

Cascadia Initiative deployment update – November 30th, 2011

The third cruise of 2011 to deploy ocean bottom seismographs (OBS) for the Cascadia Initiative community experiment was conducted on the R/V *Wecoma* cruise W1110B Leg 2, November 15-30. This portion of the Year-1 OBS array covers the western Juan de Fuca (JdF) plate, extends across the JdF ridge axis, and provides a reference array of broadband seismometers widely distributed across the Gorda and JdF plates. The cruise completed deployment of the Year 1 OBS array designed by the community to focus on a variety of scientific questions. These data will be available to the community after the instruments are recovered in the summer of 2012.

Twenty-three OBS from the Woods Hole Oceanographic Institution (WHOI) were deployed under challenging weather conditions that included four substantial storms. Thirteen OBS carry intermediate-period seismometers, and were built for the Amphibious Array with funding from the American Recovery and Reinvestment Act (ARRA). These instruments are deployed in a ~70 km spaced grid extending west from the central Juan de Fuca plate onto the Pacific plate. Ten OBS, funded by the W.M. Keck Foundation, carry broadband seismometers and strong-motion accelerometers. All 23 OBS carry a Differential Pressure Gauge (DPG). Because of their broadband response, the Keck OBS were widely distributed across the Gorda and Juan de Fuca (JdF) plates to provide a reference array. These sites will be occupied during each of the four years of the Cascadia Initiative.

The original cruise plan was to deploy 25 stations as the R/V *Wecoma* transited from south to north. The final deployment sites (Figure 1) were shifted modestly relative to their planned locations to ensure that the OBS were deployed at locations with existing multibeam bathymetry. In the rough seas there was an anchor problem with two of the WHOI ARRA OBS. With guidance from the Cascadia Initiative Expedition Team, the deployment plan was modified and OBS were not deployed at two planned sites, J32 and J69.

All sites, except J48, were acoustically surveyed to determine the location of the OBS on the seafloor. An acoustic survey was not attempted at Station J48 in order to carry out another deployment before the weather deteriorated. The attached Table and Figure show the planned and final seafloor sites. These locations were inverted using sound-speed data from the Levitus database only. Five CTD casts were performed to accurately characterize the water velocity structure throughout the area and will be used to invert for final seafloor locations.

Co-chief scientists John Collins (Woods Hole Oceanographic Institution) and Emilie Hooft (University of Oregon) are preparing a complete cruise report. Additional information about the community experiment and details of ongoing planning for 2012 and beyond is available on the Cascadia Initiative Expedition Team website: <http://cascadia.uoregon.edu/CIET>

Prepared by the Cascadia Initiative Expedition Team.