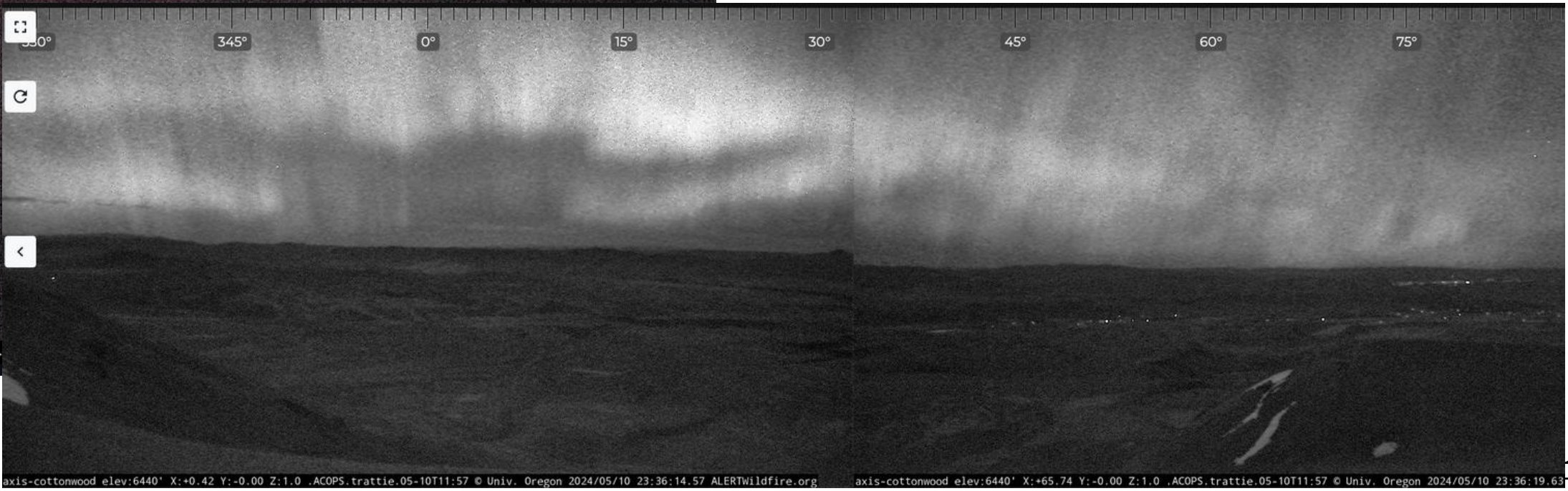
Grizzly Mtn - ALERTWest | OHAZ | University of Oregon
The fire is making a run through the grass and Air Attack has requested 3 large air tankers - per radio traffic

Cole Euken - Staff Reporter
6 days ago - Jul 2 at 12:31 PM

Grizzly Mtn - ALERTWest | OHAZ | University of Oregon
Resources are responding to a reported vegetation fire with smoke visible on the Grizzly Mtn camera.
Location is approximate and is subject to change.

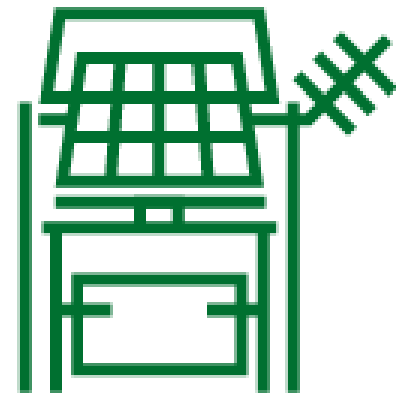
Cameras in Yachats





Break

Seismic Sensors



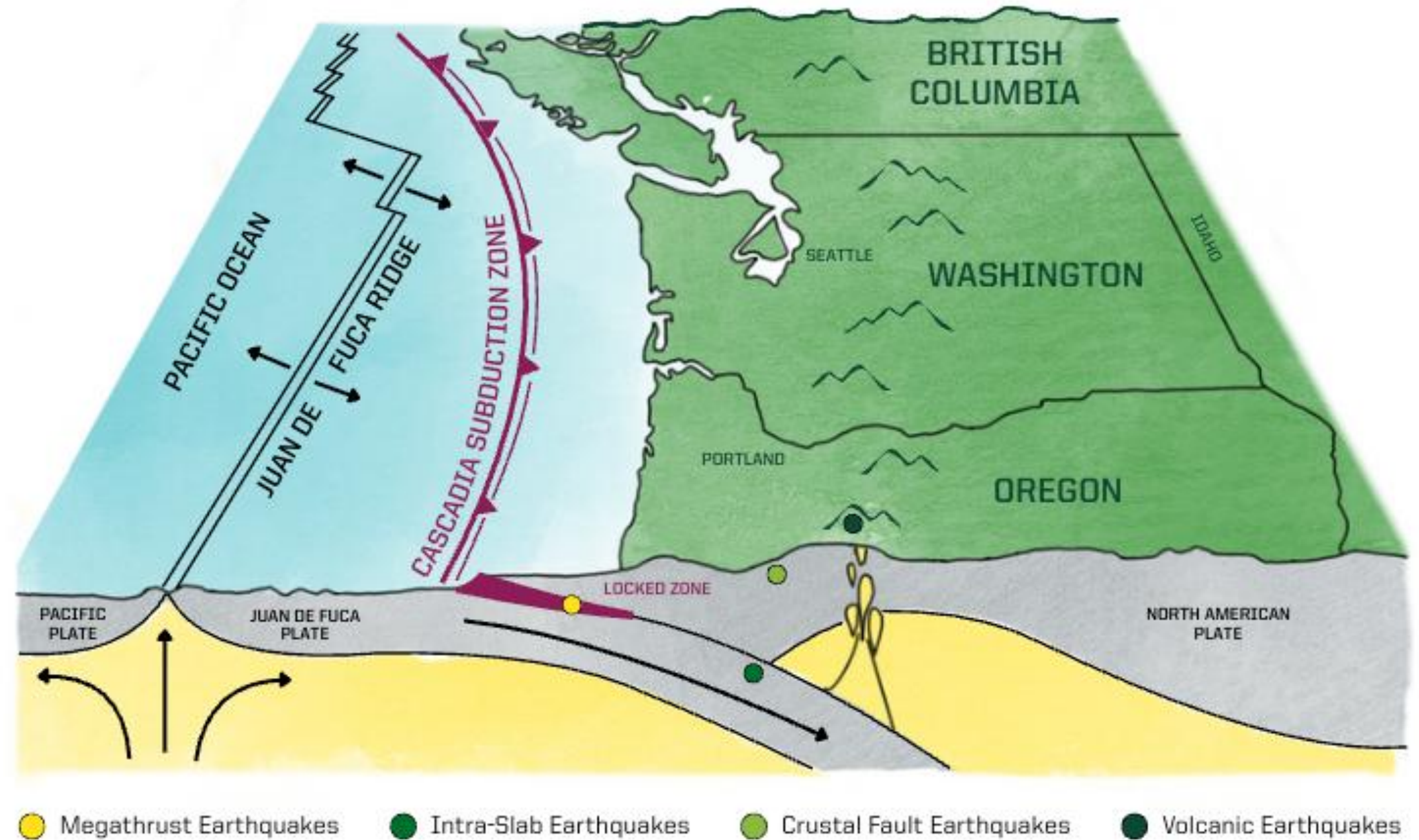
Cascadia Subduction Zone

300-500 year interval period

Last megathrust EQ was
in 1700

9.0 Earthquake

100 foot tsunami wave

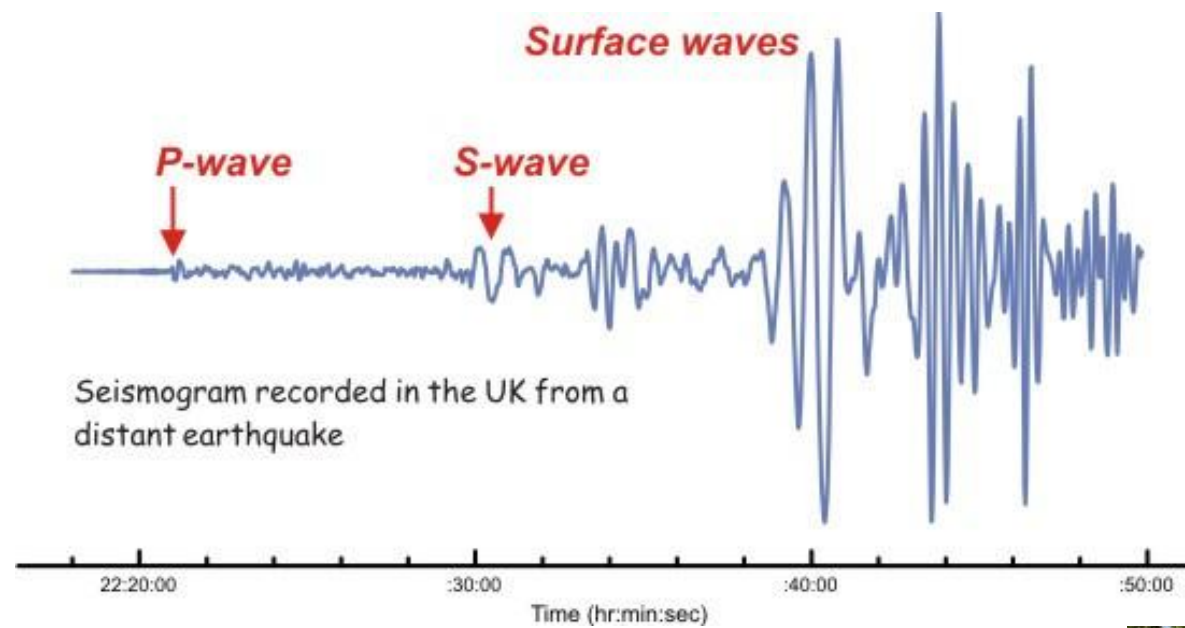
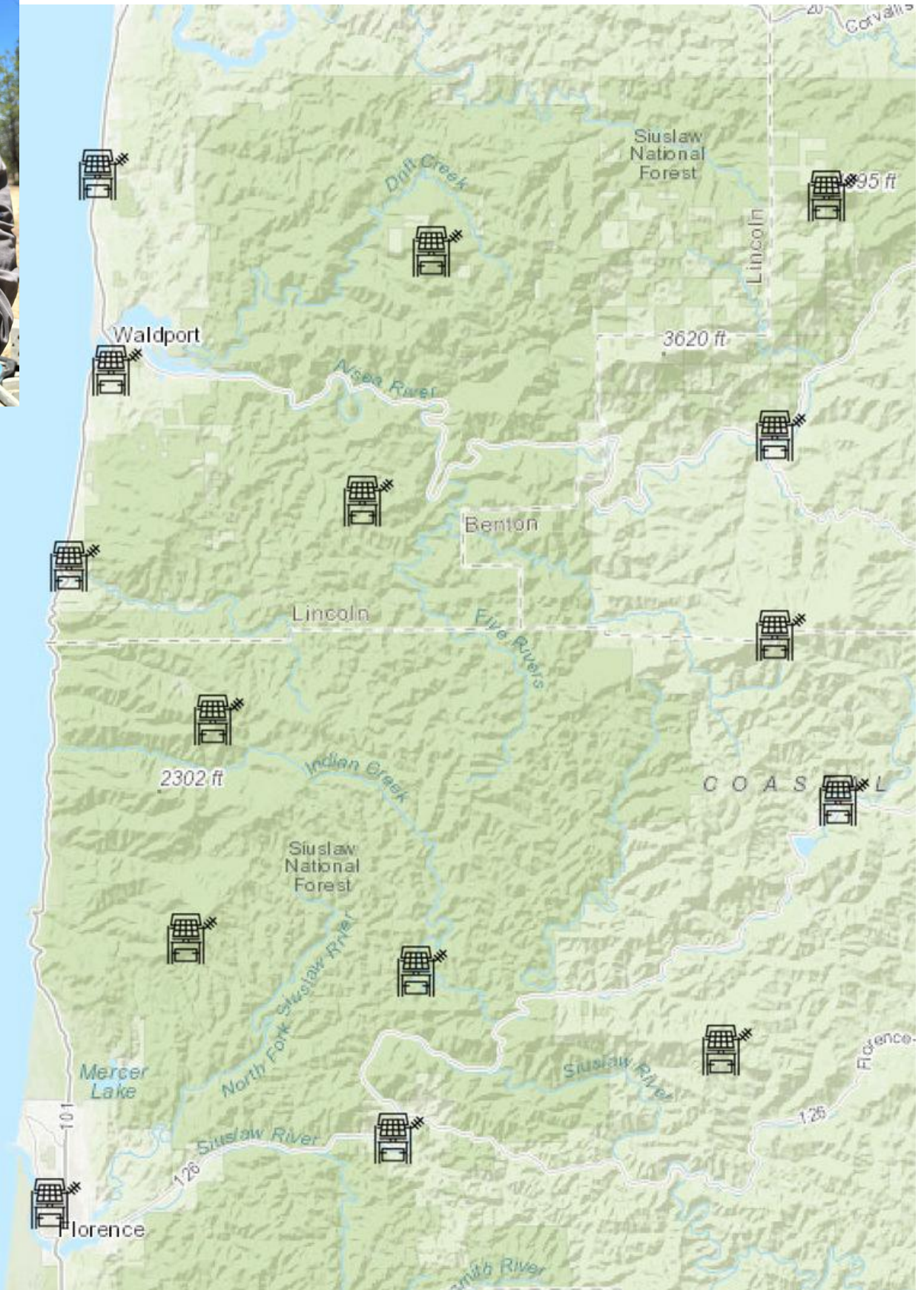


Seismic site specs

226+ Seismic Sites across Oregon

Short Period Sensors: location and magnitude of small regional earthquakes

Broadband Seismometers: Record waveforms from regional and distant earthquakes for research purposes





Operates within USGS Advanced National Seismic System

Deployed and maintains 700+ seismic stations between Washington and Oregon

Counterparts at UW are part of the seismic sites following the Mt. Rainier swarm earthquakes

209 inform ShakeAlert in Oregon



Shake!Alert™

What do you do when you receive an
Earthquake Early Warning or feel
shaking?

A.

Sit around and twiddle our thumbs

B.

Drop, Cover, and Hold
On

C.

Evacuate immediately

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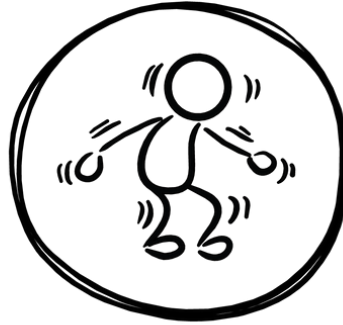
Drop, Cover, and Hold
On

What do you do when you receive an
Earthquake Early Warning or feel
shaking?

B.

**Drop, Cover, and Hold
On**

ShakeAlert™

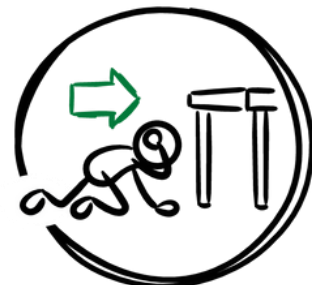


If you FEEL SHAKING or GET AN ALERT...

When possible:



DROP!

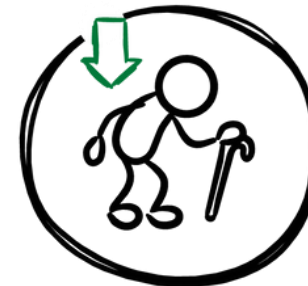


COVER!

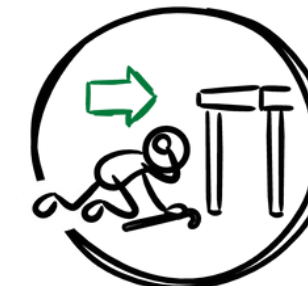


HOLD ON!

Using a cane?



DROP!



COVER!

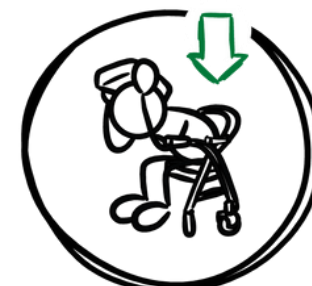


HOLD ON!

Using a walker?



LOCK!



COVER!

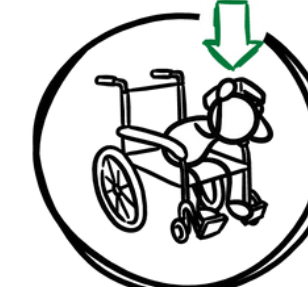


HOLD ON!

Using a wheelchair?



LOCK!



COVER!



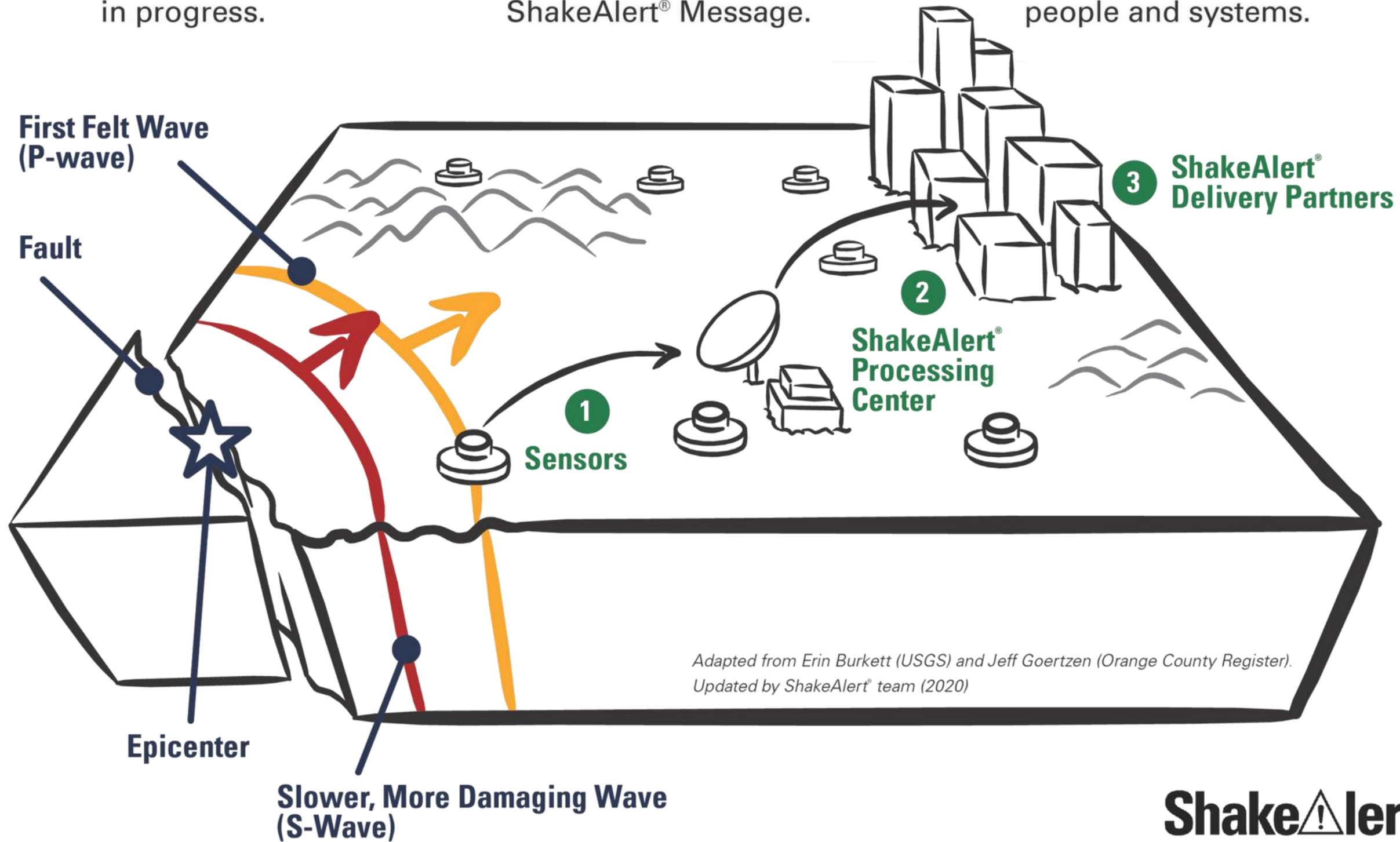
HOLD ON!

ShakeAlert® Is Not Earthquake Prediction

1 ShakeAlert® sensors rapidly detect an earthquake in progress.

2 ShakeAlert® processing centers estimate earthquake characteristics and issue a ShakeAlert® Message.

3 Delivery partners pick up the ShakeAlert® Message and produce an alert for people and systems.



ShakeAlert-Powered Earthquake Early Warning on Your Cell Phone

Available in Washington, Oregon, and California



Wireless Emergency Alerts

Sent by FEMA to all WEA-capable cell phones

Minimum magnitude 5.0

Light Shaking or Greater (MMI IV+)



Android Alerts

Sent by Google to all Android phones

Minimum magnitude 4.5

Weak to Light Shaking (MMI III-IV): Be Aware

Moderate Shaking or Greater (MMI V+): Take Action



Cell Phone App

Sent by the MyShake App (requires download)

Minimum magnitude 4.5

Weak Shaking or Greater (MMI III+)

ShakeAlert™

05.2025

Alert Thresholds

To Alert People



Wireless Emergency Alert (WEA)



General public with WEA-capable devices

5.0+

MMI IV+



Cell Phone Apps



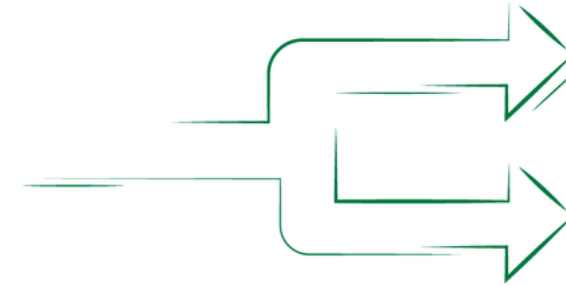
People who have downloaded a cell phone app

4.5+

**MMI III+
(user selectable)**



Android Operating System



Android cell phone users through push notifications

4.5+

**MMI III -
MMI IV**

Android cell phone users through full-screen takeover

4.5+

MMI V+



Automated Alerts through Public Address Systems, Lights, Sirens, In-House Apps, etc.



Institutions that use ShakeAlert to alert people to take a protective action

4.0+

MMI III+

To Alert Systems and Machines



Automated "Machine-to-Machine" Alerts



Institutions that use ShakeAlert to automate actions to mitigate damage to vital equipment, systems, and infrastructure

4.0+

MMI III+

“How much advanced notice will I get?”



...It *depends*

Examples of Automated Actions Powered by ShakeAlert®

Alerts Delivered to People



On Your Mobile Device



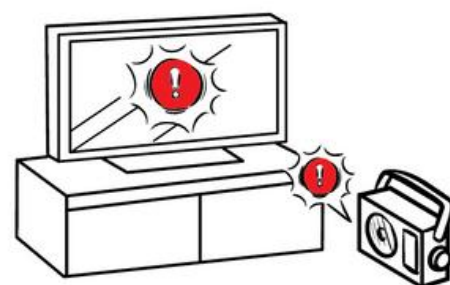
Electronic Road Signage



Digital Billboard on Buildings

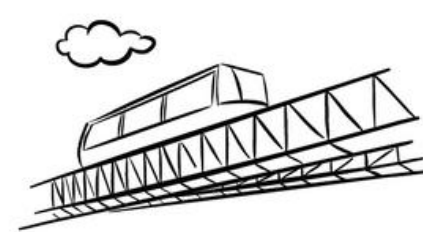


Public Announcements

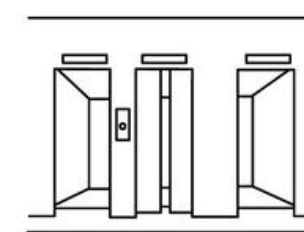


Emergency Alerts over TV and Radio

"Machine-to-Machine" Actions



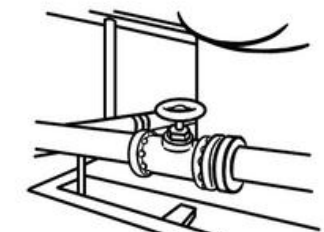
Slowing Trains



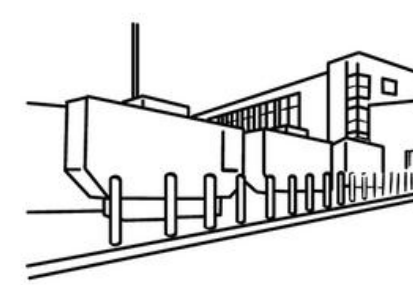
Recalling Elevators



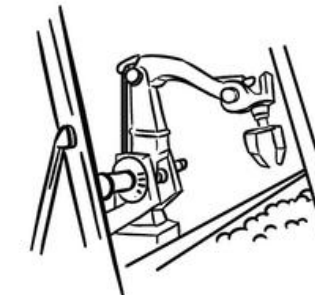
Opening Firehouse Doors



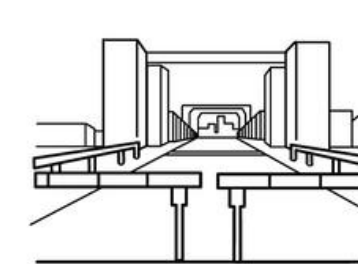
Shutting Off Water and Gas Valves



Activating Generators



Parking Delicate Machinery



Closing Bridge Gates

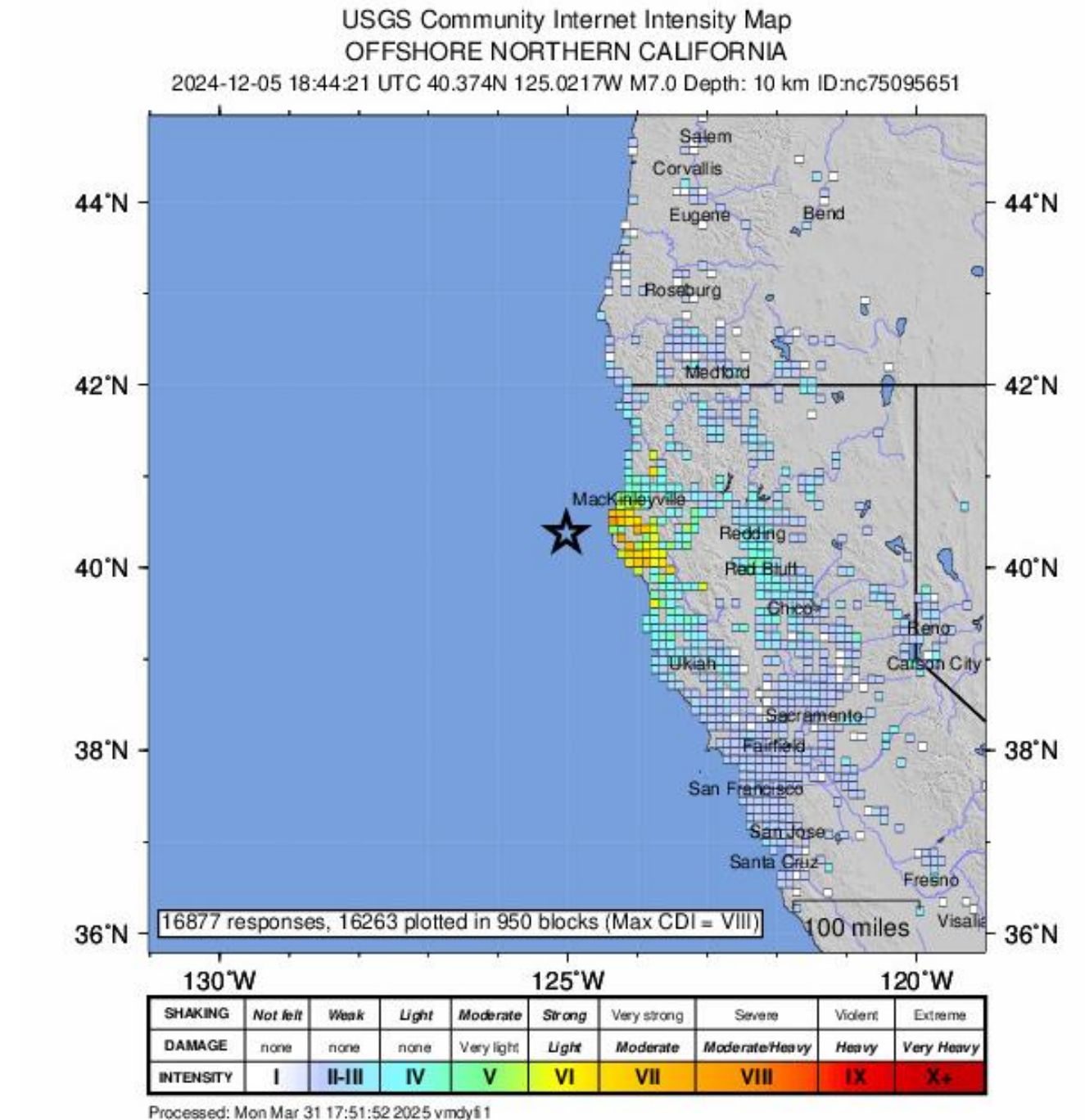
“How do we know this actually works?”

December 5, 2024

7.0 Magnitude Earthquake off the coast of California

Medford School District and the local hospital sent a ShakeAlert warning through their PA system and delivered an imminent shaking warning almost 30 seconds before shaking began.

Medford School District uses the ShakeAlert PA system for drills



Undergraduate Opportunities

Undergraduate Opportunities

18 undergraduates employed since 2018

STEM, Communications, Business

Transferrable Skills

Travel all over Oregon!



OHAZ Goals for the future

75 OHAZ cameras by late 2025

Completing buildout and maintenance of earthquake sensors

Continuing public outreach and engagement

Expand ShakeAlert technology in buildings and infrastructure

Permanent state funding

Exploring other ways to predict, mitigate, and respond to natural hazards!



Thank

Questions?

you!



ohaz.uoregon.edu

ohaz@uoregon.edu

Find us on social


[@uohazardsla](https://twitter.com/uohazardsla)

     
[@OregonHazardsLa](https://www.instagram.com/OregonHazardsLa)

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