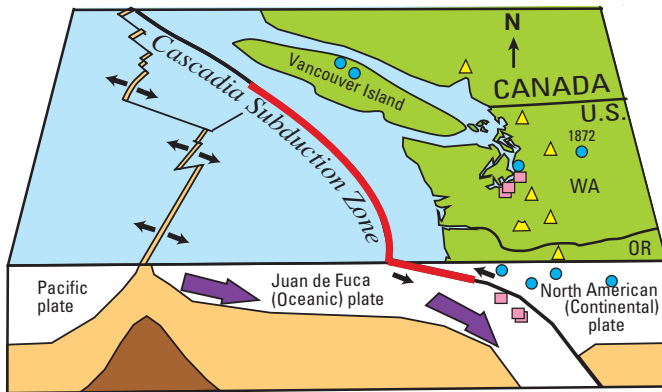


PNSN—Pacific Northwest Seismograph Network

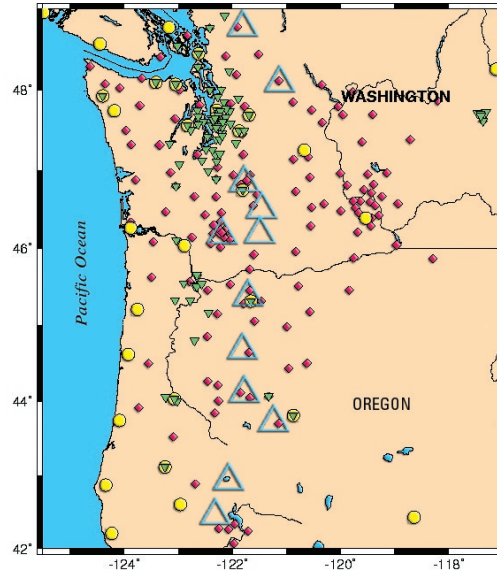
The Pacific Northwest Seismograph Network (PNSN), an integral part of the Advanced National Seismic System (ANSS), locates earthquakes in Washington and Oregon and communicates earthquake information to the public.

Earthquakes in the Pacific Northwest

The Pacific Northwest (PNW) is an active seismic area with three distinct types of earthquakes. Major deep earthquakes recur every 30 years or so in western Washington. Subduction-zone earthquakes, which can be as large as magnitude 9.0 (M9.0), recur every few hundred years on a long offshore fault that parallels the coast of Washington and Oregon. Shallow crustal faults within the continental plate are a hazard to major urban centers from Seattle to Portland. Although recurrence times are not known, crustal earthquakes are a possibility almost anywhere in Washington and Oregon, including areas east of the Cascades such as Wenatchee, Yakima, and Walla Walla. Crustal earthquakes also precede volcanic outbursts and were used to predict eruptions at Mount St. Helens in the 1980s.



- **Deep earthquakes** (40 miles below the Earth's surface) are within the subducting Oceanic plate as it bends beneath the Continental plate. The largest deep Northwest earthquakes known were in 1949 (M7.1), 1965 (M6.5), and 2001 (M6.8).
- **Shallow earthquakes** (less than 15 miles deep) are caused by faults in the North American Continental plate. The Seattle fault produced a shallow magnitude 7+ earthquake 1,100 years ago. Other M7+ earthquakes occurred in 1872, 1918, and 1946.
- ▬ **Subduction earthquakes** are huge quakes that result when the boundary between the Oceanic and Continental plates ruptures. In 1700, the most recent Cascadia Subduction Zone earthquake sent a tsunami as far as Japan.
- ▲/▲ Mount St. Helens/other Cascade volcanoes.



Each year, the PNSN records several dozen felt earthquakes and thousands of smaller—ongoing reminders of the earthquake hazards in Washington and Oregon.

The Network: PNSN's Earthquake Monitoring Equipment uses several different types of sensors that measure ground motion: accelerometer ▽; seismometer (3 components) ●; seismometer (1 component) ◆; Cascade volcanoes ▲.

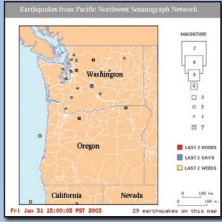
The PNSN

To monitor earthquake and volcanic activity across the Pacific Northwest, the University of Washington and the University of Oregon cooperatively operate the PNSN. Beginning in 1969 with five seismometers, the PNSN has grown to more than 200 seismograph stations distributed across the region. At the heart of the PNSN is an information and operations center, located at the University of Washington Department of Earth and Space Sciences, which provides rapid earthquake information to emergency responders, the press, and the public and high-quality data to engineers. The PNSN is sponsored by the U.S. Geological Survey (USGS), the U.S. Department of Energy, and the State of Washington.



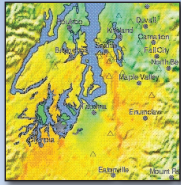
Earthquake damage: engineers examine a lateral-spreading soil failure adjacent to Capitol Lake in Olympia, Washington, after the 2001 Nisqually earthquake. [Photograph by Pedro Arduino, University of Washington.]

ANSS/PNSN Products (URLs were accessed 6/1/04)



Recent Earthquakes

Automatic maps and event information are available within minutes online at the PNSN Web site <http://www.pnsn.org/recenteqs> and the Earthquake Hazards Program Web site <http://earthquake.usgs.gov/>, which displays earthquake locations nationwide.



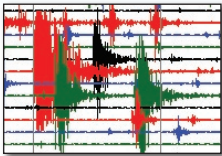
ShakeMap

Instrumentally measured shaking intensity. Fast information on strong shaking in urban areas helps get emergency response to the right places. <http://www.pnsn.org/shake/> and <http://earthquake.usgs.gov/shakemap/>



Earthquake Notification

Automated notifications of earthquakes through e-mail, pager, or cell phone. Rapid information and updates to first responders, and resources for media and local government. <http://earthquake.usgs.gov/products/services.html>



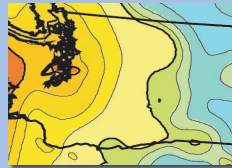
Real-time Waveforms

Real-time waveform displays from 60 stations are available online 24 hours a day. <http://www.pnsn.org/WEBICORDER/GREEN/> and <http://earthquake.usgs.gov/activity/helicorders.html>



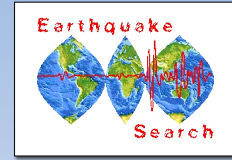
Did You Feel It?

Human reports of shaking. Report your earthquake experience and see the map of shaking reports. <http://pasadena.wr.usgs.gov/shake/pnw>



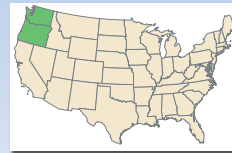
Hazard Maps

Hazard maps identify the areas of the country that are most likely to experience strong shaking in the future. Zip code or latitude-longitude lookup is available. <http://eqhazmaps.usgs.gov/>



Earthquake Catalog & Data

Online catalog search and downloadable information and technical data. <http://www.quake.geo.berkeley.edu/anss/catalog-search.html>



Earthquake Info by Region

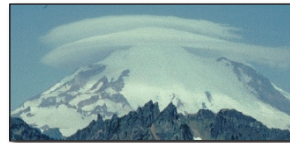
Information about earthquake hazards, historical seismicity, faults and more is available for different regions of the country, and by State. <http://www.pnsn.org/HAZARDS/> and <http://neic.usgs.gov/neis/states/states.html>



[Photo by George Thomas, PNSN]

Educational Tools

Seismometers in Schools—Schools throughout Washington and Oregon host seismometers and view the data immediately on the Web. The PNSN also provides onsite and online Lab tours. **Earthquakes for Kids**—For students and teachers, with an earthquake glossary, learning links, science fair ideas, and much more! <http://www.pnsn.org/OUTED/> and <http://earthquake.usgs.gov/4kids/>



[Photo by Seth Moran, USGS]

Volcano Monitoring

Cascade volcanoes: Updates on earthquake activity at Mount Adams, Mount Baker, Crater Lake, Glacier Peak, Mount Hood, Mount Rainier, Mount St. Helens, and Three Sisters. http://www.pnsn.org/INFO_GENERAL/volcanoes.html

A Region of the ANSS

In 2000, the PNSN was incorporated into the Advanced National Seismic System (ANSS), representing the Pacific Northwest region. The ANSS is a USGS effort to coordinate and upgrade seismic-monitoring networks nationwide and to implement rapid distribution of earthquake information. Under the ANSS, the PNSN has begun installing a new generation of digital earthquake sensors in urban areas that can accurately record ground motions from the lightest to the strongest shaking. This information will be critical for engineers in their effort to improve construction of future buildings. Other products include rapid information on the intensity and distribution of ground shaking that can be used by emergency managers to direct rescue service to hard-shaken areas. This information will be available simultaneously on USGS and PNSN Web sites.

For more information, contact:

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