Field report for the Cascadia2021 Seismic Node Experiment

(v1: March 18, 2022)

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(for an animation of the network installation and more photos from the field, see blogs.oregonstate.edu/cascadia2021)

Project objectives:

The primary objective of the Cascadia2021 experiment was to create a model of the subsurface and better understand the seismic hazards of the Cascadia Subduction Zone. The goal was to obtain data to build a high-resolution 3D Vp model for the Cascadia forearc from the deformation front to beneath the Coast Ranges of Oregon and southwest Washington by recording offshore seismic sources from cruise MGL2104 of the R/V Marcus Langseth. The onshore instruments complement the offshore dataset, filling a critical gap in the imaging data by recording seismic waves refracting through and reflecting at wide angle from the lower crust of the upper plate, the plate boundary, and the subducted oceanic plate.

A secondary objective was to record natural sources that provide information on site response and crustal structure of the upper plate, providing information critical for modeling future earthquake ground motions. Specifically, we acquired densely spaced lines of stations that recorded natural sources to evaluate the seismic response of the Tualatin Basin and to generate a receiver function transect across the entire forearc of southern Oregon where no such data currently exist. To achieve these objectives, instruments were installed along two long, densely spaced lines – one that extends from the coast at Tillamook across the Tualatin Basin and into the Portland Hills at ~250 m spacing, and another across southwest Oregon from the coast towards Mt McLaughlin at ~1 km spacing.

Network configuration:

We installed 755 nodal seismometers. The network configuration was comprised of three parts (Fig. 1). Two thirds of the nodes were installed along six linear arrays with inter-station spacing of 250-1000 m and aligned with offshore profiles; the remaining third were installed in a grid with ~10 km spacing from the OR/CA border into SW WA with a network footprint of ~50,000 km^2. The data are archived in PH5 format at the IRIS DMC with network code Z4. Figure 2 illustrates the site numbering schema for the PH5 database. Sites were renumbered after the field program was completed with sites ordered by **decreasing latitude in the six grid sectors** and by **increasing longitude along the dense nodal lines**. These site numbers are in the column labeled “SiteID” in Table 1, which also includes the preferred site information determined as described in the section on “Metadata quality control”. The original site names used during the permitting, deployment, and recovery process are in the column labeled “SiteNAME.” Figure 3 shows site locations in more detail. The station names for the linear arrays in Figure 3 are in the format X0xyz where X is the line number (which ranges from 1-6) and xyz us the site number within the line. Because of limitations on the maximum site number in the PH5 format, these are mapped to 1Xxyz in the PH5 database. Grid sites are not affected by this remapping.

In addition to the nodes, 13 temporary broadband seismometers supplemented the permanent network stations. Eight broadband stations were installed by the USGS in the Tualatin Basin to complement the high resolution nodal line for determining basin response. In addition, Nanometrics volunteered five post-hole seismometers with their new Pegasus Bluetoothenabled portable recording system. These were installed near Corvallis to compare the response to the deep borehole and vault broadband seismometers at IU station COR and next to nodal seismometers at sites 3022, 3027 and 3030. The fifth was installed in a vineyard to fill a hole in the network. The USGS data are archived at the IRIS-DMC under network USGS. The Nanometrics data will be archived as part of network Z4. Site coordinates and recording times are given in Table 2.

Permitting process:

Sites were installed on land managed by 85 different public and private entities. Because of the long process associated with obtaining permits from federal and state agencies, initial efforts were focused on obtaining permits from federal and state lands. To decrease the total number of groups to approach for permits, as many sites as possible were initially planned for public lands. This process began in February 2020 when we thought the experiment would occur during summer 2020. The decision to delay the Langseth cruise was not made until early summer, and spring 2020 was spent planning for a variety of different contingency scenarios.

Once the decision was made to delay the project until summer 2021, permitting was put on hold until January 2021. Fortunately we were able to carry over much of the work already completed to obtain permits from federal agencies in spite of several changes in the responsible contact person at some agencies. In all, permits were obtained from 3 federal agencies, 2 state agencies, 10 local agencies, 10 timber companies, 7 schools and churches, 9 private companies, and 46 individual landowners. Contact information was obtained from several different databases, including private sector apps such at OnX and HuntWise, which are geared towards the outdoor recreational community. An initial attempt at contact was attempted through mass mailing of a flyer describing the experiment. This was followed up by phone calls when necessary. For a list of all the Federal and State land managers and private landowners from whom permits were ultimately obtained see Appendix A.

To inform future permitting efforts, we note that although we acquired ODF and BLM permits, these parcels can be difficult to access due to the checkerboard pattern of land ownership and limited right of way on the roads across adjacent private timber lands. In a number of cases, suitable and more easily accessed alternative sites were available on adjacent timber lands.

Volunteer recruitment:

Volunteers were recruited by emails to a number of listservers (e.g., IRIS, UNAVCO, GeoPRISMS) and through word of mouth. An application webform was set up by the GeoPRISMS office that captured application materials. When the decision was made to delay for a year, we notified all applicants and alerted them when applications reopened for 2021. The application form stated that applicants were expected to cover their travel to the field site and that lodging, per diem, and deployment vehicles would be covered by the project. There were also limited funds to cover travel for applicants from groups underrepresented in the geosciences. Applicants were expected to attend a pre-field training workshop and return ~4 weeks after node deployment for node recovery.

We received a total of 235 applications. Of those 26 volunteers were offered volunteer positions and accepted them. The volunteer team was selected to provide a mix of backgrounds and experience levels. Over half the deployment team were women. In addition to graduate students in geophysics, the team included undergraduates, community college students, veterans, students of color, and older students who were returning to school to redirect their career goals. For photos from the field and short profiles of the participants see blogs.oregonstate.edu/cascadia2021.

Seismic bootcamp:

All volunteers attended a 3-day seismic bootcamp at the Geologic Sample Repository at Oregon State University before fanning out across western Oregon and Washington to deploy instruments. A schedule for the bootcamp is included here as Appendix B. Because of restrictions on the total number of people permitted in the classroom because of the covid-19 pandemic, we had to split the group into two sessions. The camp included presentations on the tectonic setting of Cascadia, specific project goals, seismometry, and the use of seismic data to image subsurface structure and evaluate seismic hazard. It also included hands-on practice installing and activating nodes and using navigational tools to find sites.

I**nstrumentation:**

All nodes were Fairfield 3-component nodes provided by the IRIS/PASSCAL instrument center. Acquisition parameters, which were set at the instrument center in consultation with the PIs prior to shipping, included a sampling rate of 1000 samples/s and a gain of 24 dB. Unfortunately, only the vertical component was recorded because of a programming error that was not apparent during node installation. After the deployment, instruments were returned to PASSCAL for data download.

Deployment:

Thirteen teams of 2 deployers in 14 vehicles deployed instruments starting on May 27, 2021. The first node was installed on the evening of May 27. Most of the instruments were installed by June 8, with several unused "spare" nodes installed later in Seattle and near Cape Perpetua on the Oregon coast to study topographic focusing. Vehicles included four 4WD pickup trucks and eight Ford Escape SUVs from the Oregon state motor pool, one USGS pickup, and one private vehicle. Deployers fanned out from Corvallis and stayed in motels throughout the region. Four teams remained based in Corvallis for the entire deployment. Teams were divided into 4 groups, each led by a member of the co-PI team. Because of covid-19 restrictions, participants were housed in single rather than shared rooms, which had a large impact on the project budget. We thank NSF for providing a supplement to cover the resulting cost overrun. Although finding lodging along the Oregon coast during the Memorial Day weekend was challenging, this timing provided a relatively safe window for deploying sites that were accessed via active logging roads!

Because of the pandemic and the large number and spatial extent of the sites, pre-deployment scouting of routes to access sites was limited. Routes were planned through detailed analysis of Google Earth and through consultations with personnel at the federal and state agencies and the timber companies. The primary navigation tool for deployers was a kmz file of planned sites that was loaded into GPS Tracks (on iPhones) or GPS Viewer (on Android phones). Another challenge was organizing keys and making sure that each team had the keys they needed to access roads that were blocked by locked gates. Our volunteer team is to be commended for their excellent navigation skills!

Notes were taken in “Rite in the Rain” notebooks provided to the participants. At each site, deployers logged geographic coordinates and elevation from their smartphones. They were instructed to orient the nodes relative to geographic north using handheld compasses, with their phone compass as a backup. Instruments were installed, leveled, and activated using the handheld units programmed at the PASSCAL instrument center prior to shipping. Deployers then photographed the sites and provided written notes of any landmarks and of the position of flagging relative to the node. They were instructed to consider the site through the eyes of someone who was not present for the installation when documenting the node position.

Every evening, each team reported the sites they had installed that day to their group leader and to co-PI Wirth, who compiled the information on installed sites and provided a GoogleEarth map documenting the installation progress. Approximately every other evening, the group leaders had a conference call to discuss progress and next steps.

For an animation of the day-by-day network installation, see:
https://blogs.oregonstate.edu/cascadia2021/021/09/07/animation-of-network-installation-starting-with-the-first-station-installed-on-the-evening-of-may-27-through-the-last-installation-on-june-17/

Recovery:

Most of the deployers returned to recover the instruments in early July. Similar to the deployment, the 4th of July weekend provided relatively safe passage over logging roads. On recovery, deployers logged geographic coordinates from their phone, and the GPS state, orientation, and level of the node, as well as any unusual observations. For example, one node had been displaced because of widening of a logging road that we had not been warned about. All nodes were recovered, which is a testament to the excellent installation documentation and route-finding skills of the deployers. Recovery occurred during the 2021 Pacific Northwest "heat dome" event, with afternoon temperatures reaching above 110°F.

Metadata quality control:

Although we had initially anticipated that the geographic coordinates recorded by the nodes would be the most accurate, post-recovery examination of those coordinates indicated that a significant number of sites had not recorded accurate location information. We therefore compared the coordinates logged on deployment, on recovery, and by the nodes by calculating the distance between each pair of potential coordinates. We then sorted the data by distance to identify outliers. When all three potential sites fell within 50 m of each other, the deployment location was taken as the best estimate. If the deployment coordinates were the outlier, the recovery coordinates were chosen. In a few cases, the results of this analysis were ambiguous, and we returned to Google Earth, deployer notes, and memories to determine the best estimate for the node location. Table 1 indicates which estimate was deemed 'best' and was used for construction of the PH5 database. If questions about these locations arise during analysis, digital scans of the original field notes are available in the appendix.

After examination of the elevations recorded in the notes, we decided that extracting elevations from a high-resolution DEM would be more accurate than elevations logged in the deployment and recovery notes. Elevations in Table 1 are from the ESRI 10 m elevation model for the geographic coordinates determined as discussed in the previous paragraph.

A preliminary look at the data:

Data analysis is in its infancy, and preliminary examination of the data indicates generally excellent data quality. Figure 4 shows two record sections from sources along MCS line PD16 (Figure 1) into stations along the S3000 linear array (Figure 2). Not surprisingly, background noise levels are generally higher near the coast (site 30003) than at high elevation, hard rock sites deep in the Coast Range (site 30032).

Figure 5 shows shots recorded on a grid site from lines parallel to the coast. Signals are seen to a source-receiver distance of up to 180 km. Differences in travel-time at similar source-receiver distance but different azimuth attest to the 3 dimensional nature of the structure along the margin. Although not shown here, all 4 dip lines were well recorded on this node and on neighboring nodes.

The P-wave from the M6.5 earthquake in the Kermadec trench on June 23, 2021 was recorded across the entire network, providing a nearly homogeneous, impulsive plane-wave source beneath the network that allows for a synoptic overview of the signal-to-noise characteristics across the array (Figure 6, top panel). This view reveals occasional temporary noise bursts on some sites and timing offsets on others. The timing issues generally occur for stations deployed in dense forest near the coast, where GPS reception was spotty.

The grid data, which are ordered by site number in the display in Figure 6, bottom panel, show that good signal-to-noise ratios are observed across the entire network. We anticipate that reordering the traces by increasing source-receiver offset and applying a topographic correction will lead to better alignment and the ability to identify any possible timing issues.

The Kermadec data also provide an opportunity to test the low frequency response of the nodes. Figure 7 shows the P-wave recorded on the S6000 line and reveal strong signals at frequencies below 0.1 Hz as well as frequency-dependent variations in the response to the Tualatin basin and suggestions of structural effects on the waveforms at the edges of the basin.

Given the varied backgrounds of our volunteers, the limited time available for training, and the challenge of finding "ideal" sites for the many sites deployed, we were pleasantly surprised to find that the details of site installation did not have a large impact on the signal to noise ratio. This is shown in Figure 8, which compares signals recorded from MCS shot line PD13 at two sites located only 120 m apart. One site was deployed by student volunteers and was only partially buried in road gravel. The other was fully buried in a meadow off the road.

Acknowledgements:

This project was funded by the geophysics program of the U.S. National Science Foundation through grants EAR-1946347 to OSU, EAR-1946426 to UO and EAR-1946396 to SDSMT. The U.S. Geological Survey also contributed personnel and funds to help cover expenses. Nodes were provided by the IRIS-PASSCAL program. Space for staging was provided by OSU at the Geological Sample Repository. We thank the many individuals who assisted with permitting, logistics and other aspects of the project. A list of all participating landowners is given in Appendix A. We particularly thank personnel at several of the federal and state agencies and timber companies who went out of their way to provide detailed information on keys and road access and at the OSU motor pool, who made sure we had the vehicles we needed. We also thank Tim Parker at Nanometrics for providing, overseeing installation and training us on the use of the TCH120-1/Pegasus broadband systems, and Anais Ferot at GEOPRISMS for setting up the webform that captured the application information.

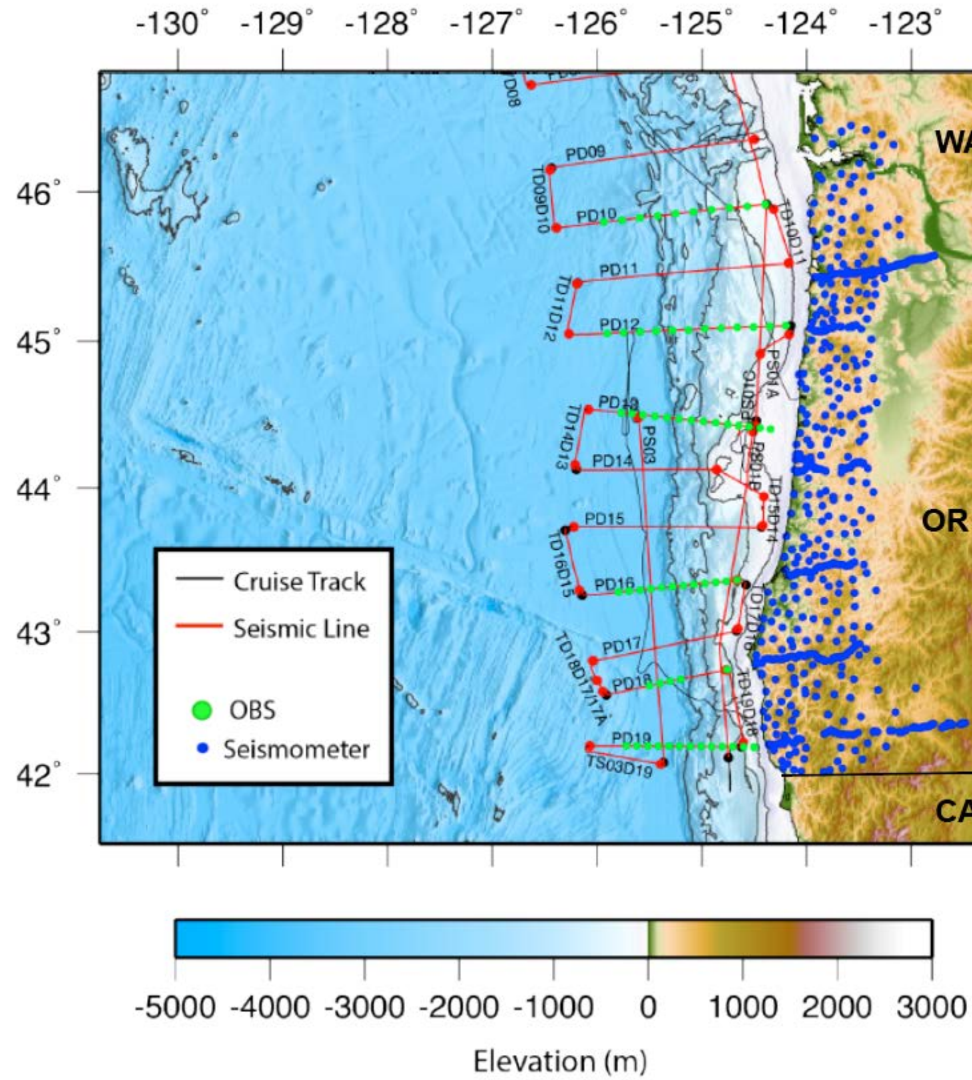


Figure 1. Overview of controlled source seismic imaging of the Cascadia forearc during June 2021. Red lines show the multichannel seismic reflection lines acquired by the R/V Langseth during cruise MGL2104, led by Suzanne Carbotte (https://www.marine-geo.org/tools/search/entry.php?id=MGL2104). Green dots are ocean bottom seismometers deployed and recovered by the R/V Oceanus during cruise OC21xx, led by Pablo Canales and Nathan Miller. Blue dots are nodes deployed by our group.

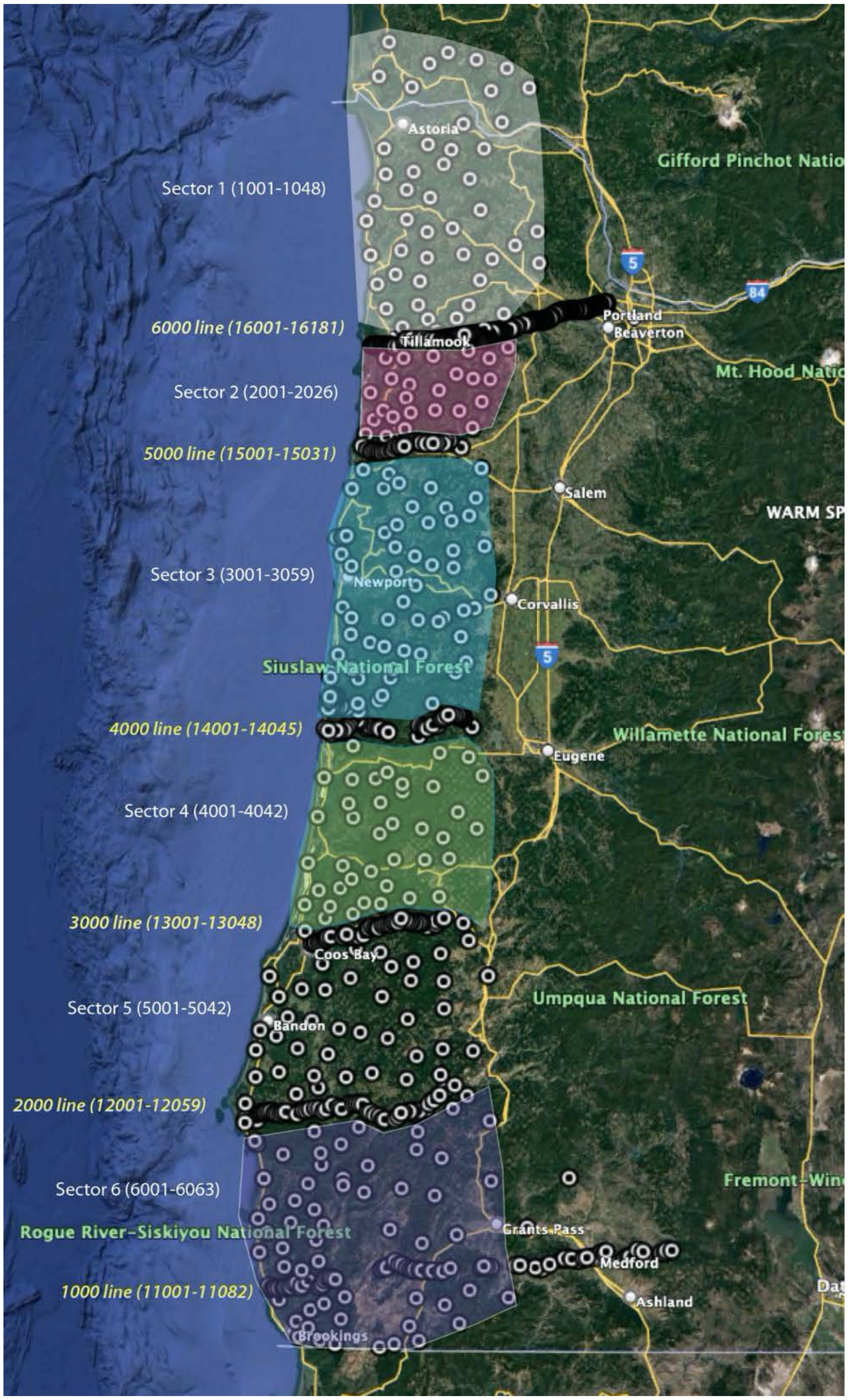
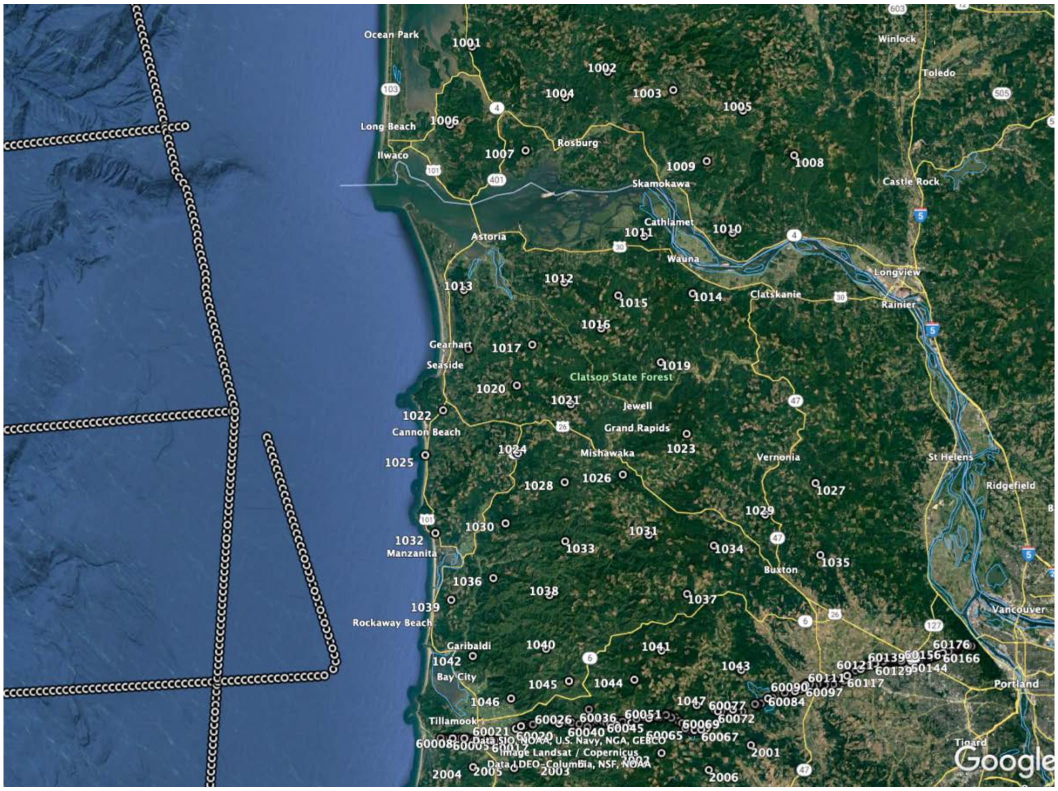


Figure 2. SiteID numbering schema. Five-digit site numbers starting with '1' designate stations along the linear subarrays. These lines are informally referred to as the 1000-6000 lines, reflecting site names using during the planning, permitting and deployment phase. Four digit numbers designate grid sites, which are divided into sectors between each line with the exception of the southernmost grid sites, which were not assigned a separate sector because of the small number of sites here). A gap in the 1000 line was due to the large Kalmiopsis Wilderness Area.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Skamokawa
Cathlamet
Wauna
Castle Rock
Longview
Rainier
Clatskanie
Clatsop State Forest
Jewell
Grand Rapids
Mishawaka
Vernonia
St Helens
Ridgefield
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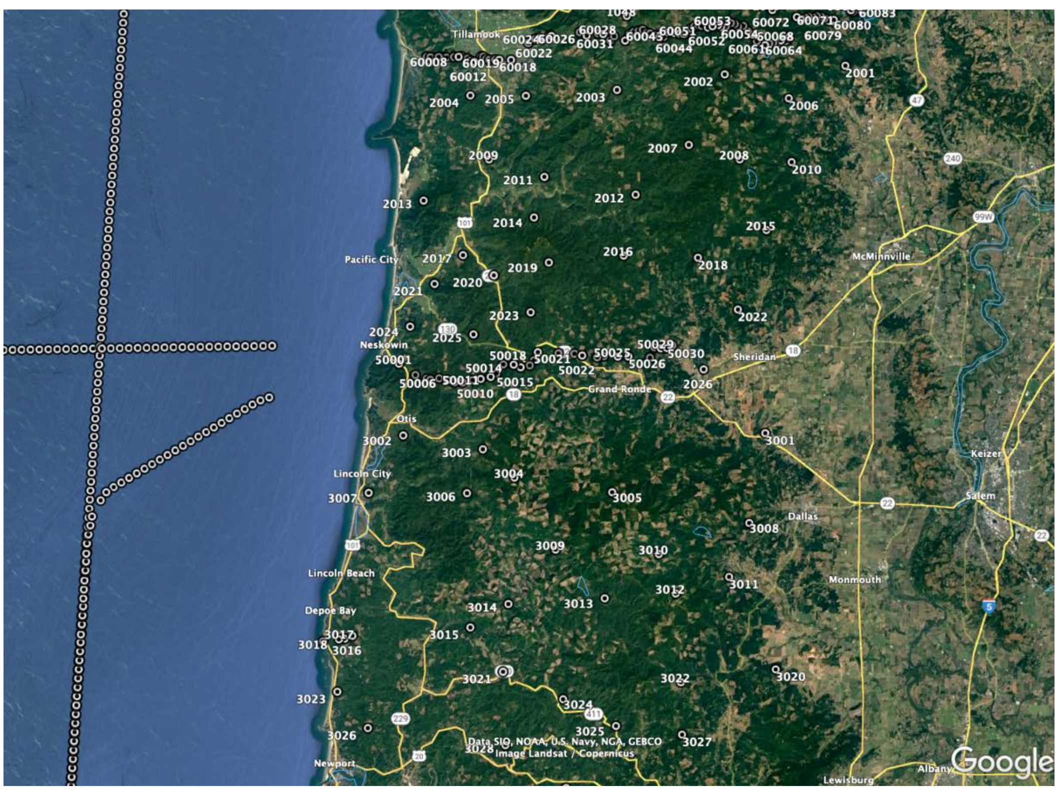
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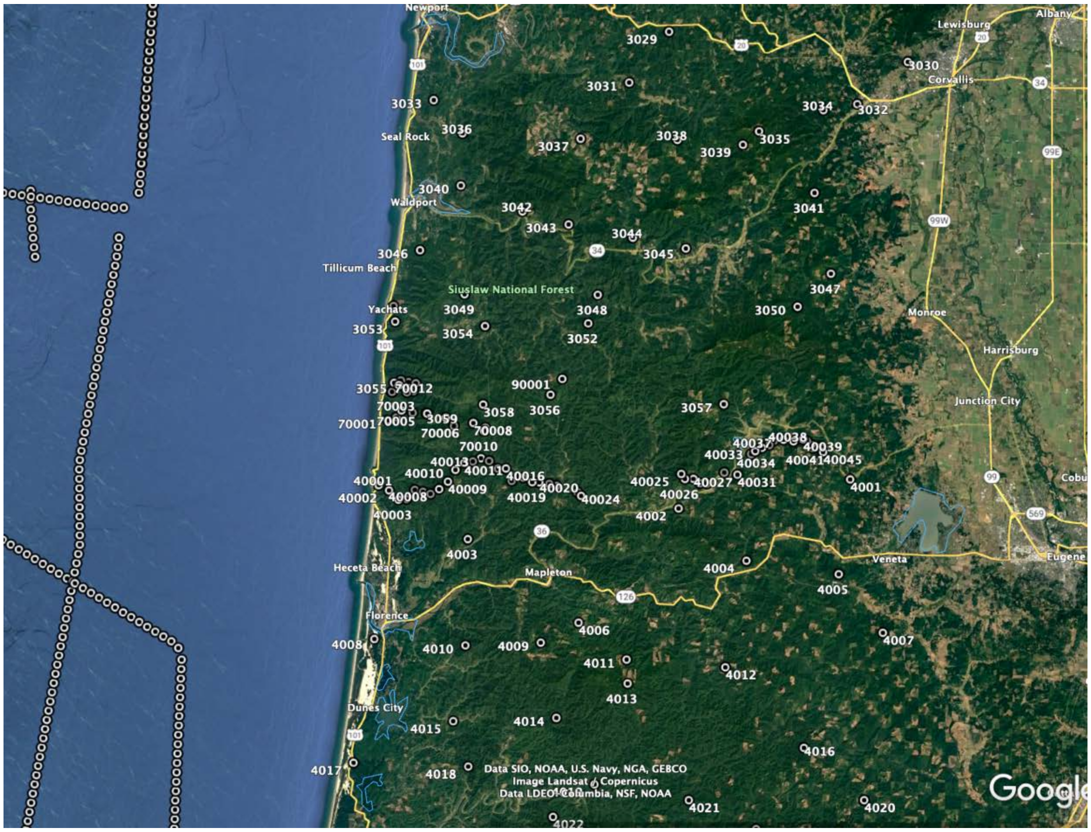
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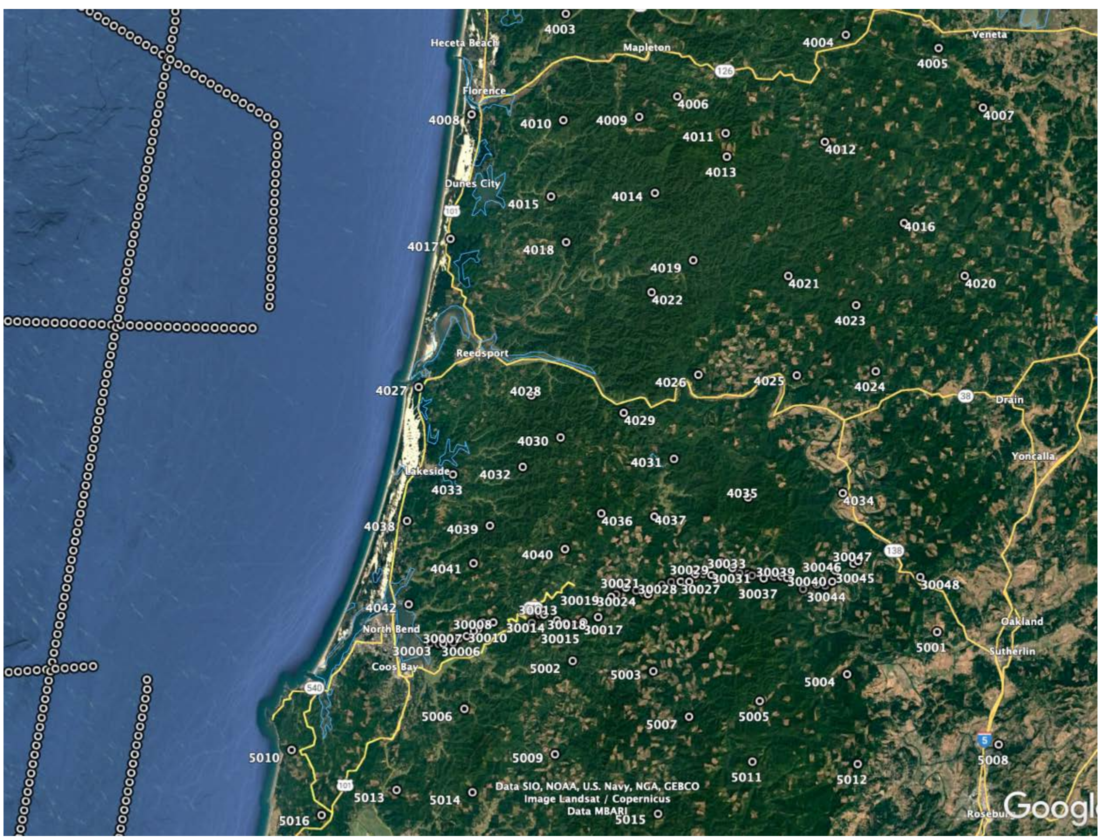
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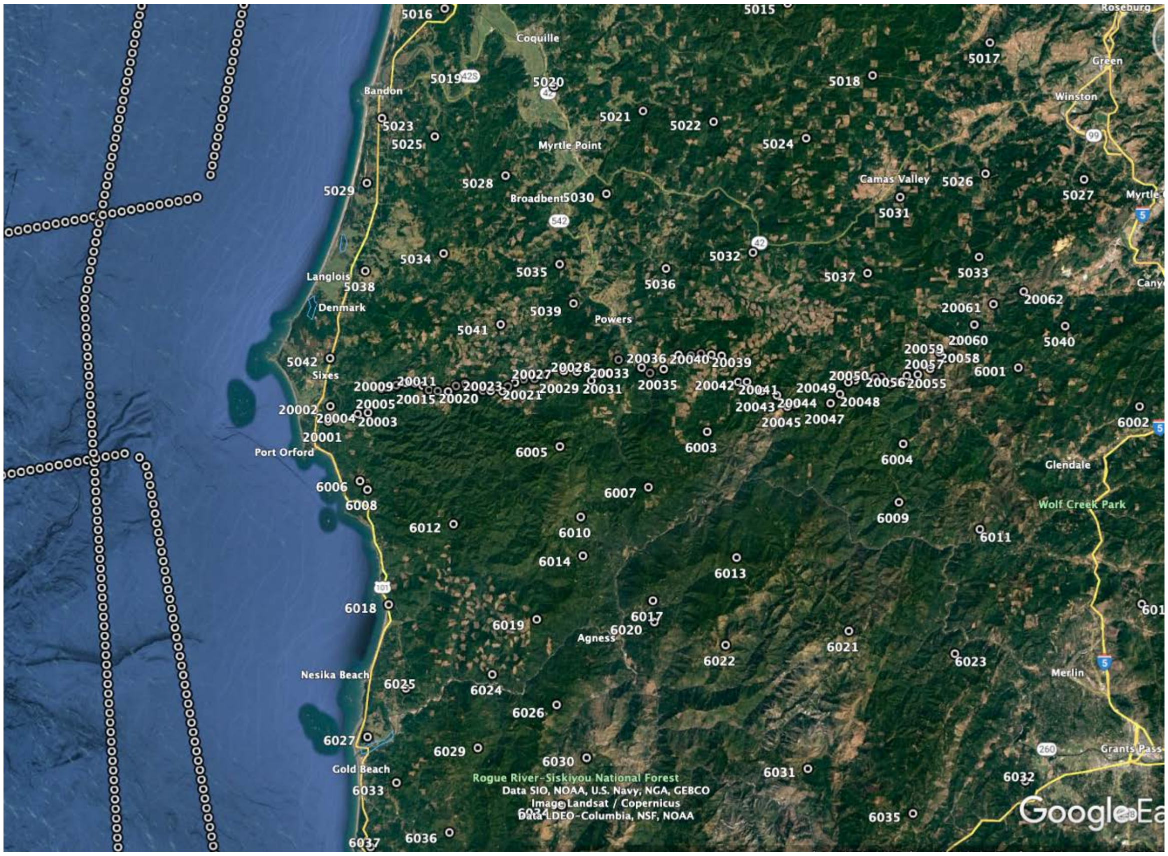


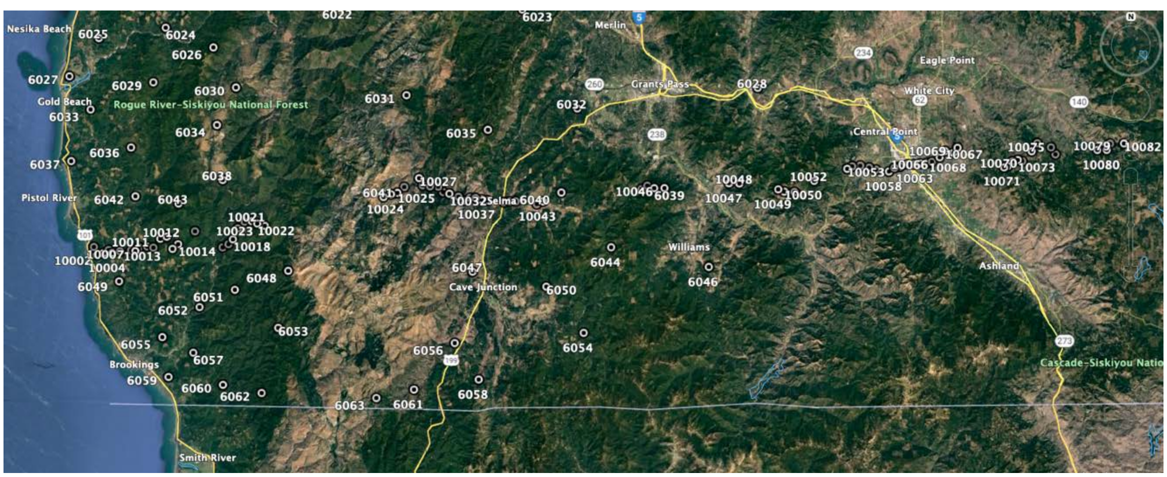


Figure 3. *Google Earth screengrabs showing more the distribution of nodes in more detail. See table 1 for site coordinates and other information. The majority of nodes were located away from population centers. Note: The 6 linear arrays labeled with 5 digit site numbers in table 1, the maps on this figure and in the text (A0xyz, with A indicating the line number and xyz indicating the site within the line, increasing to the east). These are listed in parentheses as sites 1Axyz in Figure 2 and in the PH5 database archived at the IRIS DMC because of PH5 format limitations.*

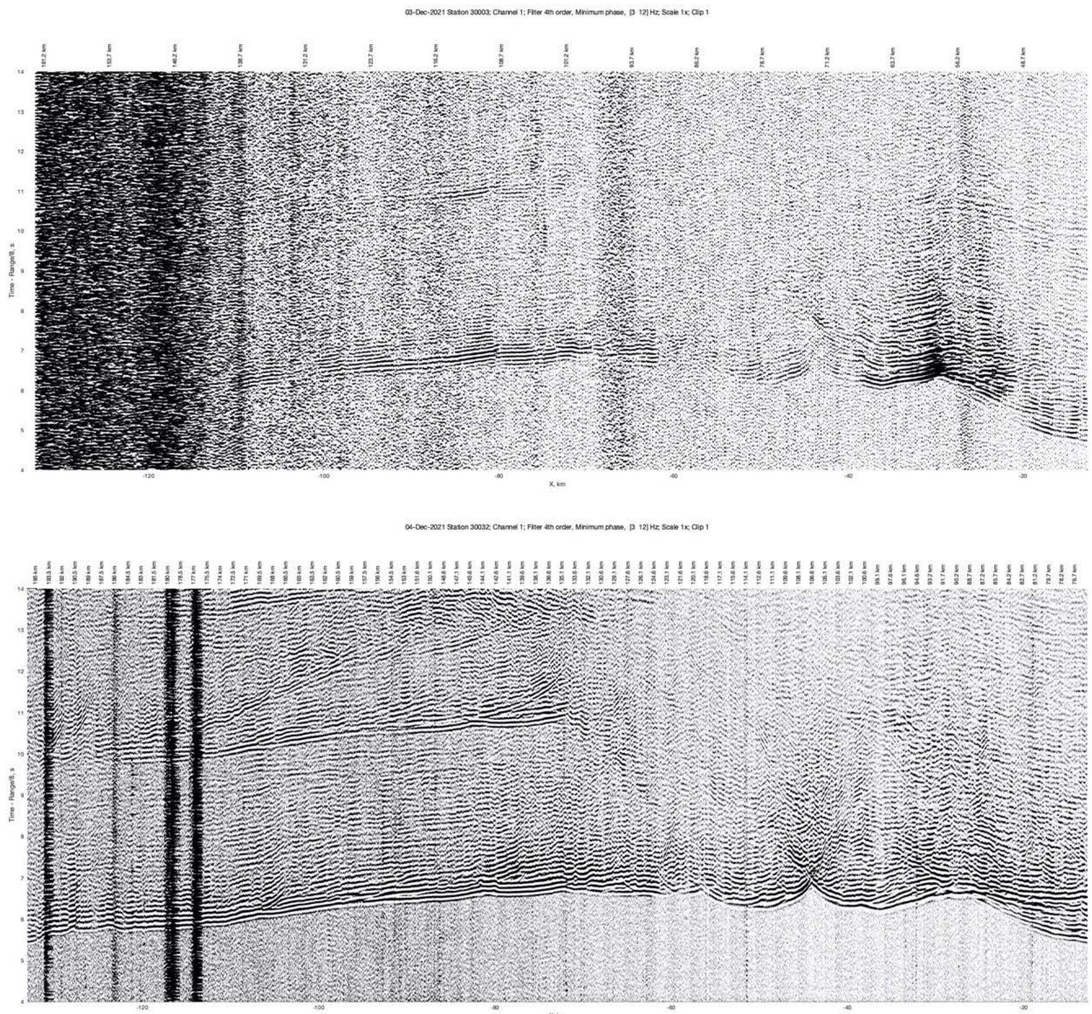
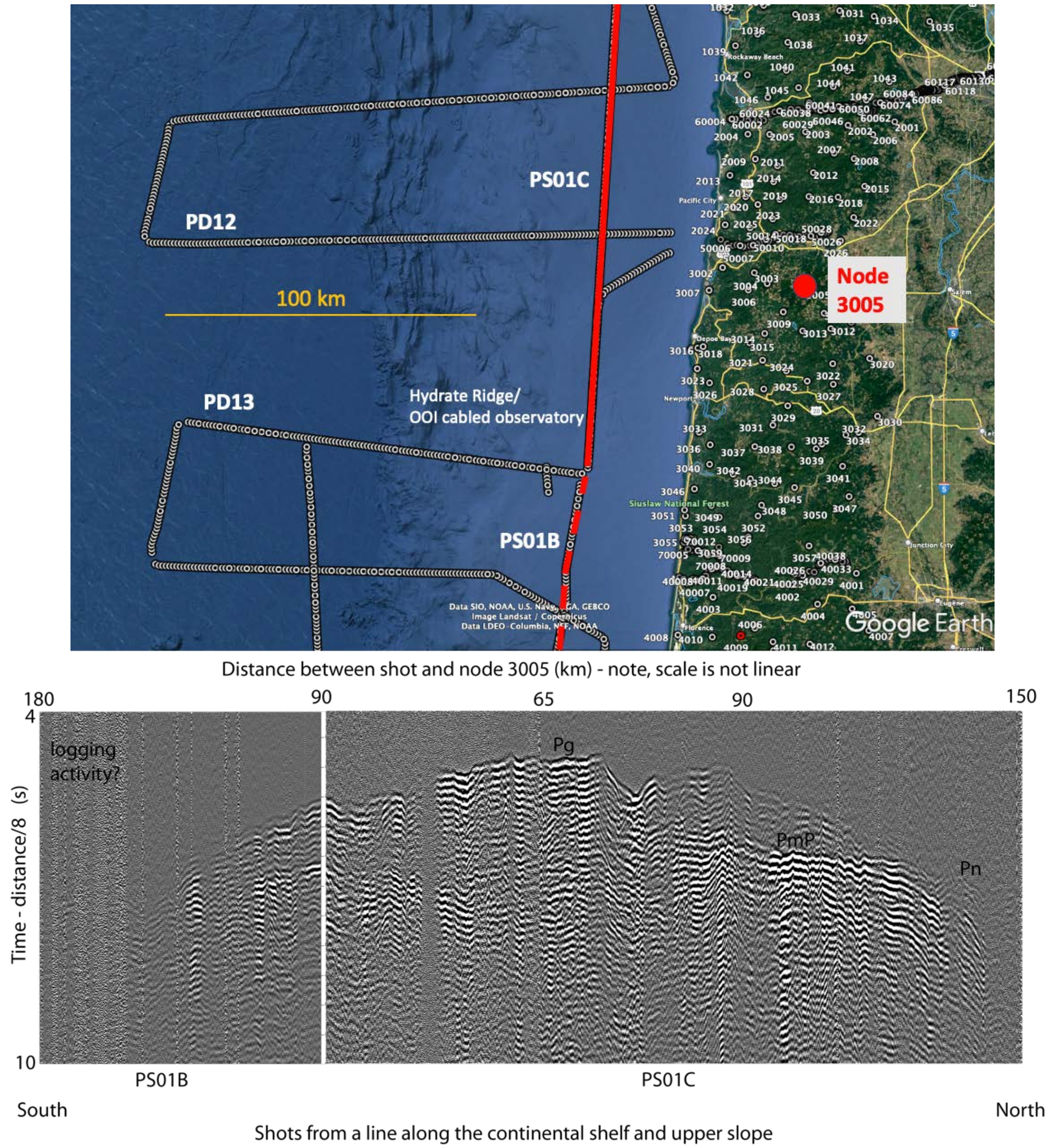


Figure 4. *Examples of data from shots along MCS line PD16 recorded on sites 13003 and 13032. Numbers along the top of the plot indicate source/receiver offset. Numbers along the bottom indicate distance within the model database set up for data analysis.*



Closest approach for this site is 65 km. Note asymmetry between paths to the north and to the south.

Figure 5. *Example of data from grid site 3005 from shots on lines parallel to the coast (lower panel). The asymmetry of the data indicates the 3D nature of the crustal structure. Circles offshore on the map show every 30th shot. Nearly all shots shown on the map were recorded with amplitude above the background noise level on site 3005. An increase in noise level at the south end of line PS01B is likely due to logging activity (based on the time of day and indication of logging activity in the region). Our modeling strategy is to develop 2.5D models along densely instrumented transects to use as a framework for defining a starting model for 3D analysis using the entire grid of sources and stations.*

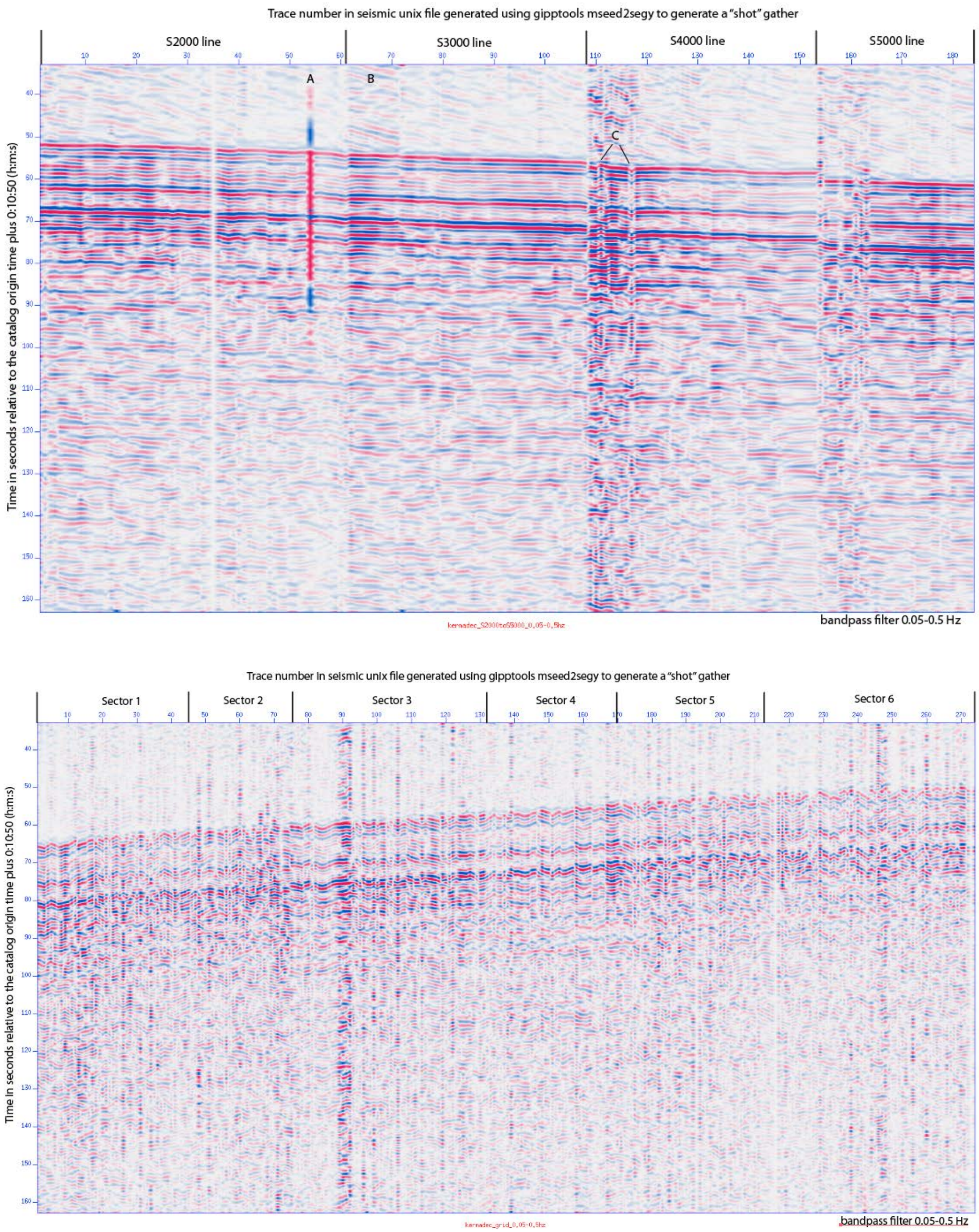


Figure 6. *The June 23, M6.5 Kermadec earthquake recorded on the 4 short, dense linear arrays (top panel) and on the grid sites (lower panel). P-wave arrivals from this earthquake, which was at a distance of ~90° from the network, approximate a plane wave beneath the array and thus provide a synoptic view of the variability in signal/noise across the array. For example, "A" indicates a strong but intermittent resonance on a node. "B" indicates higher background noise levels near the coast with apparent velocity consistent with wave-generated noise. "C" are traces with timing errors.*

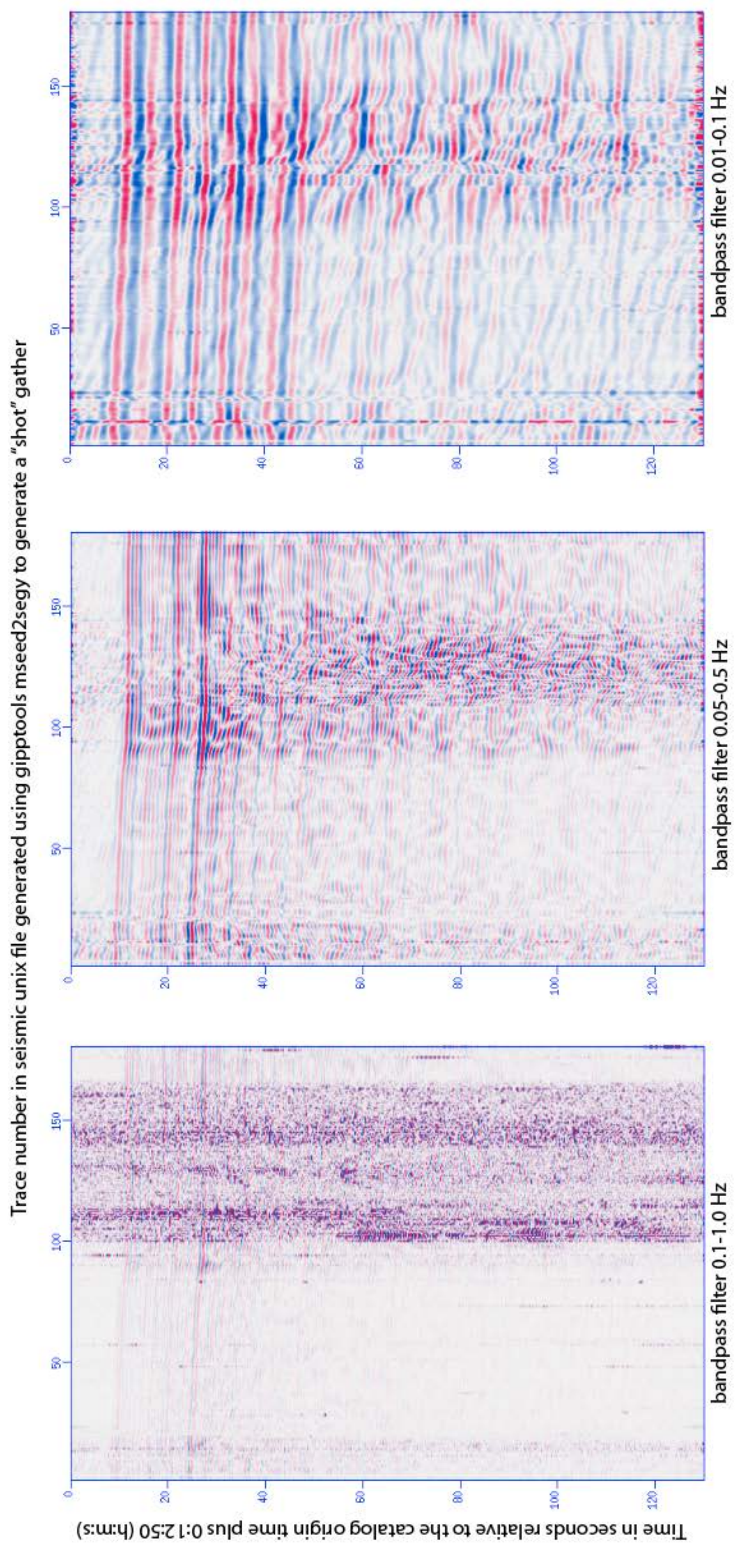


***Figure 7**. P-wave from the Kermadec earthquake recorded along the S6000 line shown in 3 different frequency bands. This illustrates the frequency dependence of noise within the Tualatin Basin and the likely presence of local structural effects on the waveforms.*

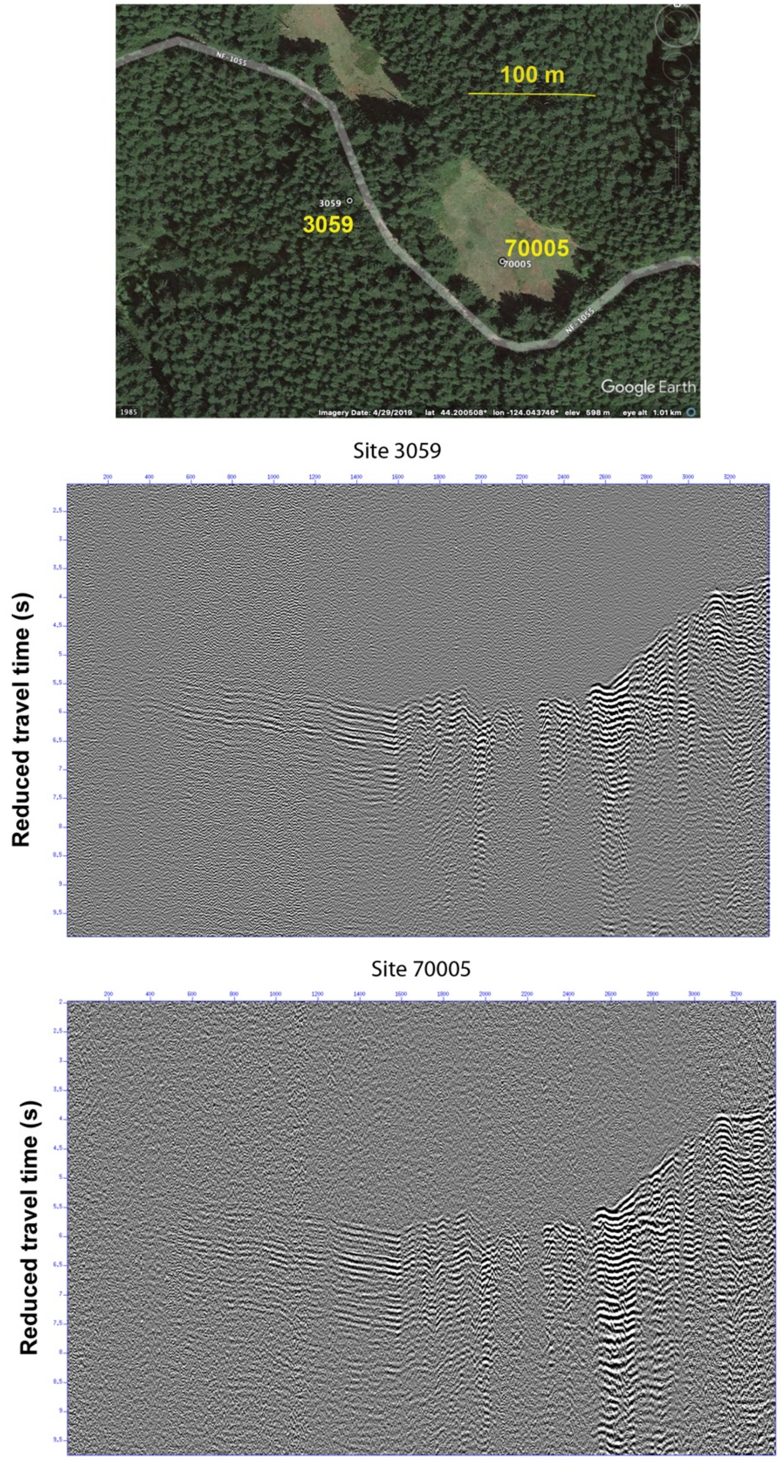


Figure 8. Offshore seismic line PD13 (see figure 5 for location) recorded on 2 nodes located only ~120 m apart. A site 3059, the node was only partially buried in road gravel; at site 70005, it was buried in sediments away from the road. The source-receiver offset ranges from ~167 km for trace 1 to ~43 km for trace 3400. Data were bandpass filtered at 4-20 Hz and a 4-trace mix was applied after reduction with a velocity of 8 km/s.

Tables (included in report and as an excel spreadsheet):

Table 1. Metadata for PH5 (provided both as printed table and as an excel spreadsheet as part of the auxiliary material). See text for discussion of how the preferred latitude, longitude and elevation values were determined. If questions arise during processing about these values, the coordinates logged during deployment, during recovery and by the GPS unit in the node are tabulated in the FieldNotes.csv spreadsheet. The Site Name column gives the site name used for permitting and field work whereas Site ID represents a remapping of Site Names into a more consistent framework for data archiving and analysis. The location code indicates whether the preferred coordinates are from the deployment log (D), the recovery log (R) or the node GPS (N). Azimuth is given in degrees relative to geographic N, measured clockwise. If azimuth was within 3° of north, most deployers noted "good," which is listed as "0" in the table. The GPS state on recovery gives the locking status on recovery.: 2B is locked; 3B is searching for a lock; OTHER indicates a code indicating a problem with the node. See documentation from PASSCAL on the Fairfield nodes for more details.

Table 2. Coordinates for broadband stations deployed in conjunction with the nodal network.

Tables (spreadsheet only):

Table 3. Compilation and comparison of serial numbers and coordinates noted by field volunteers during deployment and recovery and used to find outliers and determine the preferred coordinates listed in Table 1.

SiteID	Node Serial Number	Acquisition Start Time (GMT)	Acquisition Stop Time (GMT)	Latitude (decimal Á)	Longitude (decimalÁ)	ESRI Elevation (m)	Site Name	Location code	Azimuth clockwise from geographic north (Á)	GPS state on recovery	Level state on recovery
1001	5104	5/28/21 19:50	6/27/21 18:50	46.47503	-123.87275	48.9	B013	D	-5	2B	BFO
1002	4861	5/28/21 22:48	6/27/21 21:09	46.43781	-123.57489	560.8	B015	D	10	2B	BOK
1003	4753	5/29/21 1:24	6/28/21 0:17	46.41126	-123.43075	459.6	B023	D	-10	2B	BOK
1004	7809	5/28/21 21:13	6/27/21 20:10	46.39939	-123.66702	153	B022	R	0	2B	BFO
1005	7012	5/30/21 20:52	5/31/21 5:39	46.38096	-123.27787	439.6	B024	D	-5	OTHER	BOK
1006	7763	5/28/21 17:05	6/27/21 17:31	46.35621	-123.91875	231.8	B020	D	5	2B	BFO
1007	4796	5/29/21 3:32	6/27/21 22:42	46.31868	-123.75280	161.3	B029	D	0	2B	BOK
1008	4907	5/31/21 1:27	6/28/21 16:25	46.31341	-123.16599	653.7	B033	R	-18	2B	BOK
1009	4364	5/30/21 23:25	6/28/21 1:50	46.30497	-123.35619	115.6	B032	D	10	2B	BOK
1010	7318	5/30/21 22:14	6/28/21 4:09	46.19636	-123.29952	326.7	B036	D	0	2B	BFO
1011	4939	5/30/21 17:01	6/26/21 17:18	46.19078	-123.49152	66.7	C047	D	0	2B	BOK
1012	6476	5/30/21 1:06	6/26/21 18:29	46.11997	-123.66500	185.8	C045	D	10	2B	BFO
1013	4971	5/29/21 16:50	6/27/21 0:57	46.10695	-123.88384	69.3	C043	D	0	2B	BOK
1014	4856	5/30/21 18:27	6/26/21 15:29	46.10476	-123.38572	459.5	C046	D	0	2B	BOK
1015	6407	5/29/21 23:29	6/26/21 19:33	46.10090	-123.54757	345.4	C052	D	0	2B	BFO
1016	6541	5/29/21 22:48	6/26/21 21:19	46.05095	-123.58394	533.2	C041	D	-6	2B	BFO
1017	6354	5/29/21 21:13	6/27/21 4:28	46.02566	-123.73320	238.8	C042	D	-5	2B	BOK
1018	4602	5/29/21 17:58	6/27/21 1:34	46.01795	-123.87221	91.1	C017	D	0	2B	BOK
1019	1905	5/29/21 0:45	6/26/21 19:36	46.00080	-123.45367	325.2	C038	D	-3	2B	BOK
1020	4597	5/29/21 19:29	6/27/21 3:01	45.96403	-123.76578	255.4	C005	R	-5	2B	BOK
1021	7473	5/29/21 2:20	6/26/21 18:35	45.93675	-123.64826	437.1	C009	D	0	2B	BOK
1022	7619	5/29/21 23:27	6/27/21 21:31	45.92523	-123.92551	140.4	C001	D	0	2B	BOK
1023	6826	5/28/21 23:19	6/26/21 20:33	45.89337	-123.39713	414.3	C014	D	0	2B	BTS
1024	2700	5/29/21 20:58	6/26/21 17:58	45.86190	-123.76198	236.1	C006	D	7	2B	BFO/BTS
1025	6577	5/30/21 0:24	6/27/21 21:13	45.85723	-123.96298	41.5	C002	D	7	2B	BTS
1026	4612	5/29/21 19:55	6/26/21 15:58	45.83134	-123.53452	502.3	C024	D	4	2B	BOK/BFO
1027	4661	5/28/21 20:44	6/26/21 22:23	45.81986	-123.11685	468.9	C021	D	0	2B	BOK
1028	4854	5/29/21 21:58	6/26/21 17:16	45.81906	-123.66009	334.8	C010	D	0	2B	BOK/BTS
1029	4528	5/28/21 19:35	6/26/21 23:12	45.77247	-123.22562	266.2	C018	D	0	2B	BOK
1030	5094	5/31/21 0:55	6/27/21 20:16	45.75602	-123.78714	237.5	C007	D	0	2B	BOK
1031	6764	5/29/21 16:32	6/26/21 14:48	45.74117	-123.47740	626.7	C029	D	0	2B	BFO
1032	4964	5/30/21 1:09	6/27/21 20:49	45.73993	-123.93868	221.3	C003	D	3	2B	BOK
1033	4527	5/30/21 20:57	6/27/21 18:44	45.73042	-123.65773	492	C011	D	0	2B	BOK
1034	4908	5/29/21 15:16	6/26/21 13:59	45.72539	-123.33647	346.5	C032	D	0	2B	BFO
1035	4978	5/28/21 17:55	6/26/21 23:55	45.71174	-123.10643	523.6	C055	D	4	2B	BOK/BTS
1036	1936	5/30/21 19:52	6/27/21 19:33	45.67325	-123.81231	109.1	C008	D	0	2B	BOK
1037	1882	5/30/21 15:48	6/28/21 19:17	45.65285	-123.39411	723.1	C016	D	0	2B	BFO
1038	1885	5/30/21 22:49	6/27/21 17:23	45.64948	-123.69050	805.3	C012	D	9	2B	BFO
1039	4512	5/30/21 18:23	6/27/21 15:48	45.63974	-123.90240	267.2	C004	D	0	2B	BOK
1040	7367	5/30/21 19:32	6/27/21 19:28	45.56850	-123.69665	719.4	C023	D	0	2B	BOK
1041	5024	5/31/21 0:54	6/28/21 18:36	45.56744	-123.44816	754	C025	D	0	2B	BFO
1042	4760	5/30/21 17:01	6/27/21 14:20	45.55566	-123.85441	436.5	C022	D	10	2B	BOK
1043	4866	5/31/21 18:40	6/27/21 16:41	45.53806	-123.27578	437.9	C033	D	0	2B	BOK
1044	6368	5/30/21 21:51	6/28/21 13:40	45.52294	-123.50604	689.3	C036	D	0	2B	BOK
1045	4894	5/30/21 18:01	6/27/21 20:46	45.51976	-123.64685	595.9	C048	D	0	3B	BFO
1046	6509	5/29/21 23:25	6/26/21 23:02	45.49205	-123.77105	451.3	C035-B	D	0	2B	BFO
1047	4915	5/31/21 0:03	6/27/21 14:45	45.48491	-123.37133	543.3	C030	D	0	2B	BOK
1048	4909	5/29/21 16:31	6/26/21 19:39	45.47714	-123.60339	581.9	C028-D	D	0	corrupted :(	corrupted :(
2001	2942	5/31/21 16:13	6/28/21 21:25	45.42384	-123.25367	296.5	D005	D	0	2B	BOK
2002	2902	5/31/21 17:31	7/1/21 21:36	45.41259	-123.44659	712.3	D004	D	0	2B	BFO
2003	3031	5/30/21 0:47	6/28/21 23:47	45.39413	-123.61799	239.5	D008	D	0	2B	BFO
2004	2896	5/29/21 22:42	6/28/21 22:16	45.38687	-123.85149	16	D006	D	3	2B	BOK
2005	3015	5/29/21 23:38	6/28/21 22:35	45.38656	-123.76288	101.5	D007	D	0	2B	BOK
2006	3017	5/31/21 18:40	7/1/21 20:39	45.38653	-123.34421	355.8	D023	D	0	2B	BTS
2007	2904	5/31/21 1:21	7/1/21 23:01	45.33315	-123.50324	774	D027	D	0	2B	BOK
2008	4933	5/31/21 19:57	6/28/21 23:29	45.31734	-123.42228	644.7	D012	D	0	2B	BOK
2009	3023	5/30/21 19:14	6/28/21 21:48	45.31597	-123.82080	125.4	D015	D	-5	2B	BTS
2010	7486	5/31/21 19:25	6/28/21 23:00	45.31515	-123.33910	233.8	D013	D	0	2B	BOK
2011	3039	5/30/21 21:13	6/28/21 17:20	45.29655	-123.73211	95.1	D010	D	0	3B	BOK
2012	2931	5/31/21 0:21	6/28/21 20:54	45.27747	-123.58689	419.3	D011	D	9	2B	BOK
2013	2972	5/29/21 20:40	6/29/21 16:14	45.26874	-123.92392	332.3	D009	D	0	OTHER	BOK
2014	2891	5/30/21 20:30	6/28/21 17:57	45.25095	-123.74792	331.9	D001	D	4	2B	BOK
2015	6479	5/31/21 20:51	7/1/21 19:20	45.23918	-123.37856	412.8	D018	D	0	2B	BOK
2016	3005	5/30/21 22:12	6/28/21 18:53	45.20944	-123.60485	503.6	D016	D	0	2B	BOK
2017	3030	5/29/21 0:37	6/29/21 17:31	45.20829	-123.86016	229.9	D014	D	0	2B	BOK
2018	3007	5/30/21 23:21	6/28/21 19:51	45.20756	-123.48716	269.8	D017	D	0	2B	BOK
2019	2865	5/30/21 17:45	6/29/21 18:57	45.20072	-123.72359	701.4	D002	D	0	3B	BOK
2020	2917	5/30/21 2:26	6/29/21 17:54	45.18612	-123.81073	231.8	D026	D	0	OTHER	BFO
2021	3012	5/29/21 17:57	6/29/21 17:01	45.17576	-123.90490	158.6	D034	D	0	3B	BFO
2022	6537	5/31/21 21:46	7/1/21 18:31	45.15029	-123.42270	307.7	D003	D	0	2B	BFO

2023	2990	5/30/21 16:37	6/29/21 20:10	45.14489	-123.75156	694.8	D019	D	0	OTHER	BTS
2024	2951	5/29/21 19:27	7/2/21 0:47	45.12763	-123.94272	285.4	D021	D	0	2B	BFO
2025	2995	5/29/21 1:32	6/29/21 21:01	45.11979	-123.84191	310.5	D020	D	0	3B	BOK
2026	5053	6/1/21 20:27	7/1/21 17:56	45.08323	-123.47624	90.9	D032	D	0	2B	BFO
3001	6692	5/31/21 23:02	7/1/21 16:41	45.01234	-123.37787	174.6	E005	D	0	2B	BOK
3002	4106	6/2/21 2:58	6/27/21 20:23	45.00583	-123.95153	217.1	E057	D	0	2B	BOK
3003	7810	6/2/21 2:08	6/27/21 20:53	44.99159	-123.82483	267.5	E065	D	0	2B	BFO
3004	4784	6/1/21 22:48	7/24/21 7:08	44.96077	-123.77410	902.2	E008	D	0	2B	BOK
3005	7785	5/31/21 23:55	7/2/21 16:30	44.94544	-123.61993	815.7	E009	D	0	2B	BFO
3006	4892	6/1/21 20:46	6/29/21 18:16	44.94236	-123.84902	322	E007	D	0	2B	BFO/BOK
3007	5100	6/1/21 19:29	6/29/21 19:27	44.94101	-124.00525	79.5	E006	D	0	2B	BFO
3008	5112	6/1/21 19:14	7/1/21 16:06	44.91191	-123.40268	178.1	E011	D	0	2B	BOK
3009	7463	6/1/21 2:23	6/27/21 17:05	44.88040	-123.70820	266.7	E014	D	7	2B	BOK
3010	5030	5/31/21 21:11	6/27/21 19:55	44.87677	-123.54549	466.4	E010	D	0	2B	BOK
3011	4809	5/31/21 20:09	6/27/21 21:13	44.85156	-123.43385	122.1	E058	D	0	2B	BOK
3012	5006	6/1/21 3:49	6/27/21 18:53	44.83313	-123.51849	613.5	E019	D	0	2B	BOK
3013	7501	6/1/21 3:07	6/27/21 17:54	44.82673	-123.63002	347.5	E015	D	5	2B	BOK
3014	4993	6/1/21 0:56	6/27/21 16:08	44.81901	-123.78181	218.5	E028	D	10	2B	BOK
3015	7481	5/31/21 23:50	6/27/21 15:36	44.79209	-123.84154	169.5	E013	D	-4	2B	BOK
3016	7022	6/4/21 22:21	6/26/21 17:22	44.78073	-124.02779	166.3	E086	D	0	2B	BOK
3017	7096	6/4/21 21:29	6/26/21 17:04	44.77744	-124.04003	130.2	E085b	D	0	2B	BTS
3018	7442	6/4/21 23:14	6/26/21 16:36	44.77656	-124.04916	67.5	E085a	D	0	2B	BTS
3019	6820	6/4/21 20:17	6/26/21 17:59	44.77391	-124.07447	14.7	E085	D	0	2B	BFO
3020	4935	6/1/21 0:30	7/1/21 15:07	44.74810	-123.35888	167.1	E021	D	0	2B	BOK
3021	4738	5/31/21 23:07	6/27/21 15:06	44.74282	-123.78918	65.1	E018	D	5	2B	BOK
3022	7632	5/31/21 19:53	6/27/21 22:12	44.73320	-123.50861	234.6	E020	D	10	2B	BFO
3023	7784	6/5/21 0:24	6/26/21 16:00	44.71770	-124.05053	45.5	E070	D	0	2B	BOK
3024	1899	6/1/21 1:57	6/27/21 14:45	44.71279	-123.69394	117	E024	D	0	2B	BOK
3025	5147	5/31/21 21:55	6/27/21 14:18	44.68353	-123.61010	123.2	E025	D	0	2B	BOK
3026	7480	6/1/21 20:00	6/29/21 23:35	44.67771	-124.00139	236	E022	D	0	2B	BOK
3027	4820	5/31/21 20:50	6/27/21 22:54	44.67468	-123.50606	292.9	E080	D	0	2B	BOK
3028	4799	6/1/21 21:48	6/26/21 14:57	44.66062	-123.78418	215.2	E079	D	10	2B	BOK
3029	2861	5/31/21 15:42	6/26/21 14:13	44.61332	-123.68777	152.5	E082	D	22	2B	BFO
3030	6755	6/5/21 5:29	6/29/21 23:25	44.58322	-123.32738	221.7	1042	D	0	2B	BOK
3031	4835	5/29/21 22:58	6/30/21 20:40	44.55810	-123.74700	53	E030	D	0	2B	BFO/BOK
3032	2820	5/29/21 15:38	7/2/21 1:27	44.53740	-123.40333	109	E083-PV	N	0	2B	BOK
3033	4826	6/1/21 18:50	6/26/21 19:18	44.53705	-124.04091	146.7	E069	D	7	2B	BFO
3034	2923	5/29/21 17:08	7/2/21 0:30	44.53010	-123.45490	413.7	E083-S	D	4	2B	BOK
3035	2993	5/29/21 18:54	6/30/21 16:26	44.50490	-123.55290	1236.6	E036-NF	D	0	2B	BOK
3036	6454	5/31/21 22:42	7/20/21 20:11	44.50151	-123.99681	69.9	E033	D	0	2B	BFO
3037	7373	5/30/21 0:06	6/30/21 19:44	44.49700	-123.81910	199.2	E034	D	0	2B	BFO
3038	2887	5/29/21 22:13	6/30/21 18:18	44.49640	-123.67400	459.6	E035	D	0	2B	BFO
3039	5092	5/29/21 20:11	6/30/21 17:31	44.49150	-123.57600	534.8	E036-S	D	0	2B	BFO
3040	2889	5/31/21 21:55	6/26/21 20:28	44.44560	-123.99827	190.3	E044	D	0	2B	BFO
3041	2851	6/1/21 15:28	7/1/21 23:19	44.44077	-123.46810	412.7	E037	R	0	2B	BOK
3042	4812	5/30/21 20:14	6/26/21 23:40	44.41830	-123.90500	103.6	E072	D	0	2B	BOK
3043	5115	5/30/21 19:35	6/27/21 0:04	44.40500	-123.83570	275	E040	D	0	2B	BOK
3044	2888	6/1/21 17:13	6/27/21 1:45	44.39168	-123.73914	62.3	E073	D	0	2B	BFO
3045	3001	6/1/21 16:33	6/29/21 18:37	44.38048	-123.65963	241.5	E041-PT	D	0	2B	BFO
3046	2940	5/31/21 21:09	6/26/21 21:10	44.37540	-124.05800	97.6	E038	D	0	3B	BFO
3047	2846	5/28/21 23:55	6/29/21 17:13	44.35468	-123.44233	328.8	E043-B	R	-115	2B	BOK
3048	5149	5/30/21 17:04	6/27/21 0:48	44.32992	-123.79078	87.7	E074	D	0	2B	BFO
3049	6225	5/31/21 20:21	6/26/21 7:49	44.32870	-123.99008	230.9	E075	D	0	OTHER	BTS
3050	7321	6/4/21 1:23	7/1/21 0:47	44.31903	-123.49179	269.6	E054	D	0	2B	N/A
3051	6607	5/31/21 17:50	6/30/21 15:52	44.31516	-124.09654	216.9	E068-N	R	4	2B	BOK
3052	1052	5/30/21 18:31	6/27/21 1:46	44.29910	-123.80450	320.4	E046	D	0	2B	BOK
3053	3004	5/31/21 17:10	6/30/21 16:16	44.29831	-124.09340	324.4	E068-H	R	0	2B	BOK
3054	2886	5/31/21 18:50	6/26/21 22:30	44.29494	-123.95881	263.9	E045	D	0	2B	BFO
3055	3011	5/30/21 19:05	6/30/21 17:46	44.23026	-124.08631	275.9	E048	D	0	2B	BOK
3056	2938	5/30/21 21:02	6/30/21 22:39	44.22215	-123.85957	374.3	E050	D	5	2B	BFO
3057	7820	5/30/21 19:43	6/26/21 22:09	44.21399	-123.60105	501.2	E052	D	-5	2B	BOK
3058	2857	5/30/21 21:53	6/30/21 22:00	44.21069	-123.95991	253.7	E049	D	-6	2B	BFO
3059	2859	5/30/21 23:58	6/30/21 20:01	44.20056	-124.04425	589.3	E084	D	0	2B	BOK
4001	4690	5/29/21 17:54	6/26/21 22:56	44.13436	-123.41103	177.2	F048	D	-5	2B	BFO
4002	2689	5/30/21 0:00	6/26/21 20:50	44.10180	-123.66666	139.6	F047	D	-5	2B	BOK
4003	5117	5/30/21 18:11	6/26/21 18:06	44.06616	-123.98039	203	F001	D	0	2B	BOK
4004	5123	5/29/21 19:19	6/26/21 16:44	44.04649	-123.56496	409.5	F005	D	0	2B	BOK
4005	1911	5/30/21 2:32	6/26/21 15:52	44.03290	-123.42756	414.5	F006	D	0	2B	BOK
4006	5119	5/29/21 17:28	6/26/21 19:44	43.97845	-123.81387	384	F063	D	0	2B	BOK
4007	4920	5/29/21 18:10	6/27/21 0:14	43.97009	-123.36076	318.4	F012-D	D	0	2B	BOK
4008	4694	5/30/21 19:58	6/26/21 19:06	43.95729	-124.11789	57.2	F007	D	-20	2B	BFO
4009	4803	5/29/21 16:17	6/26/21 18:34	43.95644	-123.86972	369.7	F009	D	0	2B	BOK
4010	4709	5/30/21 21:24	6/26/21 20:32	43.95215	-123.98178	302.5	F008	D	0	2B	BFO
4011	1902	5/29/21 18:14	6/26/21 20:55	43.93965	-123.74186	552.1	F010	D	0	2B	BOK
4012	6748	6/2/21 22:41	6/26/21 16:41	43.93199	-123.59483	137.8	F011	D	0	2B	BTS

4013	4849	5/29/21 18:53	6/26/21 21:23	43.91437	-123.74003	815	F042	D	0	2B	BOK
4014	5453	5/29/21 20:01	6/26/21 22:12	43.87566	-123.84517	106.6	F015	D	30	2B	BOK
4015	4842	5/30/21 23:25	6/26/21 21:15	43.87054	-123.99849	17.9	F014	D	0	2B	BOK
4016	5148	5/29/21 15:09	6/26/21 22:59	43.84616	-123.47696	386.1	F016-D	D	-12	2B	BOK
4017	5017	5/31/21 0:31	6/26/21 22:27	43.82391	-124.14615	65.4	F019	D	-25	2B	BOK
4018	6497	5/29/21 23:51	6/26/21 23:13	43.82207	-123.97527	279.3	F056	D	0	2B	BOK
4019	4824	5/29/21 21:16	6/27/21 0:57	43.80444	-123.78730	226.7	F022	D	12	2B	BOK
4020	4902	5/29/21 10:18	6/26/21 19:46	43.79034	-123.38674	286.2	F041-B	D	0	2B	BFO
4021	4830	5/29/21 12:53	6/26/21 21:33	43.78873	-123.64708	125.5	F017-B	D	-10	2B	BFO
4022	4980	5/29/21 22:44	6/27/21 0:06	43.76958	-123.84840	349.6	F021	D	10	2B	BOK
4023	5054	5/29/21 11:14	6/26/21 20:51	43.75827	-123.54669	246.7	F018-B	D	0	2B	BFO
4024	4606	5/30/21 20:44	6/26/21 18:42	43.68806	-123.51687	206.9	F028-B	D	0	2B	BFO
4025	4737	5/30/21 21:38	6/26/21 17:33	43.68299	-123.63304	169.1	F027-B	D	0	2B	BOK
4026	5009	5/30/21 22:28	6/26/21 16:15	43.68255	-123.77809	332.4	F026-B	D	0	2B	BOK
4027	6417	5/29/21 22:51	6/26/21 23:14	43.66546	-124.18949	91.5	F023	D	0	2B	BFO
4028	4821	5/30/21 17:55	6/27/21 17:17	43.65828	-124.02318	282.5	F024	D	0	2B	BOK
4029	6501	5/30/21 18:09	6/26/21 22:16	43.64104	-123.88717	305.3	F025-D	D	0	2B	BOK
4030	7412	5/30/21 18:41	6/27/21 17:54	43.61396	-123.97951	543.1	F031	D	0	2B	BOK
4031	7309	5/30/21 18:56	6/26/21 17:47	43.59272	-123.81264	352.9	F032-D	D	-10	OTHER	BOK
4032	5108	5/30/21 20:00	6/27/21 18:27	43.58203	-124.03444	337.7	F030	D	0	2B	BOK
4033	7254	5/30/21 21:04	N/A	43.57279	-124.13706	104.4	F029	D	0	2B	BOK
4034	4788	5/30/21 17:28	6/26/21 15:47	43.55791	-123.56374	28.3	F038-b	D	0	2B	BOK
4035	4036	5/30/21 19:03	6/26/21 16:36	43.55255	-123.70323	204.2	F037-B	D	0	2B	BFO
4036	6360	5/30/21 21:09	6/26/21 18:45	43.53386	-123.91830	481.4	F066-D	D	-12	2B	BOK
4037	6170	5/30/21 20:27	6/26/21 18:15	43.53106	-123.84031	327.3	F036-D	D	-5	2B	BOK
4038	6483	5/29/21 14:54	6/27/21 19:51	43.52257	-124.20360	112.7	F033	D	0	2B	BOK
4039	6216	5/30/21 22:52	6/26/21 20:10	43.51897	-124.08143	269.5	F034-D	D	-12	2B	BOK
4040	7512	5/30/21 21:45	6/26/21 19:11	43.49528	-123.97073	469.2	F035-D	D	4	2B	BOK
4041	6089	5/30/21 23:35	6/26/21 21:02	43.47876	-124.10461	361.5	F065-D	D	0	2B	BOK
4042	7020	5/29/21 13:47	6/27/21 20:33	43.43363	-124.19914	100.9	F013	D	0	2B	BFO
5001	4604	6/3/21 17:35	6/27/21 15:59	43.41065	-123.42350	53.1	G007-B	D	4	2B	BOK
5002	4870	6/1/21 20:20	6/28/21 19:36	43.37595	-123.95741	48.6	G004-Y	D	0	2B	BOK
5003	5055	6/1/21 19:23	6/28/21 18:54	43.36649	-123.83918	372.5	G052-Y	D	0	2B	BOK
5004	4914	6/4/21 19:01	N/A	43.36501	-123.55523	161.4	G006-B	D	0	2B	BOK
5005	1939	6/4/21 17:59	6/27/21 17:19	43.33591	-123.68306	354.4	G059-Y	D	-4	2B	BOK
5006	5924	5/30/21 22:44	6/29/21 0:38	43.32317	-124.11514	151.3	G003	D	7	2B	BFO
5007	4975	6/1/21 18:38	6/28/21 18:09	43.31837	-123.78616	423.6	G005-Y	D	0	2B	BOK
5008	5091	6/3/21 18:25	6/27/21 20:13	43.29088	-123.33186	163.5	G053-N	D	180	2B	BOK
5009	4864	6/1/21 15:51	6/28/21 15:59	43.27627	-123.98139	98.6	G011-B	D	0	2B	BOK
5010	4888	6/1/21 12:16	6/27/21 17:24	43.27595	-124.36731	199.8	G001	D	0	2B	BOK
5011	4456	6/4/21 17:14	6/27/21 17:49	43.27210	-123.69342	724.2	G012-Y	D	0	2B	BFO
5012	2322	6/4/21 16:24	6/27/21 18:47	43.27044	-123.53980	736.1	G013-B	D	0	2B	BOK
5013	4451	6/1/21 23:01	6/28/21 23:27	43.23529	-124.21258	97.4	G009-B	D	-5	2B	BFO
5014	5051	6/1/21 15:16	6/28/21 15:34	43.23416	-124.10152	104.6	G010-B	D	5	2B	BOK
5015	4887	6/1/21 17:33	6/28/21 17:11	43.21544	-123.83000	734.6	G018-B	D	0	2B	BOK
5016	4769	6/1/21 11:37	6/27/21 17:54	43.20653	-124.32213	166.4	G008	D	0	2B	BOK
5017	5139	6/4/21 15:41	6/27/21 19:27	43.17775	-123.53825	205.2	G020-B	D	0	2B	BOK
5018	4477	6/4/21 20:33	6/27/21 19:42	43.14088	-123.70771	722.5	G019	D	20	2B	BOK
5019	6559	5/31/21 0:10	6/27/21 18:47	43.13743	-124.27865	53.2	G015	D	0	2B	BOK
5020	1933	6/1/21 22:19	6/28/21 0:17	43.12705	-124.16297	120.1	G016	D	0	2B	BOK
5021	1942	6/1/21 21:22	6/28/21 16:02	43.10225	-124.03478	240.2	G025	D	-4	2B	BOK
5022	6365	6/1/21 17:05	6/28/21 19:47	43.09166	-123.93359	274.2	G026-B	D	0	2B	BOK
5023	4839	6/1/21 9:33	6/27/21 20:47	43.09043	-124.40942	31.5	G057	D	0	2B	BOK
5024	4432	6/4/21 21:29	6/27/21 18:33	43.07439	-123.80191	848.4	G027	D	-10	2B	BOK
5025	4952	6/1/21 10:32	6/27/21 19:52	43.07209	-124.33295	39.9	G014	D	0	2B	BOK
5026	4862	6/4/21 15:50	6/27/21 22:15	43.04021	-123.54361	247.7	G028	D	-10	2B	BOK
5027	5134	6/5/21 0:57	6/27/21 16:50	43.03521	-123.40215	432.8	G041	D	20	2B	BOK
5028	5039	6/1/21 18:03	6/28/21 21:22	43.03200	-124.23043	108.3	G023-B	D	4	2B	BOK
5029	4932	6/1/21 8:50	6/27/21 21:17	43.02217	-124.42931	13.2	G022	D	-15	2B	BOK
5030	1906	6/1/21 20:23	6/28/21 17:00	43.01466	-124.08573	118.8	G033-B	D	50	2B	BOK
5031	4899	6/4/21 17:51	6/27/21 22:52	43.01464	-123.66586	427.8	G040	D	0	2B	BOK
5032	6721	6/1/21 20:33	7/1/21 16:33	42.95481	-123.87556	573.5	G039	D	0	2B	BFO
5033	6671	6/4/21 16:39	6/27/21 21:36	42.95250	-123.55352	681.2	G049	D	0	2B	BOK
5034	6177	5/31/21 17:41	6/27/21 22:43	42.94948	-124.31702	237.9	G031	D	0	2B	BFO
5035	5118	6/1/21 16:43	6/28/21 22:10	42.94009	-124.15097	298.2	G032-B	D	60	2B	BFO
5036	6720	6/1/21 18:23	6/28/21 18:16	42.93740	-123.99887	124.4	G038-B	D	15	2B	BOK
5037	4131	6/4/21 18:37	6/27/21 23:34	42.93478	-123.71141	530.5	G048	D	0	2B	BOK
5038	7968	5/31/21 17:01	6/27/21 21:54	42.92979	-124.42887	265.6	G030	D	0	2B	BOK
5039	4927	6/1/21 15:22	6/28/21 23:12	42.89944	-124.13039	237.3	G037	D	0	2B	BOK
5040	4853	6/4/21 23:27	6/26/21 3:01	42.88140	-123.42920	746.5	G050-RB	D	-30	2B	BOK
5041	4946	5/31/21 22:42	6/29/21 17:11	42.87614	-124.23362	389.5	G036	D	0	2B	BOK
5042	6702	6/5/21 12:31	6/29/21 16:09	42.83772	-124.47682	43.4	G034-B	D	0	2B	BOK
6001	7567	6/4/21 18:36	6/29/21 17:29	42.83753	-123.49507	428	H008	D	10	2B	BFO
6002	4761	5/27/21 18:36	6/26/21 4:23	42.79784	-123.32295	880.8	H016-B	D	0	2B	BOK
6003	4758	5/31/21 22:30	6/29/21 20:38	42.76725	-123.93773	772.4	H005-F	D	0	2B	BOK

6004	4981	6/4/21 17:07	6/29/21 18:14	42.75700	-123.65986	929.4	H007	D	40	2B	BFO
6005	6792	5/31/21 16:17	6/29/21 22:20	42.74976	-124.14616	855.8	H003-F	D	N/A	2B	N/A
6006	7511	6/1/21 0:37	6/29/21 21:11	42.70978	-124.43035	327.4	H069-PV	D	0	2B	BOK
6007	4973	5/31/21 23:12	6/29/21 21:09	42.70858	-124.01987	607.4	H004-F	D	0	2B	BOK
6008	4037	6/5/21 20:06	6/29/21 21:33	42.70098	-124.41972	268.4	H001-B	D	0	2B	BOK
6009	6528	5/31/21 18:43	6/27/21 17:58	42.69619	-123.66505	979.4	H014	D	0	2B	BOK
6010	6158	6/7/21 22:54	6/30/21 16:22	42.67675	-124.11509	864.4	H073	D	0	2B	BOK
6011	6506	5/31/21 17:17	6/27/21 16:39	42.66825	-123.54763	594.8	H015	D	0	2B	BOK
6012	4893	6/5/21 22:50	6/30/21 21:27	42.66694	-124.29536	640.8	H002	D	10	2B	BOK
6013	4794	6/7/21 17:06	6/30/21 19:31	42.63698	-123.89417	1164.1	H013	D	15	2B	BOK
6014	6505	6/7/21 21:27	6/30/21 17:05	42.63637	-124.11123	892.6	H075	D	15	2B	BFO
6015	6551	5/31/21 14:08	6/27/21 14:11	42.60561	-122.95468	541.7	H046	D	0	2B	BOK
6016	6553	5/31/21 15:48	6/27/21 15:32	42.59161	-123.31744	595.6	H028	D	0	2B	BOK
6017	6927	6/7/21 16:11	6/30/21 18:51	42.59024	-124.01112	392.9	H012	D	15	2B	BOK
6018	4687	6/8/21 15:25	6/30/21 0:03	42.58115	-124.38641	173.8	H010-PV	D	0	2B	BFO
6019	5022	6/7/21 20:05	6/30/21 17:37	42.56951	-124.17513	870.4	H011	D	0	2B	BOK
6020	4988	6/7/21 19:51	6/30/21 17:03	42.56787	-124.00873	466.5	H049	D	0	2B	BFO
6021	6696	5/31/21 21:06	6/27/21 19:42	42.56191	-123.73444	1174.7	H026	D	0	2B	BOK
6022	5036	6/7/21 18:02	6/30/21 16:15	42.54648	-123.90842	1399.7	H020	D	12	2B	BFO
6023	6171	5/31/21 22:28	6/27/21 20:52	42.53811	-123.58174	517.9	H027	D	3	2B	BOK
6024	4904	6/5/21 23:29	6/30/21 19:38	42.50977	-124.23756	125.4	H018	D	11	2B	BFO
6025	4837	6/5/21 21:28	6/30/21 1:30	42.49398	-124.35968	233.1	H017	D	30	2B	BOK
6026	4780	6/7/21 21:37	6/30/21 18:29	42.48104	-124.14511	969.3	H019	D	8	2B	BFO
6027	1938	6/5/21 15:49	6/30/21 2:13	42.44195	-124.41342	212.9	H038	D	-7	2B	BFO
6028	5020	6/3/21 15:49	6/26/21 23:38	42.43472	-123.15009	358.3	H036-B	D	0	2B	BOOK
6029	4806	6/8/21 1:24	6/30/21 22:27	42.43390	-124.25577	602	H022	D	0	2B	BFO
6030	4943	6/7/21 23:43	6/30/21 20:37	42.42686	-124.10165	1220.4	H024	D	0	2B	BFO
6031	6777	5/31/21 23:51	6/27/21 22:37	42.41869	-123.79028	1275.6	H025	D	0	2B	BOK
6032	1898	6/2/21 12:37	6/27/21 23:28	42.40514	-123.47972	465	H035-B	D	0	2B	BOK
6033	4802	6/7/21 18:18	6/30/21 18:16	42.39597	-124.37005	542.1	H021	D	-5	2B	BOK
6034	4462	6/8/21 0:22	6/30/21 21:02	42.37648	-124.13592	1039.6	H031	D	0	2B	BOK
6035	6441	6/1/21 1:38	6/27/21 23:52	42.37315	-123.64159	1273	H034	D	0	2B	BOK
6036	4791	6/7/21 14:46	6/30/21 15:53	42.34516	-124.29382	741.3	H009	D	0	2B	BOK
6037	4923	6/7/21 17:00	6/30/21 17:27	42.32669	-124.40612	199.2	H029	D	0	2B	BFO
6038	4515	6/6/21 18:31	6/30/21 18:27	42.30291	-124.12476	857.9	H032-FN	D	-5	2B	BOK
6039	4749	5/31/21 8:56	6/26/21 23:59	42.29728	-123.33875	1075.2	H043-H	D	0	2B	BOK
6040	5130	5/31/21 17:15	6/27/21 17:05	42.29104	-123.50762	685.5	H044-H	D	0	2B	BOK
6041	6148	5/30/21 18:20	6/28/21 15:16	42.28182	-123.82995	1090.2	H072	D	0	2B	BFO
6042	5122	6/7/21 20:37	6/30/21 15:07	42.28026	-124.28621	307.6	H066	D	0	2B	BOK
6043	1900	6/6/21 17:41	6/30/21 17:57	42.27026	-124.20435	780.6	H030-FN	D	0	2B	BFO
6044	4603	5/30/21 17:20	6/27/21 17:45	42.21729	-123.41635	885.3	H054-B	D	0	2B	BOK
6045	2687	6/6/21 16:42	6/29/21 21:26	42.21095	-124.36123	347.4	H070-C	D	0	2B	BOK
6046	4922	5/31/21 11:36	6/26/21 22:31	42.19216	-123.23885	813	H062-B	D	0	2B	BOK
6047	4511	6/3/21 13:49	6/27/21 19:04	42.18383	-123.66782	386.6	H053-B	D	0	2B	BOK
6048	4567	6/6/21 22:33	6/30/21 17:33	42.18161	-124.00186	1137.4	H076-FN	D	0	2B	BFO
6049	6419	6/6/21 20:26	6/30/21 0:24	42.16464	-124.31217	397.4	H050	D	0	2B	BOK
6050	4829	6/1/21 15:57	6/27/21 19:43	42.16435	-123.53354	511	H061-B	D	0	2B	BOK
6051	6500	6/1/21 16:50	6/28/21 21:48	42.15556	-124.10006	584.5	H052-FN	D	0	2B	BOK
6052	6491	6/1/21 16:18	6/28/21 22:23	42.13196	-124.16595	257.8	H051-FN	D	0	2B	BOK
6053	6176	6/1/21 17:32	6/28/21 20:51	42.10503	-124.01976	693.4	H058-FN	D	0	2B	BOK
6054	4466	6/1/21 15:07	6/27/21 20:22	42.10246	-123.46506	740.2	H067-B	D	0	2B	BOK
6055	5097	6/7/21 11:25	6/29/21 18:11	42.09045	-124.23221	192	H037-C	D	-15	2B	BTS
6056	4900	6/1/21 13:37	6/27/21 21:26	42.08741	-123.69888	442.6	H060-F	D	0	2B	BOK
6057	6135	6/6/21 18:32	6/29/21 15:41	42.07015	-124.17579	206.8	H041-F	D	-5	2B	BOK
6058	4808	6/1/21 12:42	6/27/21 22:10	42.03860	-123.65451	717.1	H065-F	D	0	2B	BOK
6059	1889	6/1/21 21:48	6/29/21 16:52	42.03679	-124.21988	409.6	H055-C	D	0	2B	BOK
6060	4912	6/1/21 19:05	6/28/21 21:35	42.02729	-124.11993	405.4	H056	D	0	2B	BOK
6061	4879	6/1/21 11:48	6/28/21 15:39	42.02421	-123.77165	518.9	H064-F	D	0	2B	BOK
6062	5002	6/1/21 18:14	6/28/21 20:03	42.01700	-124.04908	461.5	H057-FN	D	N/A	2B	N/A
6063	5120	6/1/21 10:54	6/28/21 16:28	42.01219	-123.83877	984.5	H063-F	D	0	2B	BOK
10001	4974	6/6/21 16:14	6/29/21 21:08	42.20061	-124.35581	332	S1001-C	D	-5	2B	BOK
10002	4550	6/6/21 17:04	6/29/21 20:50	42.20235	-124.34377	513	S1002-C	D	-5	2B	BOK
10003	5011	6/6/21 17:34	6/29/21 20:28	42.20691	-124.33307	507.6	S1003-C	D	0	2B	BOK
10004	5049	6/6/21 17:47	6/29/21 20:17	42.20276	-124.32562	510.3	S1004-P	D	0	2B	BOK
10005	1926	6/6/21 18:13	6/29/21 21:52	42.20528	-124.31179	421.1	S1005-P	D	0	2B	BOK
10006	6684	6/6/21 18:57	6/29/21 22:12	42.20698	-124.29210	322.6	S1006-C	D	10	2B	BOK
10007	4525	6/6/21 19:50	6/29/21 22:31	42.20606	-124.28383	485.5	S1007-B	D	0	2B	BOK
10008	7306	6/6/21 20:27	6/29/21 22:37	42.21096	-124.27747	466.4	S1008-B	D	0	2B	BOK
10009	7188	6/6/21 20:48	6/29/21 22:45	42.21240	-124.26251	438.6	S1009-C	D	0	2B	BOK
10010	5087	6/6/21 22:12	6/29/21 22:56	42.21104	-124.25094	383.2	S1010-C	R	0	2B	BOK
10011	7689	6/6/21 23:26	6/29/21 23:16	42.22298	-124.23814	451.6	S1011-B	D	0	2B	BOK
10012	4990	6/6/21 23:05	6/29/21 23:28	42.22556	-124.22522	505.5	S1012-N	D	0	2B	BOK
10013	5109	6/6/21 13:01	6/30/21 16:21	42.20906	-124.21380	717	S1013-B	D	0	2B	BOK
10014	1897	6/6/21 13:51	6/30/21 16:56	42.21567	-124.20441	675.4	S1014-B	D	0	2B	BOK
10015	4506	6/6/21 16:53	6/30/21 17:26	42.23389	-124.17544	277.4	S1016-B	D	0	2B	BFO

10016	4655	6/6/21 17:07	6/30/21 15:19	42.21287	-124.12483	352.9	S1020-P	D	0	2B	BOK
10017	4921	6/6/21 17:32	6/30/21 15:38	42.21721	-124.11401	368.4	S1021-F	D	0	2B	BOK
10018	4517	6/6/21 18:16	6/30/21 15:50	42.22370	-124.10563	422.4	S1022-F	D	-15	2B	BOK
10019	5047	6/6/21 18:57	6/30/21 16:03	42.23834	-124.09631	560.9	S1023-F	D	-5	2B	BOK
10020	4630	6/6/21 19:24	6/30/21 16:15	42.24735	-124.08394	687.6	S1024-F	D	0	2B	BOK
10021	4848	6/6/21 19:50	6/30/21 16:26	42.24806	-124.07038	662.2	S1025-F	D	0	2B	BOK
10022	1912	6/6/21 20:23	6/30/21 16:34	42.24491	-124.06023	704.7	S1026-F	D	15	2B	BOK
10023	4955	6/6/21 21:00	6/30/21 16:45	42.24180	-124.04610	973.9	S1027-F	D	0	2B	BOK
10024	7005	5/30/21 17:11	6/28/21 15:59	42.28603	-123.81696	886.6	S1029	D	0	2B	BOK
10025	6219	5/30/21 16:02	6/28/21 16:21	42.28836	-123.80566	666.3	S1030	D	0	2B	BOK
10026	6499	5/30/21 15:01	6/28/21 16:40	42.29687	-123.79393	514.5	S1031	D	0	2B	BOK
10027	4845	5/30/21 7:49	6/27/21 13:27	42.30908	-123.76719	389	S1032-F	D	0	2B	BOK
10028	1891	5/30/21 8:28	6/27/21 13:40	42.29949	-123.76030	341.4	S1033-F	D	0	2B	BOK
10029	5114	5/30/21 9:09	6/27/21 13:55	42.29814	-123.74705	338.2	S1034-F	D	0	2B	BOK
10030	2698	5/30/21 9:51	6/27/21 14:12	42.29778	-123.73218	364.6	S1035-F	D	0	2B	BOK
10031	4983	5/30/21 10:49	6/27/21 14:35	42.29056	-123.72299	491.3	S1036-F	D	0	2B	BOK
10032	5005	5/30/21 11:33	6/27/21 14:46	42.28832	-123.71143	460.8	S1037-F	D	0	2B	BOK
10033	5145	5/30/21 12:19	6/27/21 14:59	42.28452	-123.69509	418.9	S1038-F	D	0	2B	BOK
10034	4926	5/30/21 13:30	6/27/21 15:12	42.27949	-123.68483	499.1	S1039-F	D	0	2B	BOK
10035	5095	5/30/21 14:11	6/27/21 15:26	42.28305	-123.67362	456.2	S1040-F	D	0	2B	BOK
10036	5133	5/30/21 15:07	6/27/21 15:43	42.28288	-123.66383	486.3	S1041-F	D	0	2B	BOK
10037	4607	5/30/21 16:03	6/27/21 15:57	42.28095	-123.65245	430.8	S1042-F	D	0	2B	BOK
10038	1881	6/3/21 12:59	6/27/21 16:07	42.27991	-123.64229	397.7	S1043-P	D	0	2B	BOK
10039	6477	5/30/21 23:06	6/28/21 17:43	42.27799	-123.61216	403.3	S1045	D	0	2B	BOK
10040	6198	5/30/21 23:50	6/28/21 17:52	42.27892	-123.60113	406.2	S1046	D	0	2B	BOK
10041	7322	5/31/21 0:19	6/28/21 18:04	42.27915	-123.59084	419.9	S1047	D	0	2B	BOK
10042	4942	5/31/21 15:32	6/27/21 18:37	42.27544	-123.55212	435.3	S1050-P	D	0	2B	BOK
10043	4632	5/31/21 16:10	6/27/21 18:20	42.27920	-123.54110	443.6	S1051-P	D	0	2B	BOK
10044	4928	5/31/21 10:08	6/26/21 23:23	42.29640	-123.36172	577.2	S1066-B	D	0	2B	BOK
10045	4940	5/31/21 9:33	6/26/21 23:39	42.30099	-123.35141	725.2	S1067-B	D	0	2B	BOK
10046	5140	5/31/21 8:01	6/27/21 0:25	42.29741	-123.32021	891.6	S1069-B	D	0	2B	BOK
10047	4897	5/31/21 13:52	6/26/21 21:17	42.30500	-123.20250	465.4	S1078-P	D	0	2B	BOK
10048	4777	5/31/21 12:51	6/26/21 21:35	42.30450	-123.18395	592.5	S1079-B	D	0	2B	BOK
10049	4970	5/29/21 8:27	6/26/21 20:12	42.29638	-123.11385	1081.2	S1085-B	D	0	2B	BOK
10050	4786	5/29/21 9:08	6/26/21 19:56	42.29332	-123.10287	911	S1086-B	D	0	2B	BOK
10051	4801	5/29/21 9:47	6/26/21 19:37	42.29333	-123.08369	804.1	S1087-B	D	0	2B	BOK
10052	4636	5/29/21 10:38	6/26/21 19:08	42.30851	-123.04769	738.6	S1091-B	D	0	2B	BOK
10053	4757	5/29/21 13:29	6/26/21 18:36	42.32532	-122.98693	620.3	S1096-P	D	0	2B	BOK
10054	4917	5/29/21 14:12	6/26/21 18:16	42.32877	-122.97760	557.1	S1097-P	D	0	2B	BOK
10055	5004	5/29/21 15:09	6/26/21 18:04	42.32987	-122.96258	466.8	S1098-P	D	0	2B	BOK
10056	4886	5/29/21 16:05	6/26/21 17:43	42.32729	-122.94636	439.3	S1099-P	D	0	2B	BOK
10057	1893	5/29/21 16:48	6/26/21 17:29	42.32462	-122.93388	432	S1100-P	D	0	2B	BOK
10058	6796	5/30/21 0:30	6/26/21 22:47	42.32230	-122.91010	429.8	S1102	D	0	2B	BOK
10059	6472	5/29/21 23:42	6/26/21 22:37	42.32730	-122.89992	424.1	S1103	D	0	2B	BOK
10060	6393	5/29/21 23:02	6/26/21 22:27	42.32903	-122.88935	422.2	S1104	D	0	2B	BOK
10061	6558	5/29/21 19:32	6/26/21 22:20	42.33195	-122.87529	416.5	S1105	D	0	2B	BFO
10062	4984	5/29/21 18:55	6/26/21 22:10	42.33186	-122.86434	415.1	S1106	D	-3	2B	BOK
10063	5023	5/29/21 18:20	6/26/21 21:59	42.33301	-122.85261	433.9	S1107	D	0	2B	BOK
10064	4776	5/29/21 17:48	6/26/21 21:50	42.33407	-122.83946	470.9	S1108	D	0	2B	BFO
10065	4961	5/29/21 17:25	6/26/21 21:39	42.33532	-122.83153	461.8	S1109	D	0	2B	BOK
10066	5010	5/29/21 9:52	6/26/21 19:55	42.34142	-122.81759	533.7	S1110	D	0	2B	BOK
10067	6132	5/29/21 22:09	6/26/21 21:25	42.34971	-122.80839	623	S1111	D	0	2B	BOK
10068	6706	5/29/21 9:02	6/26/21 19:36	42.34715	-122.79317	799.9	S1112	D	0	2B	BOK
10069	5088	5/28/21 17:06	6/26/21 18:47	42.35374	-122.78586	1086.2	S1113	D	0	2B	BOK
10070	5141	5/28/21 10:28	6/26/21 15:43	42.32681	-122.70208	918.4	S1119	D	0	2B	BOK
10071	5125	5/28/21 11:17	6/26/21 16:03	42.32838	-122.69588	881.5	S1120	D	0	2B	BOK
10072	4308	5/28/21 12:05	6/26/21 16:28	42.33534	-122.68560	802.1	S1121	D	-3	2B	BOK
10073	4594	5/28/21 8:37	6/26/21 16:52	42.33725	-122.67562	679.2	S1122	D	0		N/A
10074	4986	5/28/21 13:10	6/26/21 17:19	42.33580	-122.66761	685.2	S1123	D	0	2B	BOK
10075	4925	5/28/21 16:57	6/26/21 13:27	42.34906	-122.65019	1132.7	S1124-B	D	0	2B	BOK
10076	1887	5/28/21 15:14	6/26/21 13:44	42.35997	-122.63998	939.6	S1125-B	D	0	2B	BOK
10077	4875	5/28/21 12:58	6/26/21 14:23	42.35428	-122.61491	891.3	S1127-B	D	0	2B	BOK
10078	4668	5/28/21 13:53	6/26/21 14:07	42.34487	-122.60676	905.6	S1128-B	D	0	2B	BOK
10079	4867	5/28/21 10:19	6/26/21 15:30	42.35059	-122.53047	697	S1134-B	D	0	2B	BOK
10080	4965	5/28/21 11:12	6/26/21 15:12	42.35059	-122.51336	837.5	S1135-B	D	0	2B	BOK
10081	4934	5/28/21 9:08	6/26/21 15:59	42.35908	-122.50725	691.1	S1136-B	D	0	2B	BOK
10082	4199	5/28/21 8:32	6/26/21 16:14	42.35929	-122.48189	706.4	S1138-F	D	0	2B	BOK
20001	5000	5/31/21 8:47	6/29/21 20:06	42.77157	-124.47770	117.2	S2001-P	D	14	2B	BFO
20002	5014	5/31/21 9:57	6/29/21 19:34	42.78757	-124.47514	36.8	S2002-PV	D	0	2B	BOK
20003	4696	5/31/21 10:35	6/29/21 16:36	42.77996	-124.43569	201	S2004-B	D	0	2B	BOK
20004	4911	5/31/21 10:55	6/29/21 16:46	42.78160	-124.42113	272.1	S2005-B	D	0	2B	BOK
20005	4896	5/31/21 11:54	6/29/21 19:01	42.80725	-124.40235	29.1	S2006-B	D	0	2B	BOK
20006	2695	5/31/21 12:34	6/29/21 18:50	42.80826	-124.39463	34.4	S2007-B	D	0	2B	BFO
20007	7957	5/31/21 16:19	6/29/21 18:32	42.80890	-124.38350	33.5	S2008-PV	D	-25	2B	BOK
20008	4345	5/31/21 13:18	6/29/21 18:20	42.81085	-124.38136	57.4	S2008-PV	D	-8	2B	BFO

20009	4987	5/31/21 14:00	6/29/21 18:07	42.81343	-124.36811	79.8	S2009-PV	D	-17	2B	BFO
20010	4947	5/31/21 14:38	6/29/21 17:55	42.81309	-124.35434	68.7	S2010-PV	D	0	2B	BOK
20011	6667	5/31/21 15:03	6/29/21 17:41	42.81091	-124.34352	59.4	S2011-B	D	11	2B	BFO
20012	4342	5/31/21 15:59	6/29/21 17:25	42.80638	-124.33451	69.2	S2012-B	D	0	2B	BFO
20013	6446	5/31/21 15:33	6/29/21 17:20	42.80647	-124.33434	69.5	S2012-B	D	0	2B	BTS
20014	4878	5/31/21 16:17	6/29/21 21:36	42.80551	-124.32191	61.9	S2013	D	15	2B	BOK
20015	4843	5/31/21 16:37	6/29/21 21:16	42.80515	-124.30727	100.1	S2014	D	0	2B	BOK
20016	4519	5/31/21 16:53	6/29/21 21:04	42.81104	-124.29599	85.8	S2015	D	0	2B	BOK
20017	2692	5/31/21 17:17	6/29/21 20:51	42.81337	-124.28320	95.7	S2016	D	0	2B	BOK
20018	5121	5/31/21 17:48	6/29/21 20:37	42.81058	-124.27040	129.7	S2017	D	0	2B	BOK
20019	4906	5/31/21 18:18	6/29/21 20:23	42.80666	-124.25713	106.5	S2018	D	0	2B	BOK
20020	4956	5/31/21 18:41	6/29/21 20:06	42.80669	-124.24650	143.9	S2019	D	0	2B	BOK
20021	5131	5/31/21 19:12	6/29/21 18:54	42.80634	-124.22954	119.9	S2020	D	0	2B	BOK
20022	4460	5/31/21 20:23	6/29/21 18:39	42.81147	-124.22207	119	S2021	D	0	2B	BFO
20023	4793	5/31/21 20:47	6/29/21 18:27	42.81563	-124.21220	136.4	S2022	D	5	2B	BFO
20024	1920	5/31/21 21:04	6/29/21 18:12	42.81917	-124.19971	133.8	S2023	D	5	2B	BOK
20025	5113	5/31/21 21:39	6/29/21 17:47	42.81994	-124.18415	319.6	S2024	D	0	2B	BOK
20026	6532	5/31/21 21:08	6/29/21 15:57	42.82459	-124.16811	231.6	S2025-PW	D	0	2B	BOK
20027	7033	5/31/21 21:49	6/29/21 15:42	42.82885	-124.14255	535.4	S2026-PW	D	-6	2B	BOK
20028	4937	5/31/21 22:23	6/29/21 15:25	42.82806	-124.12402	181.5	S2027-PW	D	5	2B	BFO
20029	7029	5/31/21 17:38	6/29/21 0:40	42.81865	-124.10323	610.5	S2028	D	15	2B	BOK
20030	6164	5/31/21 18:07	6/29/21 0:29	42.82643	-124.09231	703.1	S2029	D	0	2B	BOK
20031	7018	5/31/21 18:30	6/29/21 0:16	42.82686	-124.07886	695.5	S2030	D	12	2B	BOK
20032	1917	5/31/21 23:13	6/28/21 23:58	42.84103	-124.06474	453.8	S2033	D	0	2B	BOK
20033	1922	5/31/21 16:35	6/29/21 16:31	42.83346	-124.03179	132.8	S2034-F	D	0	3B	BOK
20034	4756	5/31/21 16:55	6/29/21 16:42	42.82778	-124.01973	156.9	S2035-F	D	0	2B	BOK
20035	4617	5/31/21 17:17	6/29/21 16:58	42.83201	-124.00036	304.3	S2036-F	D	-10	2B	BOK
20036	1904	5/31/21 17:50	6/29/21 17:19	42.84696	-123.97958	692.1	S2038-F	D	N/A	2B	N/A
20037	4509	5/31/21 18:11	6/29/21 17:32	42.84647	-123.96215	658.5	S2039-F	D	0	2B	BOK
20038	4767	5/31/21 18:30	6/29/21 17:41	42.84848	-123.94801	755.4	S2040-F	D	15	2B	BOK
20039	1937	5/31/21 18:49	6/29/21 17:51	42.84744	-123.93321	815.4	S2041-F	D	0	2B	BOK
20040	4102	5/31/21 19:13	6/29/21 18:06	42.84648	-123.91870	926	S2042-F	D	0	2B	BOK
20041	1896	5/31/21 20:00	6/29/21 18:36	42.81939	-123.89488	857.8	S2044-F	D	-5	2B	BOK
20042	4876	5/31/21 20:31	6/29/21 18:53	42.81969	-123.88214	742.2	S2045-F	D	0	2B	BOK
20043	2850	5/31/21 20:52	6/29/21 19:26	42.81032	-123.86144	695.7	S2046-F	R	-14	2B	BOK
20044	4259	5/31/21 21:59	6/29/21 19:37	42.80606	-123.83945	712.5	S2047-F	D	0	2B	BOK
20045	4919	5/31/21 21:22	6/29/21 19:50	42.79453	-123.82447	839.5	S2048-B	D	-15	2B	BOK
20046	7919	5/31/21 21:39	6/29/21 19:59	42.79661	-123.81453	847.3	S2049-B	D	0	2B	BOK
20047	4800	6/4/21 17:31	6/29/21 22:18	42.79840	-123.76362	944.2	S2052	D	-5	2B	BOK
20048	4625	6/4/21 15:42	6/29/21 21:57	42.80803	-123.75007	830.6	S2054	D	-8	2B	BOK
20049	4751	6/4/21 14:22	6/29/21 21:26	42.82048	-123.73823	659.9	S2055	D	7	2B	BOK
20050	4913	6/4/21 14:53	6/29/21 20:47	42.82279	-123.72858	675.1	S2056	D	0	2B	BFO
20051	5136	6/4/21 13:17	6/29/21 20:25	42.82595	-123.69914	498	S2058	D	0	2B	BOK
20052	4658	6/4/21 12:40	6/29/21 20:14	42.82648	-123.69035	491.5	S2059	D	0	2B	BOK
20053	4968	6/4/21 12:08	6/29/21 20:04	42.81903	-123.67767	432	S2060	D	0	2B	BOK
20054	4859	6/4/21 11:38	6/29/21 19:53	42.82120	-123.66526	386.9	S2061	D	0	2B	BOK
20055	4989	6/4/21 10:56	6/29/21 19:33	42.82808	-123.65457	505.2	S2062	D	20	2B	BOK
20056	4704	6/4/21 9:50	6/29/21 19:06	42.82937	-123.63958	816.4	S2063	D	20	2B	BFO
20057	6438	6/4/21 19:21	6/29/21 16:55	42.83573	-123.62095	293.3	S2065	D	30	2B	BFO
20058	6488	6/4/21 19:52	6/29/21 16:44	42.85280	-123.60710	284.3	S2066	D	50	2B	BOK
20059	6391	6/4/21 20:20	6/29/21 16:20	42.86480	-123.58436	278.4	S2068	D	20	2B	BFO
20060	6147	6/4/21 21:01	6/29/21 16:08	42.88227	-123.55775	267.3	S2070	D	45	2B	BFO
20061	6495	6/4/21 21:29	6/29/21 15:52	42.90383	-123.53092	249.1	S2073	D	45	2B	BOK
20062	5003	6/4/21 22:05	6/29/21 15:53	42.91745	-123.48704	237.2	S2076	D	45	2B	BOK
30001	7513	5/29/21 12:52	6/27/21 21:07	43.39241	-124.16690	144.1	S3002	D	0	2B	BOK
30002	4949	5/29/21 0:53	6/27/21 21:40	43.39190	-124.15425	204.9	S3003	D	5	2B	BOK
30003	6715	5/29/21 12:33	6/27/21 21:26	43.39251	-124.14735	209.1	S3004	D	0	2B	BFO
30004	4994	5/29/21 0:33	6/27/21 21:57	43.39353	-124.13268	271.7	S3005	D	0	2B	BFO
30005	6810	5/29/21 12:15	6/27/21 22:15	43.39851	-124.12448	239.5	S3006	D	-25	2B	BOK
30006	1915	5/29/21 0:13	6/27/21 22:28	43.40110	-124.11286	294.1	S3007	D	-25	2B	BFO
30007	6153	5/29/21 11:52	6/28/21 21:37	43.40686	-124.10265	315.6	S3008-Y	D	-4	2B	BOK
30008	7009	5/29/21 11:33	6/28/21 21:26	43.40905	-124.09621	352.6	S3008b	D	0	2B	BOK
30009	6165	5/29/21 11:06	6/28/21 21:13	43.41583	-124.08995	336.6	S3009-Y	D	0	2B	BOK
30010	6821	5/29/21 10:40	6/28/21 20:52	43.41589	-124.07440	30.3	S3010-Y	D	5	2B	BOK
30011	7448	5/29/21 9:05	6/28/21 23:40	43.41598	-124.01799	211.4	S3014	D	0	2B	BTS
30012	4877	5/29/21 0:15	6/28/21 23:37	43.42514	-124.00674	57.9	S3015	D	0	2B	BOK
30013	4295	5/28/21 16:52	6/28/21 23:01	43.42519	-124.00038	70.7	S3016	D	-10	2B	BTS
30014	4153	5/28/21 22:57	6/28/21 22:43	43.41926	-123.98105	216.6	S3017	D	-20	2B	BTS
30015	5101	5/28/21 23:41	6/28/21 23:20	43.41624	-123.96786	376.1	S3018	D	0	2B	BOK
30016	4570	5/28/21 16:05	6/28/21 22:21	43.41423	-123.95361	277	S3020	D	0	2B	BOK
30017	4810	5/28/21 22:24	6/28/21 21:59	43.41755	-123.94252	120.1	S3021	D	-20	2B	BOK
30018	4836	5/28/21 22:54	6/28/21 22:55	43.42326	-123.92088	90.3	S3022	D	0	2B	BFO
30019	5124	5/28/21 21:37	6/28/21 21:30	43.44499	-123.90219	428.4	S3024	D	0	2B	BFO
30020	5111	5/28/21 14:52	6/28/21 21:15	43.44781	-123.89499	494.7	S3025	D	10	2B	BOK
30021	5045	5/28/21 21:16	6/28/21 20:59	43.45536	-123.88082	551.1	S3026	D	-20	2B	BTS

30022	4936	5/28/21 22:51	6/28/21 22:23	43.45229	-123.86582	564.1	S3027	D	0	2B	BOK
30023	5013	5/28/21 14:26	6/28/21 20:48	43.44983	-123.85527	590.3	S3028	D	6	2B	BOK
30024	1880	5/28/21 20:53	6/28/21 20:33	43.44876	-123.84841	612	S3029	D	0	2B	BFO
30025	4884	5/28/21 13:55	6/28/21 19:55	43.45901	-123.82837	561	S3030	D	0	2B	BFO
30026	4903	5/28/21 21:55	6/28/21 21:57	43.46194	-123.81478	541.7	S3031	D	0	2B	BOK
30027	5031	5/28/21 21:51	6/28/21 21:46	43.46241	-123.80090	515	S3032	D	0	2B	BFO
30028	4895	5/28/21 20:11	6/28/21 19:20	43.46248	-123.78847	491.6	S3033	D	0	2B	BOK
30029	1930	5/28/21 13:24	6/28/21 19:06	43.47038	-123.77992	396.7	S3034	D	0	2B	BTS
30030	4521	5/28/21 19:10	6/28/21 18:51	43.47055	-123.76789	360.2	S3035	D	0	2B	BOK
30031	4977	5/28/21 21:22	6/28/21 21:25	43.46955	-123.75574	241.4	S3036	D	0	2B	BOK
30032	5089	5/28/21 21:13	6/28/21 21:10	43.48296	-123.74237	205.6	S3037	D	0	2B	BOK
30033	5026	5/28/21 12:42	6/28/21 18:30	43.47722	-123.72488	210.9	S3038	D	0	2B	BFO
30034	4665	5/28/21 18:24	6/28/21 18:13	43.47167	-123.71489	286.8	S3039	D	0	2B	BFO
30035	5129	5/28/21 20:47	6/28/21 20:52	43.47107	-123.70259	425.9	S3040	D	0	2B	BFO
30036	4643	5/28/21 20:40	6/28/21 20:43	43.46948	-123.69627	433.1	S3041	D	-10	2B	BOK
30037	5043	5/28/21 11:55	6/28/21 17:35	43.46661	-123.67930	441.3	S3042	D	0	2B	BOK
30038	4832	5/28/21 17:35	6/28/21 17:16	43.46844	-123.66382	358.5	S3043	D	0	2B	BFO
30039	4881	5/28/21 11:20	6/28/21 16:59	43.46884	-123.65342	356.5	S3044	D	0	2B	BOK
30040	5041	5/28/21 17:16	6/28/21 16:38	43.46743	-123.64486	402.2	S3045	D	0	2B	BFO
30041	1908	5/28/21 16:31	6/28/21 16:00	43.45560	-123.62123	350.6	S3047	D	0	2B	BFO
30042	4646	5/28/21 18:32	6/28/21 20:03	43.46066	-123.60138	319.8	S3048	D	0	2B	BOK
30043	5050	5/28/21 19:03	6/28/21 19:49	43.45960	-123.58897	374.4	S3049	D	-8	3B	BOK
30044	1892	5/28/21 17:52	6/28/21 19:02	43.46391	-123.57866	385.9	S3050	D	0	2B	BFO
30045	5019	5/28/21 18:01	6/28/21 18:48	43.47563	-123.57430	357.4	S3051	D	-8	2B	BOK
30046	4863	5/28/21 18:34	6/28/21 18:16	43.48290	-123.54714	309.8	S3053	D	-5	2B	BFO
30047	6443	5/28/21 17:10	6/28/21 17:47	43.48563	-123.54050	261.7	S3054	D	0	2B	BOK
30048	4439	5/28/21 17:06	6/27/21 15:33	43.46929	-123.44949	51.7	S3061-B	D	0	2B	BOK
40001	2910	5/30/21 16:32	6/26/21 20:52	44.12277	-124.11434	296.3	S4001	D	0	3B	BOK
40002	6829	5/30/21 18:13	6/26/21 20:07	44.11728	-124.09858	300.9	S4002	D	0	2B	BOK
40003	2847	5/30/21 17:06	6/26/21 19:58	44.10762	-124.08442	394	S4003	D	0	3B	BOK
40004	2976	5/30/21 17:23	6/26/21 19:49	44.10843	-124.07254	313.4	S4004	D	0	2B	BOK
40005	2897	5/30/21 17:41	6/26/21 19:30	44.11828	-124.06027	273	S4005	D	0	2B	BOK
40006	2964	5/29/21 22:43	6/26/21 19:18	44.11638	-124.04794	382.7	S4006	D	-5	2B	BFO
40007	3038	5/29/21 22:32	6/26/21 19:08	44.11433	-124.03650	483.9	S4007	D	0	3B	BOK
40008	2991	5/29/21 22:14	6/26/21 18:50	44.11955	-124.02350	566.9	S4008	D	0	OTHER	BOK
40009	2907	5/29/21 21:58	6/26/21 18:39	44.12768	-124.01079	496.2	S4009	D	0	2B	BFO
40010	2860	5/29/21 21:33	6/26/21 18:26	44.14042	-123.99979	488.7	S4010	D	0	3B	BOK
40011	3036	5/29/21 21:18	6/26/21 18:10	44.14792	-123.98706	350.5	S4011	D	0	2B	BOK
40012	2862	5/29/21 20:59	6/26/21 18:00	44.14965	-123.97417	353.2	S4012	D	0	2B	BTS
40013	2867	5/29/21 20:26	6/26/21 17:45	44.15316	-123.96210	301.1	S4013	D	0	3B	BFO
40014	2908	5/29/21 20:06	6/26/21 17:32	44.15035	-123.95005	264	S4014	D	-33	3B	BFO
40015	2925	5/29/21 19:09	6/26/21 17:23	44.14220	-123.93656	260.8	S4015	D	0	3B	BFO
40016	2973	5/29/21 18:41	6/26/21 17:03	44.14251	-123.92485	95.4	S4016	D	0	3B	BFO
40017	2916	5/29/21 18:05	6/26/21 16:52	44.12927	-123.91609	66	S4017	D	0	2B	BFO
40018	2873	5/29/21 17:49	6/26/21 16:27	44.13293	-123.89897	211.1	S4018	D	0	3B	BTS
40019	2928	5/29/21 17:11	6/26/21 16:16	44.12828	-123.88528	314.6	S4019	D	0	2B	BTS
40020	2898	5/29/21 16:40	6/26/21 16:05	44.12808	-123.87461	296.7	S4020	D	0	2B	BTS
40021	4513	5/31/21 20:44	6/26/21 15:49	44.12655	-123.85985	301.2	S4021	D	0	2B	BOK
40022	6925	5/31/21 20:12	6/26/21 15:38	44.12457	-123.84907	183.6	S4022	D	0	2B	BFO
40023	6115	5/31/21 19:06	6/26/21 15:06	44.11810	-123.81755	298.9	S4024	D	0	2B	BFO
40024	6306	5/31/21 18:36	6/26/21 14:55	44.11413	-123.81212	287.5	S4025	D	0	2B	BTS
40025	2903	5/31/21 1:09	6/26/21 20:13	44.13893	-123.66340	542.8	S4036	D	0	2B	BOK
40026	7774	5/31/21 1:41	6/26/21 19:57	44.13354	-123.65782	493.6	S4037	D	14	2B	BOK
40027	2927	5/31/21 0:21	6/26/21 19:48	44.13377	-123.64512	384.3	S4038	D	0	2B	BFO
40028	2892	5/30/21 23:43	6/26/21 19:38	44.12902	-123.63523	351.8	S4039	D	0	2B	BOK
40029	3027	5/30/21 22:48	6/26/21 19:14	44.12873	-123.62491	128.1	S4040	D	0	2B	BOK
40030	2987	5/30/21 21:58	6/26/21 18:54	44.14076	-123.59912	197.3	S4042	D	14	2B	BFO
40031	2849	5/30/21 21:14	6/26/21 18:32	44.13858	-123.57950	218.2	S4043	D	0	2B	BTS
40032	2969	5/29/21 23:15	6/26/21 18:05	44.16081	-123.55942	502.3	S4044	D	10	2B	BFO
40033	2977	5/29/21 23:58	6/26/21 17:53	44.16405	-123.55352	518.4	S4045	D	14	3B	BFO
40034	2909	5/30/21 0:19	6/26/21 17:38	44.16764	-123.54348	493.5	S4046	D	14	3B	BTS
40035	3018	5/30/21 0:52	6/26/21 17:25	44.17067	-123.53258	503.5	S4047	D	25	3B	BOK
40036	2985	5/30/21 1:17	6/26/21 17:13	44.17534	-123.52565	516.9	S4048	D	0	3B	BOK
40037	2997	5/30/21 1:57	6/26/21 16:54	44.17651	-123.51145	479.8	S4049	D	14	2B	BOK
40038	2856	5/30/21 2:37	6/26/21 16:40	44.17488	-123.49671	510	S4051	D	14	2B	BFO
40039	2975	5/29/21 21:11	6/26/21 16:18	44.17728	-123.48235	484.7	S4052	D	14	2B	BTS
40040	2941	5/29/21 20:28	6/26/21 16:07	44.17499	-123.47642	412.4	S4053	D	0	2B	BOK
40041	2875	5/29/21 20:00	6/26/21 15:56	44.17127	-123.47028	412.8	S4054	D	0	2B	BOK
40042	2954	5/29/21 19:27	6/26/21 15:46	44.16788	-123.46743	436.2	S4055	D	-5	2B	BFO
40043	2853	5/29/21 18:49	6/26/21 15:33	44.16831	-123.46115	354.8	S4056	D	0	2B	BOK
40044	2871	5/29/21 18:22	6/26/21 15:19	44.16923	-123.45564	237.9	S4057	D	0	2B	BFO
40045	3029	5/29/21 17:53	6/26/21 14:56	44.16346	-123.45163	203.9	S4058	D	0	2B	BOK
50001	2845	5/28/21 23:24	6/27/21 18:13	45.08595	-123.95977	22.7	S5002	D	0	OTHER	BOK
50002	2937	6/1/21 21:45	6/27/21 17:55	45.07364	-123.93334	57.1	S5003	D	0	2B	BTS
50003	2970	6/1/21 21:56	6/27/21 17:45	45.06949	-123.91543	83.7	S5005	D	0	2B	BOK

50004	2915	5/28/21 21:56	6/27/21 17:39	45.06845	-123.90945	121.8	S5006	D	0	2B	BOK
50005	2948	5/28/21 22:19	6/1/21 22:07	45.07017	-123.89543	234.2	S5007	D	0	3B	BFO
50006	2906	5/28/21 20:56	6/27/21 17:18	45.06844	-123.88199	325.3	S5008	D	0	2B	BOK
50007	2893	5/28/21 20:27	6/27/21 16:54	45.06602	-123.87098	330.3	S5009	D	0	2B	BTS
50008	2950	5/28/21 20:31	6/1/21 22:25	45.06592	-123.85810	390.2	S5010	D	0	3B	BOK
50009	2959	5/28/21 19:57	6/27/21 16:32	45.06856	-123.84251	278.4	S5011	D	0	2B	BOK
50010	2793	6/1/21 22:42	N/A	45.07003	-123.82951	277.5	S5012	D	0	3B	BFO
50011	2965	5/28/21 19:18	6/27/21 16:15	45.07252	-123.81383	274.1	S5013	D	0	2B	BFO
50012	2884	5/28/21 18:44	6/27/21 15:45	45.07646	-123.80486	256.8	S5014	D	0	2B	BOK
50013	2830	5/28/21 18:41	6/27/21 15:35	45.08662	-123.79411	177.7	S5015	D	0	2B	BOK
50014	2874	5/28/21 18:10	6/27/21 15:19	45.08644	-123.77769	277.2	S5016	D	0	2B	BOK
50015	2961	5/28/21 18:09	6/27/21 15:10	45.08364	-123.76657	273.3	S5017	D	0	2B	BFO
50016	2899	5/28/21 17:39	6/27/21 14:58	45.08578	-123.75220	259.6	S5018	D	0	2B	BOK
50017	2878	5/28/21 17:37	6/27/21 14:48	45.09175	-123.74564	239.2	S5019	D	0	2B	BOK
50018	2947	5/28/21 17:04	6/27/21 14:36	45.10070	-123.73963	215.2	S5020	D	0	2B	BOK
50019	2980	5/29/21 0:02	6/27/21 19:51	45.09975	-123.70694	210.3	S5022	D	0	2B	BOK
50020	7405	6/5/21 17:10	6/27/21 21:33	45.09939	-123.68149	225	S5023	D	0	2B	BOK
50021	4695	6/5/21 16:16	6/27/21 21:01	45.09750	-123.66917	222.2	S5025	D	0	3B	BOK
50022	4967	6/5/21 16:30	6/27/21 21:01	45.09751	-123.66915	223.4	S5024	D	0	2B	BOK
50023	3047	5/28/21 21:52	6/27/21 19:16	45.09564	-123.64539	218.6	S5026	D	0	2B	BOK
50024	2945	5/28/21 22:28	7/13/21 9:19	45.09699	-123.63504	226.6	S5027	D	-5	2B	BOK
50025	3000	5/28/21 20:27	6/27/21 17:33	45.09659	-123.61285	137	S5028	D	-14	2B	BOK
50026	2957	5/28/21 19:13	6/27/21 18:16	45.09679	-123.59609	285.9	S5029	R	0	2B	BOK
50027	7085	6/1/21 23:35	6/27/21 16:59	45.09577	-123.56167	229.4	S5032	D	0	2B	BFO/BOK
50028	7408	6/1/21 22:52	6/27/21 16:34	45.10734	-123.55463	241.7	S5033	D	0	2B	BFO/BOK
50029	2696	6/2/21 0:32	6/27/21 15:24	45.10637	-123.54451	185.9	S5034	D	0	2B	BOK
50030	4624	6/2/21 1:01	6/27/21 15:46	45.10659	-123.53462	183.6	S5035	D	0	2B	BFO
50031	4827	6/1/21 21:47	6/27/21 14:57	45.10983	-123.52648	172.7	S5036	D	-5	2B	BOK
60001	6719	5/28/21 17:55	6/26/21 21:18	45.42995	-123.92219	80.3	S6002	D	0	2B	BST
60002	6355	5/28/21 18:14	6/26/21 21:10	45.42954	-123.91628	92.1	S6002-a	D	0	3B	BFO
60003	7498	5/28/21 21:38	6/26/21 21:38	45.42882	-123.90731	75.5	S6003	D	0	2B	BOK
60004	7299	6/1/21 3:14	6/27/21 14:57	45.42992	-123.90309	60.3	S6003-a	D	0	2B	BTS
60005	4972	5/28/21 22:08	6/26/21 21:44	45.42983	-123.89632	71.9	S6004	D	0	2B	BOK
60006	6735	5/28/21 22:30	6/26/21 21:50	45.42929	-123.89068	101.5	S6004-a	D	0	2B	BOK
60007	4797	5/28/21 23:01	6/26/21 22:00	45.42994	-123.87842	63	S6005-a	D	0	2B	BOK
60008	7804	5/29/21 20:50	6/26/21 16:22	45.43013	-123.87116	4.9	S6006	D	0	2B	BTS
60009	7702	5/28/21 19:12	6/26/21 16:17	45.43056	-123.86674	3.1	S6006-a	D	0	2B	BOK
60010	4924	5/28/21 23:37	6/26/21 22:21	45.42778	-123.85693	26.3	S6007	D	N/A	3B	on its side
60011	6746	6/1/21 1:25	6/27/21 16:16	45.42563	-123.85172	66	S6007-a	D	0	2B	BTS
60012	6380	6/1/21 1:52	6/27/21 16:00	45.42434	-123.84614	51.5	S6008	D	0	2B	BFO
60013	6785	5/28/21 20:01	6/26/21 17:20	45.43046	-123.83510	4.1	S6008-a	D	0	2B	BFO
60014	7519	5/28/21 19:47	6/26/21 17:11	45.43045	-123.83154	5.4	S6009	D	0	2B	BTS
60015	4561	5/28/21 20:15	6/26/21 17:31	45.42769	-123.82682	6.4	S6009-a	D	0	2B	BOK
60016	4190	5/29/21 0:10	6/26/21 17:39	45.42670	-123.82192	6.4	S6010	D	0	2B	BTS
60017	7825	5/29/21 0:21	6/26/21 17:45	45.42681	-123.81255	7.8	S6010-a	D	0	2B	BFO
60018	7834	5/29/21 0:32	6/26/21 17:51	45.42678	-123.80611	9.5	S6011	R	0	2B	BFO
60019	4852	5/29/21 0:48	6/26/21 18:01	45.42670	-123.78724	18.3	S6012-a	R	0	2B	BOK
60020	4901	5/29/21 20:20	6/26/21 18:33	45.44565	-123.76008	91	S6014-a	D	0	3B	BOK
60021	6713	5/29/21 20:01	6/26/21 18:26	45.45002	-123.74910	152	S6015-a	D	0	3B	BOK
60022	4931	5/29/21 19:44	6/26/21 18:17	45.45095	-123.74205	188.1	S6016	D	0	2B	BFO
60023	7470	5/30/21 0:51	6/27/21 0:04	45.45351	-123.72675	493.9	S6017	D	0	2B	BOK
60024	4710	5/30/21 1:11	6/26/21 23:55	45.45364	-123.72312	483.4	S6018	D	0	2B	BFO
60025	1914	5/29/21 19:10	6/26/21 18:48	45.45826	-123.67809	50.9	S6021	D	0	2B	BOK
60026	7761	5/29/21 18:25	6/26/21 20:20	45.45455	-123.66716	64.3	S6022	D	0	3B	BFO
60027	7468	5/29/21 18:08	6/26/21 20:12	45.45730	-123.64875	75.5	S6023	D	0	2B	BOK
60028	6320	5/29/21 17:39	6/26/21 20:07	45.45657	-123.64074	72.8	S6024-B	D	0	3B	BOK
60029	7637	5/29/21 17:22	6/26/21 19:53	45.44959	-123.62962	80.4	S6025	D	0	3B	BFO
60030	1886	5/29/21 17:03	6/26/21 19:58	45.45414	-123.62339	78.1	S6025-a	R	0	2B	BOK
60031	6523	5/29/21 16:50	6/26/21 23:47	45.44948	-123.60580	123.1	S6027	D	-5	2B	BTS
60032	6229	5/29/21 17:24	6/26/21 23:34	45.45675	-123.59806	131	S6027-a	D	0	2B	BFO
60033	6220	5/29/21 18:03	6/26/21 23:21	45.45901	-123.59228	122.6	S6028	D	0	2B	BTS
60034	7378	5/29/21 18:33	6/26/21 23:02	45.46019	-123.58447	130.7	S6028-a	D	0	2B	BOK
60035	6647	5/29/21 19:23	6/26/21 22:53	45.46156	-123.57779	135.7	S6029	D	0	2B	BOK
60036	6520	5/29/21 19:59	6/26/21 22:44	45.45816	-123.57124	150.5	S6029-a	D	0	2B	BOK
60037	4785	5/29/21 20:31	6/26/21 22:34	45.45748	-123.56596	184.7	S6030	D	0	2B	BFO
60038	4725	5/29/21 21:05	6/26/21 22:14	45.45503	-123.55725	362.5	S6030-a	D	0	2B	BTS
60039	5034	5/29/21 21:48	6/26/21 21:47	45.45379	-123.55170	345.5	S6031	D	0	2B	BTS
60040	7493	5/29/21 22:19	6/26/21 21:33	45.45385	-123.54411	278.5	S6031-a	D	0	2B	BTS
60041	1924	5/29/21 22:52	6/26/21 21:19	45.45902	-123.53796	281.6	S6032	D	0	2B	BFO
60042	4962	5/29/21 23:19	6/26/21 21:09	45.45916	-123.53059	273.7	S6032-a	D	0	2B	BTS
60043	7959	5/29/21 23:55	6/26/21 20:57	45.45826	-123.52679	241.4	S6033	D	0	2B	BOK
60044	6705	5/30/21 0:58	6/26/21 20:47	45.45780	-123.51864	222.1	S6033-a	D	0	2B	BTS
60045	6425	5/30/21 0:32	6/26/21 20:38	45.45724	-123.51225	206.4	S6034	D	0	2B	BFO
60046	6369	5/30/21 1:27	6/26/21 20:30	45.45865	-123.50869	213.2	S6034-a	D	0	2B	BFO
60047	7010	5/30/21 18:46	6/26/21 20:18	45.46345	-123.50056	221.8	S6035	D	0	2B	BFO

60048	6466	5/30/21 19:18	6/26/21 20:07	45.46560	-123.49557	229.7	S6035-a	D	0	2B	BTS
60049	7052	5/30/21 19:49	6/26/21 19:55	45.46706	-123.48889	264.2	S6035-b	D	0	2B	BTS
60050	6517	5/30/21 20:27	6/26/21 19:43	45.46622	-123.48369	243.3	S6036-B	D	0	2B	BTS
60051	6257	5/30/21 20:52	6/26/21 19:29	45.46454	-123.47416	282.3	S6037-B	D	0	2B	BFO
60052	6474	5/30/21 21:19	6/26/21 19:18	45.46607	-123.46671	254	S6038-B	R	0	2B	BFO
60053	7969	5/30/21 21:57	6/26/21 18:59	45.46750	-123.45760	263.4	S6038-a	R	0	2B	BTS
60054	6794	5/30/21 22:40	6/26/21 18:49	45.46549	-123.45313	401.8	S6039	D	0	2B	BTS
60055	6804	5/30/21 23:10	6/26/21 18:40	45.46631	-123.44531	482.8	S6039-a	D	0	2B	BFO
60056	6140	5/30/21 23:38	6/26/21 18:28	45.46978	-123.43740	506	S6040	D	0	2B	BOK
60057	7024	5/31/21 0:06	6/26/21 18:15	45.46891	-123.43109	501.8	S6040-a	D	0	2B	BFO
60058	7712	5/31/21 0:25	6/26/21 18:05	45.46598	-123.42595	502.5	S6041	D	0	2B	BTS
60059	7386	5/31/21 0:47	6/26/21 17:54	45.46676	-123.41763	469.4	S6041-a	D	0	2B	BTS
60060	5016	5/31/21 1:13	6/26/21 17:45	45.46096	-123.41053	477.7	S6042	D	0	2B	BTS
60061	4615	5/31/21 1:36	6/26/21 17:36	45.45762	-123.40247	486.1	S6042-a	D	0	2B	BTS
60062	5098	5/31/21 1:57	6/26/21 17:26	45.44984	-123.39572	493.8	S6043	D	0	2B	BTS
60063	4564	5/31/21 18:26	6/26/21 17:18	45.44806	-123.38944	515.9	S6043-a	D	0	2B	BTS
60064	7279	5/31/21 18:52	6/26/21 17:10	45.44565	-123.38252	532.8	S6044	D	0	2B	BFO
60065	4689	5/31/21 19:14	6/26/21 17:02	45.44757	-123.37602	513.3	S6044-a	D	0	2B	BTS
60066	1918	5/31/21 19:39	6/26/21 16:52	45.44868	-123.36958	590.6	S6045	D	0	2B	BTS
60067	5001	5/31/21 20:15	6/26/21 16:37	45.44840	-123.36157	601	S6045-a	D	0	2B	BFO
60068	6428	5/31/21 21:18	6/26/21 16:12	45.45106	-123.35748	669.6	S6046	D	0	2B	BTS
60069	4196	5/31/21 21:52	6/26/21 15:57	45.45033	-123.34997	660.5	S6046-a	D	0	2B	BTS
60070	6184	5/31/21 22:33	6/26/21 15:34	45.45489	-123.34439	577.2	S6047	D	0	2B	BTS
60071	7090	5/31/21 15:38	6/27/21 13:49	45.47722	-123.33217	451.7	S6048	D	0	2B	BOK
60072	6503	5/31/21 15:57	6/27/21 13:43	45.47527	-123.32549	470.8	S6048-a	D	0	2B	BOK
60073	4731	5/31/21 16:05	6/27/21 13:38	45.47620	-123.31808	435.2	S6049	D	0	2B	BOK
60074	7446	5/31/21 16:16	6/27/21 13:33	45.47782	-123.31347	420.5	S6049-a	D	0	2B	BOK
60075	6707	5/31/21 16:25	6/27/21 13:30	45.47691	-123.30589	401	S6050	D	0	2B	BOK
60076	7178	5/31/21 16:34	6/27/21 13:24	45.47849	-123.30004	398.1	S6050-a	D	0	2B	BOK
60077	5090	5/31/21 16:39	6/27/21 13:21	45.47796	-123.29317	420.7	S6051	R	0	2B	BOK
60078	4815	5/31/21 16:47	6/27/21 13:17	45.47638	-123.28759	396.7	S6051-a	R	0	2B	BFO
60079	5126	5/31/21 16:55	6/27/21 13:13	45.47363	-123.28102	363.4	S6052-B	D	0	2B	BOK
60080	7552	5/31/21 17:15	N/A	45.47481	-123.27263	282.7	S6052-a	D	0	2B	BOK
60081	7359	5/31/21 17:53	6/27/21 15:42	45.48597	-123.24524	167.8	S6055	R	0	2B	bok
60082	4944	5/31/21 18:13	6/27/21 15:49	45.48453	-123.24174	137.6	S6055-a	D	0	2B	BOK
60083	4858	5/31/21 19:10	6/27/21 16:04	45.48693	-123.23227	111.9	S6056	D	0	2B	BFO
60084	4807	5/31/21 19:27	6/27/21 16:14	45.49436	-123.21694	117.1	S6057	R	0	2B	BOK
60085	5046	5/31/21 19:42	6/27/21 16:19	45.49592	-123.20815	115.4	S6058	D	0	2B	BFO
60086	1931	5/31/21 21:59	6/27/21 17:19	45.50364	-123.18144	130.1	S6060	D	0	2B	BFO
60087	6143	6/1/21 16:04	6/27/21 20:06	45.50356	-123.17493	218.3	S6060-a	D	0	2B	BFO
60088	7034	6/1/21 15:06	6/27/21 19:57	45.50444	-123.16581	82.6	S6061-a	D	3	2B	BOK
60089	6812	6/1/21 14:33	6/27/21 19:45	45.50494	-123.16195	69.3	S6061-b	D	0	2B	BFO
60090	6188	6/1/21 13:48	6/27/21 19:34	45.50560	-123.15898	65.1	S6061-c	D	0	2B	BFO
60091	6151	6/1/21 18:05	6/27/21 17:59	45.50777	-123.15545	60.4	S6062	D	0	2B	BOK
60092	7495	6/1/21 17:34	6/27/21 17:48	45.50794	-123.15208	57.7	S6062-a	D	0	2B	BFO
60093	6998	6/1/21 17:08	6/27/21 21:11	45.50789	-123.14873	57.6	S6062-b	D	0	2B	BFO
60094	6373	6/1/21 18:33	6/27/21 18:34	45.50826	-123.14547	57.5	S6062-c	D	0	2B	BFO
60095	6809	6/1/21 19:14	6/27/21 18:47	45.51156	-123.14200	58.3	S6063	D	0	2B	BFO
60096	6406	6/1/21 19:39	6/27/21 18:55	45.51265	-123.13939	56.6	S6063-a	D	0	2B	BOK
60097	6686	6/1/21 20:08	6/27/21 19:07	45.51437	-123.13590	53.5	S6064	D	0	2B	BFO
60098	6484	6/1/21 20:33	6/27/21 19:17	45.51596	-123.13295	54.2	S6064-a	D	0	2B	BFO
60099	4872	5/31/21 18:10	6/27/21 16:26	45.51635	-123.12978	54	S6065	D	0	2B	BFO
60100	4976	5/31/21 18:43	6/27/21 16:40	45.51614	-123.12643	55.6	S6065-a	D	0	2B	BFO
60101	5032	5/31/21 19:22	6/27/21 16:50	45.51438	-123.12292	55.6	S6066	D	0	2B	BOK
60102	4568	5/31/21 19:50	6/27/21 17:04	45.51432	-123.12028	54	S6066-a	D	0	2B	BFO
60103	2691	5/31/21 20:21	6/27/21 17:17	45.51237	-123.11754	52.8	S6067	D	0	2B	BFO
60104	4747	5/31/21 21:36	6/26/21 18:46	45.51631	-123.11379	64.5	S6067-a	D	0	2B	BFO
60105	5132	5/31/21 22:09	6/26/21 18:29	45.51608	-123.11050	65.2	S6068	D	0	2B	BOK
60106	5143	5/31/21 23:32	6/26/21 18:16	45.51593	-123.10768	64.7	S6068-a	D	0	2B	BOK
60107	4659	5/31/21 22:50	6/26/21 17:50	45.51469	-123.09725	54.3	S6070	D	0	2B	BFO
60108	4752	5/31/21 23:35	6/26/21 17:33	45.51484	-123.09397	51.9	S6070-a	D	0	2B	BOK
60109	6105	5/31/21 23:43	6/26/21 17:15	45.51537	-123.09305	52.6	S6071	D	6	2B	BOK
60110	6548	6/1/21 0:01	6/26/21 16:54	45.51957	-123.08401	55	S6072-a	D	0	2B	BOK
60111	4814	5/31/21 16:56	6/26/21 16:38	45.51948	-123.07844	54.8	S6073	D	0	2B	BFO
60112	5027	5/31/21 16:23	6/26/21 16:17	45.51990	-123.07596	55.3	S6073-a	D	0	2B	BFO
60113	7888	5/31/21 23:59	6/26/21 16:07	45.51598	-123.07567	53.4	S6074	D	0	2B	BFO
60114	4954	5/31/21 15:44	6/26/21 14:38	45.51649	-123.07099	52.5	S6075	D	0	2B	BFO
60115	1909	5/31/21 14:05	6/26/21 14:14	45.52156	-123.05244	56.4	S6078	D	0	2B	BOK
60116	4813	5/30/21 21:05	6/26/21 13:53	45.52707	-123.05028	45.8	S6078-b	D	0	2B	BOK
60117	4279	5/30/21 20:27	6/26/21 13:11	45.52864	-123.04624	48.5	S6079	D	0	2B	BFO
60118	5025	5/30/21 22:10	6/26/21 13:34	45.52919	-123.04435	46.3	S6080	D	0	2B	BFO
60119	4860	5/28/21 23:50	6/25/21 18:41	45.53652	-123.02833	43	S6083	D	0	2B	BFO
60120	4766	5/28/21 20:16	6/25/21 19:00	45.53921	-123.02326	57.8	S6084	D	0	2B	BOK
60121	4890	5/28/21 22:59	6/25/21 18:17	45.53884	-123.01681	58.5	S6085	D	0	2B	BFO
60122	6395	5/28/21 22:27	6/25/21 18:04	45.54352	-123.01306	59	S6085-a	D	0	2B	BFO

60123	4691	5/28/21 21:25	6/25/21 17:56	45.54366	-123.00952	57.5	S6086	D	0	2B	BOK
60124	5105	5/28/21 21:46	6/25/21 17:47	45.54343	-123.00629	57.2	S6086-a	D	0	2B	BFO
60125	4929	5/30/21 23:15	6/27/21 15:31	45.54506	-122.99972	48.8	S6087-a	D	0	2B	BOK
60126	4898	5/30/21 19:29	6/27/21 15:18	45.54663	-122.99770	56.2	S6088	D	0	2B	BFO
60127	7008	5/30/21 18:03	6/27/21 15:03	45.54579	-122.99403	56.6	S6088-a	D	0	2B	BFO
60128	6351	5/30/21 17:33	6/27/21 14:50	45.54689	-122.99093	57.4	S6089	D	0	2B	BFO
60129	6498	5/30/21 17:05	6/26/21 19:42	45.54696	-122.98544	57	S6089-a	D	0	2B	BOK
60130	6545	5/30/21 16:40	6/26/21 19:52	45.54868	-122.98313	57.9	S6090	D	0	2B	BOK
60131	6531	5/30/21 16:09	6/27/21 14:33	45.54949	-122.98137	57.6	S6090-a	D	0	2B	BOK
60132	6801	5/30/21 15:03	6/27/21 14:20	45.54979	-122.97480	58.2	S6091	D	0	2B	BOK
60133	6420	5/30/21 14:02	6/27/21 14:09	45.55061	-122.96844	59.9	S6092-a	D	0	2B	BFO
60134	7523	5/28/21 17:41	6/25/21 16:36	45.55031	-122.96473	59.8	S6093	D	0	2B	BOK
60135	4874	5/28/21 17:09	6/25/21 16:45	45.55025	-122.96129	56.3	S6093-a	D	0	2B	BTS
60136	4740	5/28/21 18:32	6/25/21 16:59	45.55078	-122.95786	58.7	S6094	D	0	2B	BFO
60137	5052	5/28/21 18:08	6/25/21 17:07	45.55070	-122.95461	59.5	S6094-a	D	0	2B	BOK
60138	4805	5/28/21 19:29	6/25/21 17:24	45.55004	-122.95232	60	S6095	D	0	2B	BOK
60139	7830	5/28/21 18:59	6/25/21 17:16	45.55037	-122.94853	60.3	S6095-a	D	0	2B	BFO
60140	1923	5/29/21 22:36	6/27/21 13:54	45.55120	-122.93546	63.5	S6097-a	D	0	2B	BOK
60141	4671	5/29/21 23:03	6/27/21 13:40	45.55128	-122.93149	64.3	S6098	D	0	2B	BFO
60142	6388	5/29/21 23:28	6/27/21 13:30	45.55129	-122.92872	65.4	S6098-a	D	0	2B	BFO
60143	6695	5/30/21 0:04	6/27/21 12:49	45.55123	-122.92582	67	S6099	D	0	2B	BOK
60144	6823	5/30/21 0:36	6/25/21 21:00	45.55120	-122.90856	63.4	S6102-b	D	0	2B	BFO
60145	6691	5/30/21 1:07	6/25/21 20:46	45.55155	-122.90476	63	S6103	D	4	2B	BFO
60146	4443	5/29/21 21:38	6/25/21 20:33	45.55267	-122.90223	64.1	S6104	D	0	2B	BFO
60147	7344	6/2/21 17:04	6/25/21 23:46	45.55521	-122.89475	66.4	S6105	D	0	2B	BTS
60148	6178	5/29/21 20:38	6/25/21 20:09	45.55335	-122.89377	69.7	S6105-a	D	3	2B	BFO
60149	6496	5/29/21 19:31	6/25/21 19:55	45.55304	-122.89028	70.4	S6106	D	0	2B	BOK
60150	6416	5/29/21 3:31	6/25/21 14:03	45.55103	-122.88749	60.7	S6106-a	D	0	2B	BFO
60151	5037	5/29/21 3:04	6/25/21 13:50	45.55125	-122.88489	61.7	S6107	D	0	2B	BFO
60152	6121	5/29/21 18:58	6/25/21 19:39	45.55060	-122.88251	54.8	S6107-a	D	3	2B	BOK
60153	4995	5/29/21 13:57	6/25/21 14:44	45.55087	-122.87931	51.3	S6108	D	0	2B	BFO
60154	6789	5/30/21 2:08	6/25/21 14:19	45.55107	-122.87603	55.2	S6108-a	D	0	2B	BFO
60155	6139	5/29/21 17:53	6/25/21 19:20	45.55295	-122.87269	56.3	S6109	D	0	2B	BOK
60156	6995	5/29/21 16:44	6/25/21 18:53	45.55432	-122.87036	63	S6109-a	D	4	2B	BFO
60157	6817	6/1/21 18:26	6/25/21 15:21	45.55686	-122.86616	52.8	S6110	D	0	2B	BTS
60158	6803	6/1/21 18:56	6/25/21 15:29	45.55673	-122.86387	54.8	S6110-a	D	0	2B	BTS
60159	7445	6/1/21 19:40	6/25/21 15:46	45.55810	-122.85965	56.4	S6111	D	0	2B	BTS
60160	6504	6/1/21 20:04	6/25/21 23:25	45.55876	-122.85665	56.4	S6111-a	D	0	2B	BTS
60161	7390	6/1/21 22:12	6/25/21 23:10	45.55961	-122.85292	59.5	S6111-b	D	0	2B	BFO
60162	7482	6/1/21 22:33	6/25/21 23:00	45.56011	-122.85130	65.1	S6111-c	D	0	2B	BTS
60163	5029	6/1/21 22:57	6/25/21 22:44	45.56142	-122.84812	70.2	S6112	D	0	2B	BTS
60164	5150	6/1/21 23:18	6/25/21 22:36	45.56158	-122.84559	76.4	S6112-a	D	0	2B	BTS
60165	5307	6/2/21 0:29	6/25/21 22:15	45.56253	-122.84175	74.7	S6112-b	D	0	2B	BTS
60166	6525	6/1/21 23:58	6/25/21 22:05	45.56320	-122.83882	80.3	S6112-c	D	0	2B	BTS
60167	1901	6/2/21 0:50	6/25/21 21:53	45.56420	-122.83617	91.4	S6113	D	0	2B	BTS
60168	6381	6/2/21 15:22	6/25/21 21:16	45.56491	-122.83296	98.8	S6113-a	D	0	2B	BFO
60169	6226	6/2/21 15:41	6/25/21 21:01	45.56565	-122.82993	111.5	S6113-b	D	0	2B	BFO
60170	7369	6/2/21 16:09	6/25/21 20:54	45.56555	-122.82648	123.2	S6113-c	D	0	2B	BTS
60171	6535	6/1/21 21:28	6/25/21 20:08	45.56459	-122.82365	126	S6114	D	0	2B	BFO
60172	7324	5/28/21 16:20	6/25/21 16:31	45.56709	-122.82016	138.8	S6114-a	D	3	2B	BOK
60173	6475	5/28/21 19:08	6/25/21 16:47	45.56750	-122.81701	138	S6114-b	D	3	2B	BOK
60174	4865	5/28/21 20:01	6/25/21 17:08	45.56792	-122.81402	130.7	S6114-c	D	0	2B	BFO
60175	5093	5/28/21 17:16	6/25/21 17:52	45.56879	-122.81093	140.3	S6115	D	0	2B	BOK
60176	4855	5/28/21 18:13	6/25/21 17:34	45.56991	-122.80842	154.3	S6115-a	D	0	2B	BOK
60177	5135	5/28/21 22:34	6/25/21 21:43	45.57465	-122.78883	329.3	S6199	D	0	2B	BFO
60178	4657	5/26/21 17:53	6/25/21 21:56	45.57428	-122.78495	316.9	S6200	D	0	2B	BFO
60179	4999	6/1/21 17:40	6/26/21 3:05	45.57425	-122.78150	308.1	S6201	D	0	2B	BTS
60180	4873	6/1/21 17:49	6/26/21 2:50	45.57363	-122.77754	304	S6202	D	-5	2B	BFO
60181	4996	6/1/21 17:57	6/26/21 2:40	45.57292	-122.77538	304.5	S6203	D	0	2B	BFO
70001	4958	6/17/21 20:10	6/30/21 19:07	44.19225	-124.10173	208.6	1	D	0	2B	BOK
70002	4948	6/17/21 20:45	6/30/21 19:18	44.19572	-124.08903	286.4	2	D	0	2B	BOK
70003	5107	6/17/21 21:19	6/30/21 19:28	44.20316	-124.08178	391.8	3	D	0	2B	BFO
70004	5044	6/17/21 22:12	7/2/21 20:05	44.20082	-124.06505	356.4	4	D	5	2B	BFO
70005	4792	6/17/21 22:47	6/30/21 20:14	44.20015	-124.04276	607.8	5	D	0	2B	BOK
70006	1884	6/17/21 23:32	7/2/21 20:05	44.19603	-124.01521	537.1	6	D	0	3B	BOK
70007	7321	6/18/21 0:03	6/30/21 20:44	44.18721	-124.00295	565.8	7	D	0	2B	BOK
70008	6440	6/18/21 0:31	6/30/21 20:56	44.19082	-123.97397	602.9	8	D	0	2B	BOK
70009	5042	6/18/21 1:16	6/30/21 21:08	44.18603	-123.95603	652.2	9	D	4	2B	BFO
70010	4804	6/18/21 1:54	6/30/21 21:29	44.18239	-123.95782	493.8	10	D	0	2B	BOK
70011	1929	6/7/21 18:16	6/30/21 17:16	44.22268	-124.07413	105.9	1075	D	0	2B	BOK
70012	7487	6/7/21 19:04	6/30/21 17:55	44.23270	-124.09353	335	1076	D	0	2B	BOK
70013	1932	6/7/21 19:39	6/30/21 18:26	44.23263	-124.06134	447.1	1077	D	0	2B	BOK
70014	4759	6/7/21 20:15	6/30/21 18:18	44.23379	-124.07232	467.8	1078	D	0	2B	BOK
70015	1916	6/7/21 21:01	6/30/21 18:04	44.23536	-124.08356	385.4	1079	D	0	2B	BOK
70016	5695	6/7/21 22:25	6/30/21 17:30	44.22411	-124.06519	112.6	1085	D	0	2B	BOK

70017	5103	6/7/21 23:04	6/30/21 17:05	44.22304	-124.09661	10.7	1086	R	0	3B	BOK
70018	4871	6/8/21 1:02	6/30/21 16:52	44.22302	-124.09671	10.3	1087	D	0	2B	BOK
80001	6208	6/10/21 16:04	6/17/21 16:47	47.58528	-122.39353	80.2	SEA0	D	0	2B	BFO
80002	6790	6/10/21 19:06	6/17/21 17:00	47.58423	-122.39692	75.5	SEA1	D	0	2B	BTS
80003	6413	6/10/21 19:47	6/17/21 17:22	47.58434	-122.39711	60.5	SEA2	D	0	2B	BFO
80004	6656	6/10/21 20:30	6/17/21 17:16	47.58444	-122.39725	48.8	SEA3	D	0	3B	BTS
80005	6493	6/10/21 16:48	6/17/21 17:30	47.58525	-122.39704	35.4	SEA4	D	0	2B	BTS
80006	6122	6/10/21 18:22	6/17/21 17:40	47.58531	-122.39740	25.7	SEA5	D	0	2B	BTS
80007	6431	6/10/21 22:06	6/17/21 17:51	47.58548	-122.39775	9.5	SEA6	D	0	2B	BTS
90001	2697	5/28/21 22:11	7/14/21 13:20	44.23924	-123.84232	270.4	N/A	N	N/A	N/A	N/A

Table 2. Temporary broadband seismometers installed in conjunction with the Cascadia2021 nodal network.

USGS - data under network code GS at the IRIS DMC

Station name	Installation date	Removal date	Latitude (degrees)	Longitude (degrees)	Elevation (m)	Comment
TAUL1	5/25/21	12/31/99	45.522769	-123.054179	56	Cornelius Elementary School, Cornelius, OR,USA
TAUL2	5/26/21	12/31/99	45.518911	-123.109937	58	Forest Grove Fire Dept, Forest Grove, OR, USA
TAUL3	5/25/21	12/31/99	45.497901	-122.96268	52	Minter Bridge Elementary School, Hillsboro, OR, USA
TAUL4	5/25/21	12/31/99	45.439792	-122.942326	56	Twin Oaks Nursery, Hillsboro, OR, USA
TAUL5	5/25/21	12/31/99	45.614405	-123.106933	66	Quail Valley Golf Course, Banks, OR, USA
TAUL6	5/25/21	12/31/99	45.513791	-123.235303	247	Scott land and timber, Gaston, OR, USA
TAUL7	5/26/21	12/31/99	45.608833	-122.869734	182	Plumper Pumpkin Patch, Portland, OR, USA
TAUL8	5/26/21	12/31/99	45.627924	-122.613163	90	Vanco Golf Range, Vancouver, WA, USA

Nanonetrics TCH120-1 seismometers with Pegasus portable recording system

Station name	Installation date	Removal date	Latitude (degrees)	Longitude (degrees)	Elevation (m)	Comment
NX.STA1	6/4/21	8/13/21	44.557871	-123.278392	72.4	next to nodal site
NX.STA02	6/5/21	8/13/21	44.733059	-123.508731	236.6	next to nodal site
NX.STA3	6/5/21	8/13/21	44.674591	-123.506049	289.5	next to nodal site
NX.STA04	6/5/21	8/13/21	44.596947	-123.41846	151.5	in Lumos vineyard
XX.COR	6/5/21	8/13/21	44.585576	-123.303979	127.5	next to IU-COR site

Appendix A.

We thank the many landowners who gave us access to their land. Without their cooperation and support, this project would not have been possible. If we have forgotten anyone, please let us know and accept our apologies.

Federal and State Agencies:

- Bureau of Land Management
- Suislaw National Forest
- Rogue River/Siskiyou National Forest
- Oregon Board of Forestry
- Washington Department of Natural Resources

Timber companies:

- Chetco Forest Products
- Lewis and Clark Tree Farms
- Hancock Forest Resources
- Hampton Lumber Company
- Hull Oakes Lumber Company
- Roseburg Lumber Company
- Starker Forests, Inc.
- Stimson Lumber Company
- Thompson Tree Farm
- Weyerhaeuser Forest Products

Local Agencies:

- Bandon Municipal Airport
- City of Hillsboro
- City of Portland
- Oregon Metro
- Lewis and Clarke Interpretive Center
- Siletz Fire Station
- Port of Portland - Hillsboro Airport
- Port of Tillamook
- Tualatin Hills Parks and Recreation
- Tualatin Valley Water District

Schools & Churches:

- Forest Grove School District
- Forest Grove United Methodist Church
- Forest Grove 7th Day Adventist Church
- Hillsboro School District
- Kings Valley School
- Umqua Community College
- Willamina School District

Other Companies:

- Ace Hardware-Forest Grove
- Everde Growers
- Genentech
- PGM Landscape Services
- Powers Ranch
- Rock Creek Country Club
- Sahlfeld Farms
- Verboort Berry Farms

Individuals:

- Tim & Jo Toth
- Keith Whitehead
- The Jenck Family
- Ann Batchelder
- Steve Harris
- Duane Pfeiffer

- Douglas Kujak
- Jeffrey Spath
- Courtney Scott
- Scott Griffith
- Judith Lichtenstein
- Tom Epler
- Saralyn Ewald
- Tony & Tammy Tasler
- Dwight Holmes
- Suzanne Hertel
- Annette Gates
- Armando Solano
- The Goins Family
- Kevin Kraly
- Joshua Licht
- Kevin Ryder
- Marshall Willis
- Frank Haas
- Jack Nantz
- Brian Belt
- Daniel Miller
- Neil & Esperanza Pietrok
- Jacob Dudek
- William & Lea Hoppe
- Shawn Thomas
- Jim Petersen
- Waldo Wakefield & Clare Reimers
- Stan Waterman
- Scott Knox
- Quincy Powers
- Henry Isenhart
- Dana Douglass
- Matt Morris
- Bonnie Jaspers
- Allyn Ford
- Marian Howe
- Bruce Holt
- John Wilson
- Randy Moe
- Dave and Tina Green

We also thank the Oregon Hazards Lab, University of Oregon, for assistance with permitting and fieldwork.

Appendix B.

Cascadia 2021 Boot-Camp Schedule

Tuesday, May 25th, 2021

(All times PDT)	**Breakfast (included with the HGI; on your own for commuters)**
08:15	*Participants at the HGI meet Anne at the HGI.* *We will walk over to the Motor Pool and pick up field vehicles.*
09:30 – 09:40	*Welcome and introduction at the Marine Geology Repository (most of the workshop will be at the Marine Geology Repository)
09:40 – 10:00	General introduction to subduction zones (Emilie)
10:00 – 10:20	The Cascadia subduction zone – scientific background to our project (Anne)
10:20 – 10:40	Introduction to seismometers (Kevin)
10:40 – 11:00	**Break**
11:00 – 11:20	Crustal structure and strong ground motion (Erin)
11:20 – 12:00	Discussion/questions
12:00 – 13:00	**Lunch boxes provided**
13:00 – 14:00	What do the data look like, and what will we do with it? (Contributions from all PIs)
14:00 – 18:00	Navigating and notetaking: Discussion of note-taking protocols; decision-making strategies in the field; hands-on analysis of deployment strategies.
18:00	**Dinner on your own**

Wednesday, May 26th, 2021

	Breakfast (included with the HGI; on your own for commuters)
08:30 – 09:00	Introduction to the nodes and associated field equipment and checklists (zoom with PASSCAL)

09:00 – 10:00	Example instrument deployment and best practices
10:00 – 10:30	Sharing the road with loggers
10:30 – 11:00	Flora, fauna, and archeology
11:00 – 12:00	How and where to "plant" the instruments when you cannot safely reach your waypoint
12:00 – 13:00	**Lunch boxes provided**
13:00 – 17:00	Leave for the field in 2-3 groups to install sites near Corvallis
17:00 – 19:00	Meet on Marys Peak, where on a clear day you can see the Cascades and the Pacific
19:00	**Dinner on your own**

Thursday, May 27th, 2021

Breakfast (included with the HGI; on your own for commuters)

08:00 – 12:00	Smaller breakout groups for detailed planning (south, central, and northern zones)
12:00 – 13:00	**Lunch boxes provided**
13:00 – 16:00	Pack up vehicles and continue analysis of maps and assignments.
16:00	End of formal workshop. Some groups will head out to their temporary deployment bases at the northern and southern end of the experiment footprint.

**(Note: because of covid-19 policies at OSU, we cannot all be in the classroom at the same time. Unless the policy is updated based on CDC guidance, some participants will have to view the presentations on a screen in the lobby.)*