

## **Cascadia Initiative deployment update - Leg OC1209A, September 10-22 2012**

The objective of Leg 6 of the second Cascadia Initiative (CI) field season was to deploy 14 LDEO-TRM ocean bottom seismometers (OBS) and 10 LDEO classic OBSs. All but two of the instruments included an absolute pressure gauge (APG). Most of the instruments were located in the Year 2 Focused Array (FA) near the Mendocino Triple Junction. The drop locations are shown in the following map and table.

This was the third cruise during which TRMs were deployed, and lessons learned during previous 2 cruises were put into effect. One lesson was that the time between recovery and redeployment (July 24 - September 10, or 6.5 weeks) was the minimum possible. Spare parts arrived as late as the day of departure and considerable rebuilding of instruments was done at sea. An additional 2 weeks between cruises would have permitted shipping of the data loggers and sensors back to LDEO, where conditions for working on them would have been better. It would also have allowed for more time for shipping replacement parts.

We found that the heave-compensating winch in AHC mode (automatic heave compensation) worked very well even in moderately rough seas (wave period of ~5 s and wave height of at least 6 ft). Small floats were added to release that holds the TRM on the deployment wire to keep it upright when the instrument reached the seafloor (see cover photo). We recommend turning on the heave compensator as soon as possible after the instrument hits the water.

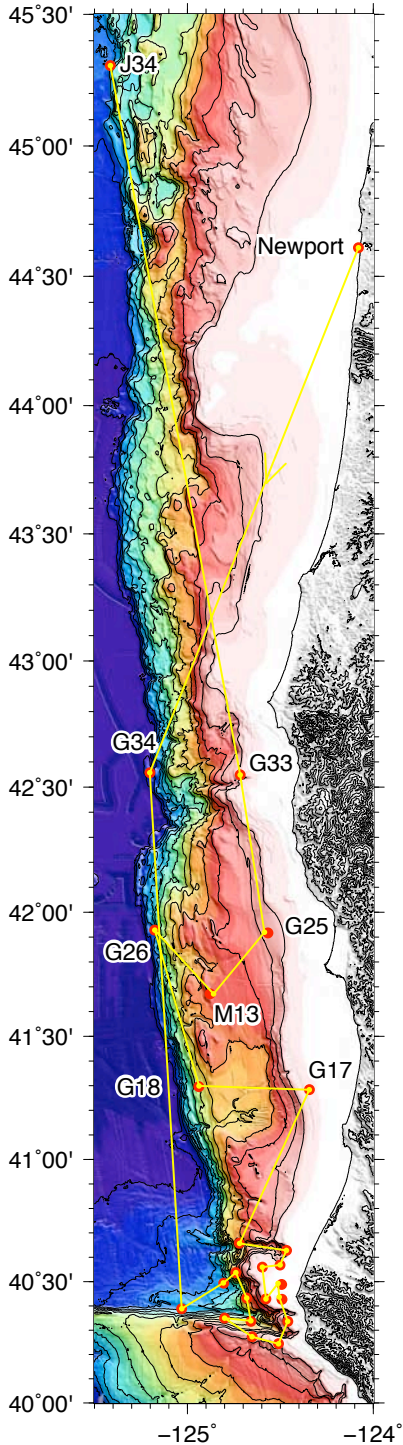
Although we acquired CTDs, we recommend that future OBS deployment cruises on R/V Oceanus leave the CTD in port and use XBTs to acquire information on the physical properties of the ocean. When a cruise includes CTD, panels are removed from the side of the deck to facilitate deployment of the CTD. When there are no CTDs planned, solid panels close off that part of the deck, resulting in a dryer deck.

Acoustic surveys to locate the OBS on the seafloor were conducted for all instruments deployed in water depth greater than 430 m. The final position of instruments lowered on the wire in water depth <430 m was assumed to be the position of the ship when the OBS reached the seafloor, corrected from the layback between the ship's GPS antenna and A-frame.

The importance of having the science party monitor their own set of station drop points independently from the bridge was illustrated at one site when it became apparent during the pre-drop survey that the bridge drop location was ~1 km east of the science party location.

A bathymetric map and table showing the Leg 6 OBS deployment positions are shown on the next page. The yellow line shows the deployment order.

All underway data are available from the *Rolling Deck to Repository* web site ([www.rvdata.us](http://www.rvdata.us)).



| Site Name | Final Station Latitude (deg N) | Final Station Latitude (min) | Final Station Longitude (deg W) | Final Station Longitude (min) | Final Station Depth (m) | Type  |
|-----------|--------------------------------|------------------------------|---------------------------------|-------------------------------|-------------------------|-------|
| G34       | 42                             | 33.326                       | 125                             | 12.058                        | 2954                    | OBS   |
| G26       | 41                             | 55.496                       | 125                             | 10.650                        | 2357                    | OBS   |
| G25       | 41                             | 55.195                       | 124                             | 35.166                        | 430                     | TRM   |
| G17       | 41                             | 17.036                       | 124                             | 20.677                        | 123                     | TRM-P |
| G09       | 40                             | 39.410                       | 124                             | 43.120                        | 842                     | TRM   |
| FS19      | 40                             | 37.677                       | 124                             | 28.003                        | 87                      | TRM-P |
| FS18      | 40                             | 34.091                       | 124                             | 30.094                        | 107                     | TRM-P |
| FS17      | 40                             | 33.586                       | 124                             | 35.792                        | 146                     | TRM-P |
| FS16      | 40                             | 32.289                       | 124                             | 44.367                        | 1073                    | OBS   |
| FS13      | 40                             | 29.589                       | 124                             | 48.391                        | 2332                    | OBS   |
| FS10      | 40                             | 25.977                       | 124                             | 40.915                        | 1076                    | OBS   |
| FS11      | 40                             | 25.752                       | 124                             | 34.667                        | 132                     | TRM-P |
| FS15      | 40                             | 29.555                       | 124                             | 30.758                        | 52                      | TRM-P |
| FS12      | 40                             | 26.224                       | 124                             | 30.354                        | 60                      | TRM-P |
| FS08      | 40                             | 20.199                       | 124                             | 27.591                        | 120                     | TRM-P |
| FS07      | 40                             | 20.351                       | 124                             | 39.576                        | 1297                    | OBS   |
| FS04      | 40                             | 14.681                       | 124                             | 30.581                        | 159                     | TRM-P |
| FS03      | 40                             | 16.389                       | 124                             | 39.158                        | 345                     | TRM   |
| FS02      | 40                             | 21.065                       | 124                             | 47.879                        | 1403                    | OBS   |
| FS20      | 40                             | 23.373                       | 125                             | 1.868                         | 2378                    | OBS   |
| G18       | 41                             | 18.098                       | 124                             | 56.179                        | 1464                    | OBS   |
| M13       | 41                             | 40.287                       | 124                             | 51.579                        | 909                     | TRM   |
| G33       | 42                             | 32.900                       | 124                             | 42.971                        | 213                     | TRM   |
| J34       | 45                             | 18.357                       | 125                             | 24.817                        | 2583                    | OBS   |

