

QUARTERLY NETWORK REPORT 2004-A

on

Seismicity of Washington and Oregon

January 1 through March 31, 2004

Pacific Northwest Seismograph Network

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This report is prepared as a preliminary description of the seismic activity in Washington State and Oregon. Information contained in this report should be considered preliminary, and not cited for publication without checking directly with network staff. The views and conclusions contained in this document should not be interpreted as necessarily representing the official policies, either express or implied, of the U.S. Government.

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INTRODUCTION

This is the first quarterly report of 2004 from the Pacific Northwest Seismograph Network (PNSN), at the University of Washington Dept. of Earth and Space Sciences, covering seismicity of Washington and western Oregon.

Comprehensive quarterlies have been produced by the PNSN since the beginning of 1984. Prior to that we published quarterly reports for western Washington in 1983 and for eastern Washington from 1975 to 1983. Annual technical reports covering seismicity in Washington since 1969 are available from the U.W. Dept. of Earth and Space Sciences. The complete PNSN catalog of earthquake locations and magnitudes is available on-line, both through our web-site (ftp://ftp.ess.washington.edu/pub/seis_net/) and through the ANSS catalog. In the quarterly reports we provide special coverage (figures, counts, listings, etc.) of earthquake swarms, aftershock sequences, etc. Prior to 2004, each quarterly included station tables. Beginning in 2004, station tables will be included only in the 4th quarter report. Lists of currently operating stations are available on-line through web page <http://www.pnsn.org/OPS/stations.html>.

This quarterly report discusses network operations, seismicity of the region, unusual events or findings, and our educational and outreach activities. This report is preliminary, and subject to revision. The PNSN routinely records signals from selected stations in adjoining networks. This improves our ability to locate earthquakes at the edges of our network. However, our earthquake locations may be revised if new data become available. Findings mentioned in these quarterly reports should not be cited for publication.

NETWORK OPERATIONS

Table 1 gives approximate periods of time when individual stations were inoperable. Data for Table 1 are compiled from weekly plots of network-wide teleseismic arrivals and automated and manual digital and analog signal checks, plus records of maintenance and repair visits.

Strong Motion Instrumentation Update

The first of the Duwamish Valley array stations was installed this quarter. Station ACES is located at the Seattle Field Office of the Army Corps of Engineers. The location was selected based on previous seismic recordings at this site of the 1965 Olympia earthquake.

An additional strong motion station was installed in Oregon. Station SEAS is located at the Seaside Historical Museum in Seaside, Oregon. This is an ANSS station but TrendWest Resorts provided the hardware and installation funding.

Computer Processing and Analysis Update

This quarter, scossa remained our main EARTHWORM computer, with milli serving as our primary backup and verme as the secondary backup. Milli and verme still serve as the principal computers for data acquisition for most of the digital stations. We are currently running EARTHWORM-V6.1. Pigia is our primary digitizer for analog stations.

A high-speed, 2 CPU Linux box with RAID disc storage, grasso, is used for research purposes and online storage of historical waveforms of frequent interest. Grasso is also used for non time-critical processing to reduce the load on our primary processing computers.

Software Update/Product Development

Washington State Department of Transportation has funded a joint PNSN/ UW Civil Engineering proposal to improve ground-motion processing capabilities and develop fast damage estimates that would serve the emergency earthquake information needs of WSDOT. To make rapid notification much more useful for post-earthquake recovery and emergency response, we are working on the following:

- Build the systems needed to provide estimated bridge damage based on ShakeMap ordinates, the Washington State Bridge Inventory, and WSDOT provided bridge fragility information. Based on probability of damage, a ranked list of bridges has been produced to help prioritize bridge inspections. This code has been written and was tested and verified to work this quarter. The automation is currently being tested.
- We are currently running two parallel versions of ShakeMap, our current version 2.4 and also version 3.0, which includes the bridge damage prediction code.

CREST Instrumentation Update

A replacement site for CREST station RWW has been found at Wishkah Valley School where we can use IP connectivity. Unexpected siting problems involving power have delayed installation, but site construction began at the end of the quarter.

Use of PNSN Data

The IRIS Data Management Center reports 581 requests for PNSN trace-data this quarter. Nearly 128,000 traces were requested.

TABLE 1 - Station outages and installations

Station	Outage Dates	Comment
ACES	3/9/2004	Installed (SMO)
ALST	02/02/04-End	Bad timing
ASR	01/18/04-02/07/04	Dead
BABE	12/17/03-01/08/04	No communications
BEVT	03/02/04-End	No communications
BHW	03/14/04-End	Very noisy
BOW	12/24/03-02/14/04	Dead
BPO	12/23/03-03/24/04	Dead
BRO	02/04/03-End	Dead
BUO	12/31/03-01/11/04	Dead
COLT	09/11/02-End	Intermittent - Hardware problem, needs repair
COR	02/16/04-End	No communications
EYES	09/11/02-End	Intermittent - Hardware problem, needs repair
FRIS	12/29/03-01/09/04	Dead
GHW	10/09/03-02/09/04	Dead
GHW	02/09/04-03/21/04	Intermittent
GLK	12/09/03-/3/09/04	Very noisy
GPW	01/14/04-02/08/04	Dead
GPW	03/16/04-End	Dead
HBO	02/13/04-End	Very noisy
HDW	12/19/03-End	Very noisy
HUBA	09/12/02-End	Intermittent - Hardware problem, needs repair
HUO	03/12/04-03/28/04	Dead battery, site is now solarized
IRO	12/14/03-01/24/04	Dead
KOS	01/22/04-02/03/04	Dead
LAWT	12/23/03-01/21/04	Bad timing
MBW	01/13/04-End	Dead
MEAN	12/20/03-02/20/04	Bad timing
MEGW	04/01/03-End	Bad timing
MPL	01/01/04-End	Bad timing
NLO	03/17/04-End	Dead
NOWS	11/25/03-02/24/04	Bad timing
OBH	01/31/02-End	Temp. removed for logging
OOW	12/21/03-End	Possible dead battery
OSD	12/21/03-End	Dead because of OOW
OSR	01/06/04-End	VCO may be off-frequency
PGO	09/21/03-End	Dead
PGW	10/08/03-End	Dead
RCM	01/27/04-End	Intermittent
RCS	12/10/03-02/07/04	Intermittent
RER	12/24/03-02/21/04	Very noisy
RMW	03/19/04-End	Dead
RVC	12/05/03-End	Very noisy
RVW	02/26/04-End	Dead
RWW	10/24/02-End	Temporarily removed
SBES	12/19/03-01/13/04	No communications
SCC	01/03/04-02/10/04	Vault needed repair from water damage
SCC	03/03/04-03/25/04	Disconnected for testing
SEA.EN?	01/07/04-02/16/04	Bad timing
SEA.HH?	12/05/03-End	Disconnected for renovation
SEAS	1/31/2004	Installed (SMO)
SEP	01/14/04-02/10/04	Dead
SEP	02/18/04-03/13/04	Dead
SFER	12/30/03-01/11/04	No communications
SLF	01/25/04-02/01/04	Dead

TABLE 1 - Station outages and installations

Station	Outage Dates	Comment
SMW	06/20/03-End	Intermittent
SOPS	08/27/02-End	K2 flash problem
SP2	03/04/04-End	Temporarily removed
SQM	08/01/03-End	Channel mix-up
SSO	11/25/03-03/12/04	Very noisy
SVTR	09/20/02-End	Intermittent - Hardware problem, needs repair
TOLO	02/20/04-End	No communications
TRW	07/14/02-End	Fire damage repaired, not seismic
UWFH	12/17/03-03/02/04	Temp. removed for construction
VBE	12/02/03-End	Dead
VG2	12/28/03-02/10/04	Dead
VIP	12/09/03-End	Dead
VTH	12/13/03-02/01/04	Off freq., seis. was changed
WPW	01/01/04-02/28/04	Dead
WRW	01/25/04-02/01/04	Dead
WRD	01/09/04-02/01/04	Noisy
YEL	01/14/04-02/10/04	Dead
YEL	02/18/04-End	Dead
YPT	03/16/04-End	Dead

EARTHQUAKE DATA - 2004-A

There were 937 events digitally recorded and processed at the University of Washington between January 1 and March 31, 2004. Locations in Washington, Oregon, or southernmost British Columbia were determined for 510 of these events; 403 were classified as earthquakes and 107 as known or suspected blasts. The remaining 427 processed events include teleseisms (124 events), regional events outside the PNSN (53), and unlocated events within the PNSN. Unlocated events within the PNSN include surficial events on Mt. St. Helens and Mt. Rainier, very small earthquakes, and blasts. Frequent mining blasts occur near Centralia, Washington and we routinely locate them.

Table 2 lists earthquakes reported to have been felt during this quarter. Events with ShakeMaps or Community Internet Intensity Maps (CIIM) are indicated. This quarter, five events generated ShakeMap. ShakeMap (<http://www.pnsn.org/shake/index.html>) shows instrumentally measured shaking using data from accelerometers in the network. Peak ground acceleration (PGA) values are modeled from accelerometer data, local geology, and distance to the epicenter. CIIM maps (<http://pasadena.wr.usgs.gov/shake/pnw/>) convert "felt" reports relayed via Internet into numeric intensity values. The CIIM map shows the average intensity by zip code.

Table 3 is this quarter's catalog of earthquakes M 2.0 or greater, located within the network - between 42-49.5 degrees north latitude and 117-125.3 degrees west longitude.

Figure 1. Earthquakes with magnitude greater than or equal to 0.0 ($M_c \geq 0$).

Figure 2. Blasts and probable blasts ($M_c \geq 0$).

Figure 3. Earthquakes located near Mt. St. Helens ($M_c \geq 0$).

Figure 4. Earthquakes located near Mt. Rainier ($M_c \geq 0$).

TABLE 2 - Felt Earthquakes during the 1st Quarter of 2004

DATE-(UTC)-TIME	LAT(N)	LON(W)	DEP	MAG	COMMENTS	CIIM	Shake Map
yy/mm/dd hh:mm:ss	deg.	deg.	km				
1/06/2004 22:45:52	48.64	122.45	0.0	2.1	14.3 km S of Bellingham, WA		
1/07/2004 00:11:51	48.64	122.44	0.1	2.7	14.0 km SSE of Bellingham, WA	✓	
1/09/2004 09:08:18	45.63	122.76	17.4	2.1	15.8 km NW of Portland, OR		
1/14/2004 12:13:39	47.86	120.16	2.5	3.3	11.5 km WNW of Chelan, WA	✓	✓
1/14/2004 12:39:54	47.86	120.16	0.7	2.1	11.5 km WNW of Chelan, WA		
1/16/2004 03:19:71	47.33	122.36	24.5	2.4	12.1 km NNE of Tacoma, WA		
1/16/2004 08:18:18	47.57	122.59	55.6	3.6	3.0 km E of Bremerton, WA	✓	✓
1/26/2004 16:43:11	47.10	122.21	10.7	1.8	20.2 km SW of Enumclaw, WA		
2/09/2004 14:33:12	47.67	120.18	0.7	2.9	3.7 km E of Entiat, WA		
2/09/2004 20:04:27	48.38	122.44	0.0	2.4	8.9 km WSW of Mount Vernon, WA		
2/26/2004 01:51:54	45.65	122.75	18.9	3.0	16.2 km NW of Portland, OR	✓	✓
2/28/2004 02:01:48	46.04	119.02	1.0	3.3	20.2 km SSE of Kenewick, WA		✓
3/17/2004 11:34:27	48.45	122.27	0.1	3.8	6.0 km ENE of Mount Vernon, WA	✓	✓
3/19/2004 05:41:35	45.15	122.63	26.1	2.4	14.0 km SSE of Canby, OR	✓	

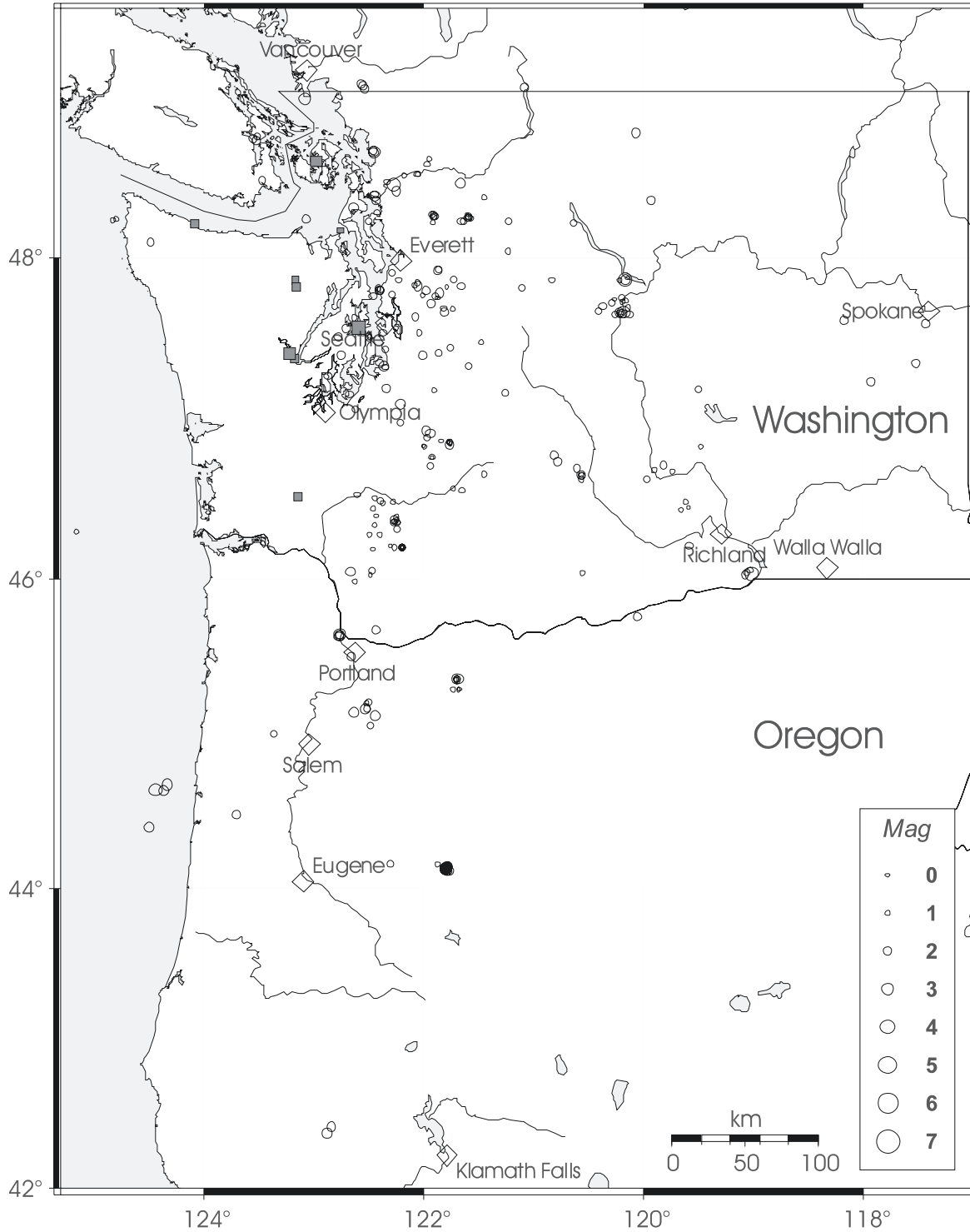


Figure 1. Earthquakes with magnitude greater than or equal to 0.0 ($M_c \geq 0.0$).

Unfilled diamonds represent cities. Quakes shallower than 30 km are indicated by circles, and deeper quakes by filled squares.

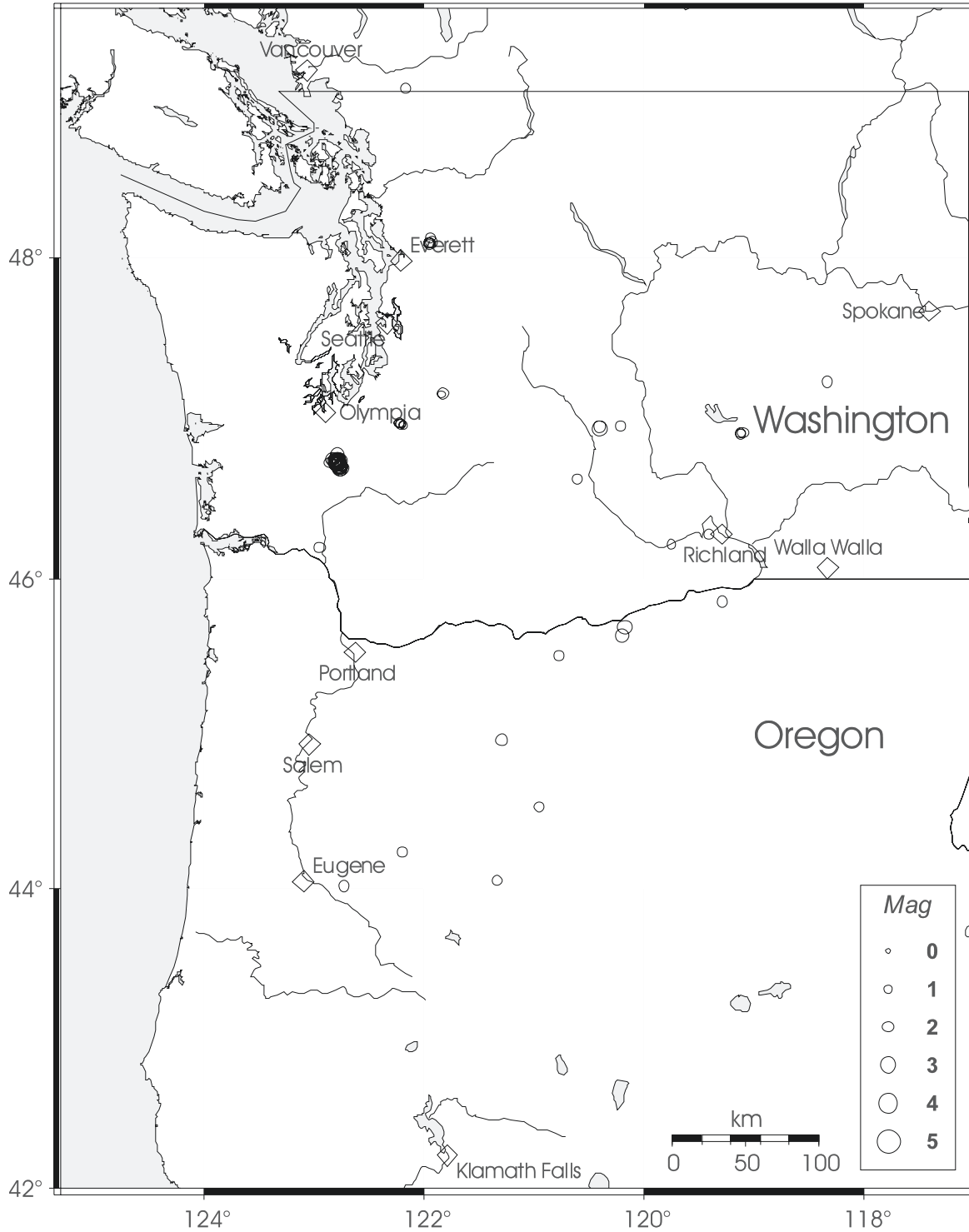


Figure 2. Blasts and probable blasts. Unfilled diamonds represent cities.

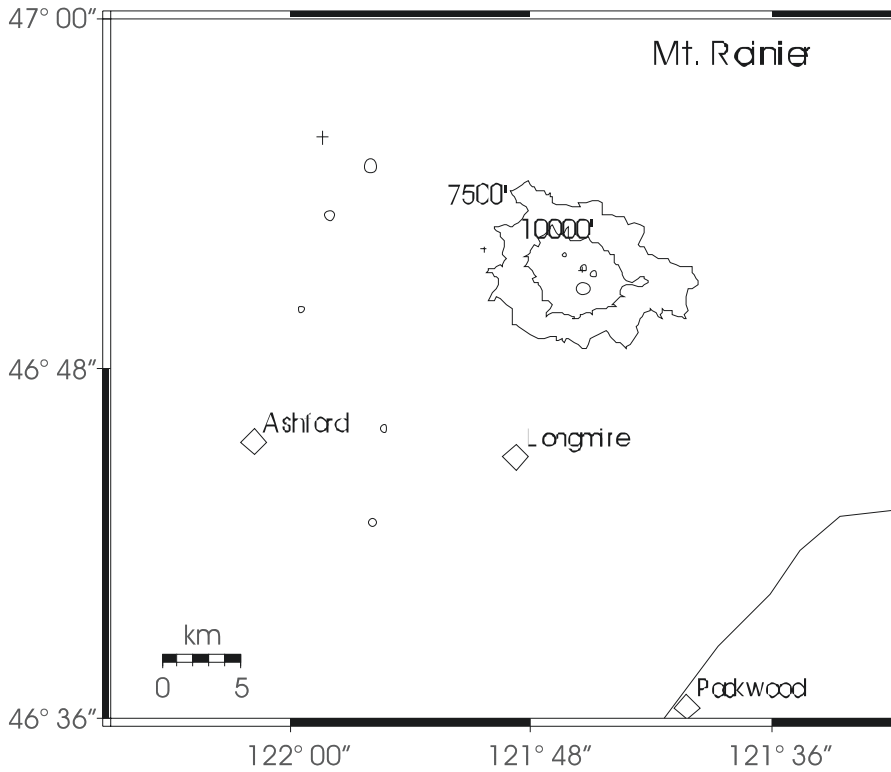


Figure 3. Earthquakes at Mt. St. Helens, M>0.0.

Plus' symbols indicate depth less than 1 km. Circles indicate depth greater than 1 km. Elevation contours shown in feet

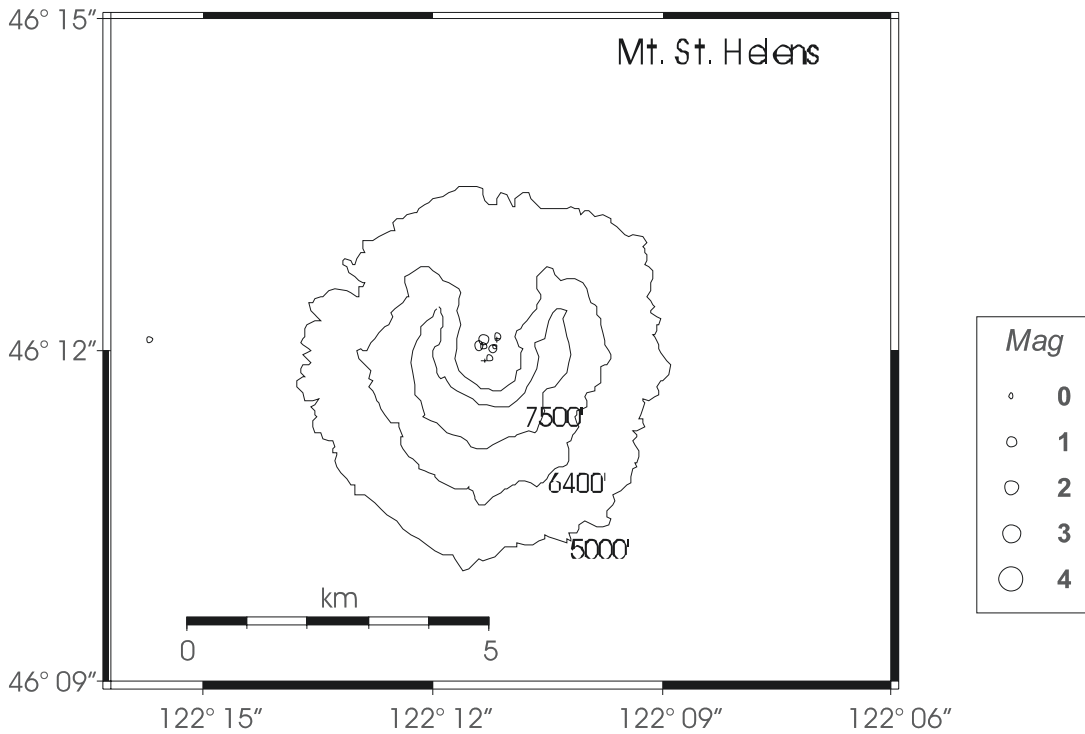


Figure 4. Earthquakes at Mt. Rainier, M>0.0.

OREGON

During the first quarter of 2004, a total of 108 earthquakes were located in Oregon between 42.0 degrees and 45.5 degrees north latitude, and between 117 degrees and 125 degrees west longitude. One earthquake within this area was reported felt within this quarter (see Table 2 for details). A magnitude 2.4 event on March 19, at a depth of about 26 km, located 14 km south-southeast of Canby. Two other felt events northwest of Portland are in the western WA area, below.

OREGON CASCADE VOLCANOES

This quarter a swarm of small earthquakes occurred between March 23 and 25 near the Three Sisters volcanic center in central Oregon. An information statement was issued in cooperation with the USGS Cascade Volcano Observatory: http://www.pnsn.org/NEWS/PRESS_RELEASES/March242004Info.html.

The earthquakes occurred in the northeast part of an area centered 5 kilometers (3 miles) west of South Sister volcano where the ground has been uplifted by as much as 25 cm (about 10 inches) since late 1997 see http://vulcan.wr.usgs.gov/Volcanoes/Sisters/WestUplift/information_18march2002.html). Over a hundred events were detected, and 78 were located in an area from 44-44.3 N latitude, and 121.5-122.3 W longitude. The largest events were magnitude 1.9 (2 events). The Three Sisters area was poorly instrumented before the summer of 2002 and low magnitude earthquakes, like this quarter's, could have gone undetected in the past. The swarm died down rapidly, and temporary seismometer station BKC was installed at Black Crater in early April. No felt or damaging earthquakes are known in the area.

WESTERN WASHINGTON SEISMICITY

During the first quarter of 2004, 235 earthquakes were located between 45.5 degrees and 49.5 degrees north latitude and between 121 degrees and 125.3 degrees west longitude. Nine earthquakes were felt this quarter in western Washington or the northwestern tip of Oregon. Details are in Table 2.

The largest felt earthquakes in western Washington was a magnitude 3.6 event on Jan. 16 (UTC), located about 3 km east of Bremerton at a depth of about 56 km. This was also the deepest quake in western Washington this quarter.

WASHINGTON CASCADE VOLCANOES

Mount Rainier

The number of events in close proximity to the cone of Mt. Rainier varies over the course of the year, since the source of much of the shallow activity is presumably ice movement or avalanching at the surface, which is seasonal in nature. Events with very low frequency signals (1-3 Hz) believed to be icequakes are assigned type "L" in the catalog. Emergent, very long duration signals, probably due to rockfalls or avalanches, are assigned type "S" (see Key to Earthquake Catalog). There were no located events flagged "L" or "S" at Mount Rainier this quarter although 36 "L" or "S" events were recorded, but were too small to locate reliably. Type L and S events are not shown in Fig. 4.

A total of 27 tectonic events (13 of these were smaller than magnitude 0.0, and thus are not shown in Fig. 4) were located within the region shown in Fig. 4. The largest tectonic earthquake located near Mt. Rainier this quarter was on January 15; a magnitude 2.0 event at a depth of about 14 km located about 15 km west-northwest of the summit. This quarter, 15 tectonic earthquakes were located in the "Western Rainier Seismic Zone" (WRSZ), a north-south trending lineation of seismicity approximately 15 km west of the summit of Mt. Rainier (for counting purposes, the western zone is defined as 46.6-47.0 degrees north latitude and 121.83-122 west longitude). Within 5 km of the summit, there were 9 (4 of them smaller than magnitude 0.0 and thus not shown in Fig. 4) higher-frequency tectonic-style earthquakes, and the remaining events were scattered around the cone of Rainier as seen in Fig. 4.

Mount St. Helens

Figure 5 shows volcano-tectonic earthquakes near Mount St. Helens. Low frequency (L) and avalanche or rockfall events (S) are not shown.

This quarter, 53 tectonic earthquakes were located at Mount St. Helens in the area shown in Fig. 5. Of these earthquakes, 13 were magnitude 0.0 or larger and 4 were deeper than 4 km. The largest tectonic earthquake at Mount St. Helens this quarter was a magnitude 1.3 event at about 2 km depth on January 29 UTC. It was located about 0.4 km north-northeast of the summit.

One type "S" or "L" events was located at Mount St. Helens, and 30 "L" or "S" events too small to locate were recorded.

EASTERN WASHINGTON SEISMICITY

During the first quarter of 2004, 59 earthquakes were located in eastern Washington in the area between 45.5-49.5 degrees north latitude and 117-121 degrees west longitude. One earthquake was recorded near Spokane this quarter. The largest earthquakes recorded in eastern Washington this quarter were magnitude 3.3 (two of them). One occurred on Jan. 14 about 12 km west-northwest of Chelan. The other was on Feb. 28 (UTC), and occurred about 20 km south-southeast of Kennewick. Both events were shallow, within a few km of the earth's surface.

OTHER SOURCES OF EARTHQUAKE INFORMATION

We provide automatic computer-generated alert messages about significant Washington and Oregon earthquakes by e-mail, FAX or via the pager-based RACE system to institutions needing such information, and we regularly exchange phase data via e-mail with other regional seismograph network operators.

Other regional agencies provide earthquake information. These include the Geological Survey of Canada (Pacific Geoscience Centre), Sidney, B.C. <http://www.pgc.nrcan.gc.ca/seismo/table.htm> ; and other regional networks in the United States <http://earthquake.usgs.gov/regional/> The US Geological Survey coordinates earthquake information nationally; <http://earthquake.usgs.gov>.

EARTHQUAKE CATALOG, 2004-A

Complete catalog listings are available on-line through <http://www.pnsn.org/CATDAT/catalog.html> Key to earthquake catalog can be found in the last quarterly report of each year, or at

http://www.pnsn.org/INFO_GENERAL/PNSN_QUARTERLY_EQ_CATALOG_KEY.htm

**TABLE 3. Tectonic earthquakes, 1st quarter, 2004, magnitude 2.0 and larger
Within the area 42-49.5 degrees north latitude and 117-125.3 degrees west longitude**

Jan-04												
DAY	TIME	LAT	LON	DEPTH	M	NS/NP	GAP	RMS	Q	MOD	TYP	
6	45:51.9	48 38.19	122 27.12	0.02*	2.1	30/031	104	0.30	BC	P3	F	
7	11:51.2	48 38.41	122 26.64	0.05*	2.7	32/033	104	0.33	CC	P3	F	
9	08:17.7	45 38.07	122 45.80	17.36	2.1	29/032	63	0.13	AA	C3	F	
13	32:29.8	44 29.14	123 41.66	23.14	2.0	11/011	127	0.19	BB	O0		
14	13:38.9	47 51.70	120 09.81	2.53	3.3	36/039	94	0.36	CC	N3	F	
14	39:54.0	47 51.87	120 09.81	0.66	2.1	21/023	95	0.35	CC	N3	F	
15	30:25.8	45 21.83	121 41.34	3.18	2.5	19/021	75	0.23	BB	O0		
15	32:35.3	46 54.94	121 56.01	13.88	2.0	38/040	43	0.14	AA	C3		
16	20:11.4	47 19.89	122 21.32	24.48	2.4	53/053	39	0.27	BA	P3	F	
16	18:18.1	47 34.15	122 35.40	55.63	3.6	92/092	17	0.30	BA	P3	F	
19	51:59.9	46 50.76	121 45.41	2.22	2.0	28/031	74	0.12	AA	C3		
30	34:18.0	48 57.72	123 04.48	19.29	2.5	19/020	228	0.22	BD	P3		
Feb-04												
DAY	TIME	LAT	LON	DEPTH	M	NS/NP	GAP	RMS	Q	MOD	TYP	
6	12:36.1	44 40.84	124 19.67	23.41	2.4	13/015	241	0.42	CD	O0		
9	33:11.8	47 40.04	120 10.52	0.74	2.9	35/036	48	0.40	CC	N3	F	
9	04:27.4	48 22.60	122 26.35	0.03*	2.4	23/024	59	0.33	CC	P3	F	
9	17:48.8	42 25.01	122 49.88	20.73	2.1	4/004	226	0.00	AD	K3		
12	02:20.6	45 10.03	122 31.60	21.71	2.4	34/034	55	0.32	CA	O0		
15	59:43.2	44 38.84	124 26.03	25.33	2.9	16/017	221	0.41	CD	O0		
23	04:32.5	47 24.77	123 12.71	45.64	2.6	49/050	110	0.16	BB	P3		
26	51:54.4	45 38.76	122 45.23	18.88	3.0	62/063	43	0.16	BA	C3	F	
27	00:12.9	45 38.87	122 45.68	18.84	2.0	43/046	43	0.16	BA	C3		
28	01:47.9	46 02.18	119 01.23	1.02	3.3	31/031	117	0.33	CB	E3	F	
Mar-04												
DAY	TIME	LAT	LON	DEPTH	M	NS/NP	GAP	RMS	Q	MOD	TYP	
15	57:54.3	45 07.71	122 26.30	15.53	2.1	25/027	75	0.21	BA	O0		
16	22:57.1	47 39.83	120 12.81	0.52	2.0	20/024	114	0.29	BC	N3		

Mar-04

DAY	TIME	LAT	LON	DEPTH	M	NS/NP	GAP	RMS	Q	MOD	TYP
16	34:59.3	48 35.31	122 58.54	50.27	2.5	24/026	80	0.18	BA	P3	
17	34:27.2	48 26.78	122 16.06	0.05*	3.8	59/059	79	0.48	CC	P3	F
17	50:17.6	48 24.26	122 14.64	0.03*	2.1	16/016	68	0.31	CB	P3	
19	41:34.7	45 08.74	122 37.53	26.12	2.4	50/051	68	0.34	CA	O0	F
21	34:26.6	48 27.17	121 39.42	0.02*	2.2	18/019	119	0.37	CC	C3	
21	35:08.9	44 24.09	124 29.21	22.38	2.2	7/008	301	0.24	CD	O0	
30	45:35.8	42 22.39	122 52.40	6.25#	2.2	6/006	175	0.03	AC	K3	

OUTREACH ACTIVITIES

The PNSN staff and faculty participate in an educational outreach program designed to better inform the public, educators, businesses, policy makers, government agencies, engineers, and the emergency management community about earthquake and related hazards. Our program offers lectures, classes, lab tours, workshops, and consultations and electronic and printed information products. Special attention is paid to the information needs of the media. We provide information directly to the public through information sheets, an audio library, email, and via the Internet at <http://www.pnsn.org>.

Telephone, Mail, and On-line outreach

The PNSN audio library system received 250 calls this quarter. Our audio library provides several recordings; we have resumed regular updating of messages concerning current seismic activity. There are also recordings describing seismic hazards in Washington and Oregon, and earthquake prediction. Callers to the audio library have the option of being transferred to the Seismology Lab for additional available information.

Internet outreach:

PNSN staff replied to about 100 e-mail messages from the public seeking information on a variety of topics via the seis_info@ess.washington.edu email address. Routine questions are typically responded to within a day. Complex or sensitive questions are routed to the appropriate staff person for a more in-depth response. These replies include assistance with hazard assessments and legal issues, consultations with government agencies, and support for engineering issues related to strong motion data.

Changes to our web site this quarter include two new webicorder features. First, current webicorders now have fixed web addresses!! This means you can bookmark your favorite webicorder station., or add a link on your web page for easy monitoring. Secondly, webicorder pages now use two browser windows, one to display the index and the other for viewing a webicorder record. This makes it easier to page through a series of webicorder records, either in time-sequence or across stations. To test-drive this new format, we recommend resizing the index window long and narrow across the top of the page, and placing the webicorder window below it. Scroll the index to a station, and click on successive time periods.

K-20 Education Outreach:

PNSN and USGS staff provided 14 Seismology Lab tours and presentations for K-20 students and teachers serving about 300 people this quarter including participation in UW's Math day attracting middle and High school students from across the State. Ruth Ludwin hosted a middle school job shadow.

- **Educational Resources Page:** <http://www.pnsn.org/EDHOME/index.html>.

The PNSN maintains an email list-service and distributed monthly newsletters to over 50 local K-20 educators, subscribers interested in earth sciences education.

Media Relations:

PNSN staff frequently provides interviews, research support, and referrals to radio, television, film, and print media. The PNSN organizes press conferences, contributes to TV and radio news programs and talk shows, and provides field opportunities linking reporters with working scientists. Staff members also assist news organizations, authors, television producers, and independent documentary makers to design accurate and informative stories and programs related to earthquake and volcano hazards. PNSN staff work to link reporters and producers developing stories with the appropriate research institutions, agencies, and scientists working in the areas to be covered by the piece.

Meetings, Presentations, and Visitors:

- Steve Malone attended the ANSS regional coordinators meeting in Pasadena.
- Steve Malone gave a general-public presentation on volcanoes to the Emerald Heights activity club.
- Bill Steele and Tony Qamar hosted a meeting for FEMA, WAEMD, Seattle Emergency Management and Ivan Wong of URS, to develop a project proposal to develop a Seattle area ShakeMap and use ShakeMap data to produce information products for the emergency management community.
- The PNSN hosted the Cascadia Region Earthquake Working Group's Workshop, "Planning for Earthquakes in Washington State" attended by 35 land use planners.
- Two separate groups of Italian seismologists visited for several weeks each for seismic research consultation.
- The PNSN hosted a meeting of CPARM (Contingency Planners and Recovery Managers) attended by 45 representatives of Portland and Puget Sound Region corporations. Tony Qamar (PNSN) and Craig Weaver (USGS) made presentations about current research activities and emerging information products.
- Ruth Ludwin provided two general presentations on PNW EQ hazards; at the Port Townsend Marine Science Center and on Whidbey Island at a class for the annual conference of Island County Beach Watchers
- Bill Steele lectured on disaster preparedness for the deaf to residents of Seattle's Lake City neighborhood.