



**Cruise:** Trehu- W0808B

**Vessel:** R/V Wecoma

**Port:** Yaquina Bay, Newport, Oregon

**Captain:** Dan Arnsdorf

**Chief Scientist:** Anne Trehu, OSU-COAS

**Co-Chief Scientist:** Marta Torres OSU-COAS

**SIO Personnel:** Phil Thai, Mark Gibaud, and Ernest Aaron

**OSU Watch Standers:** Mark Williams, Chih-Ting Hsieh, and Peter Kannberg

**WHOI TowCam Technician:** Erich Horgan

**Wecoma Marine Tech:** Daryl Swensen

**Cruise Dates:** (08/15/08 – 08/21/08)



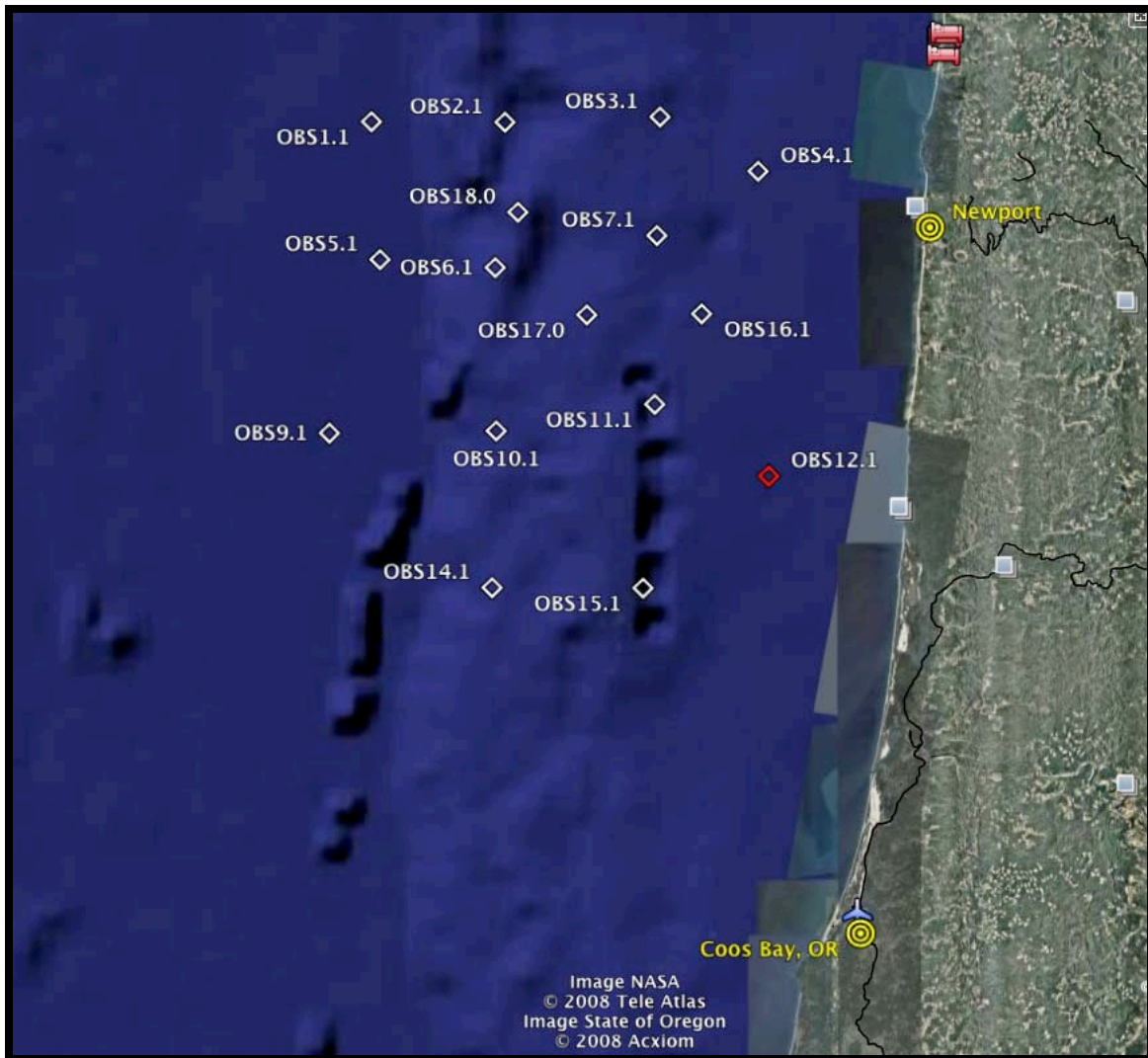
R/V WECOMA

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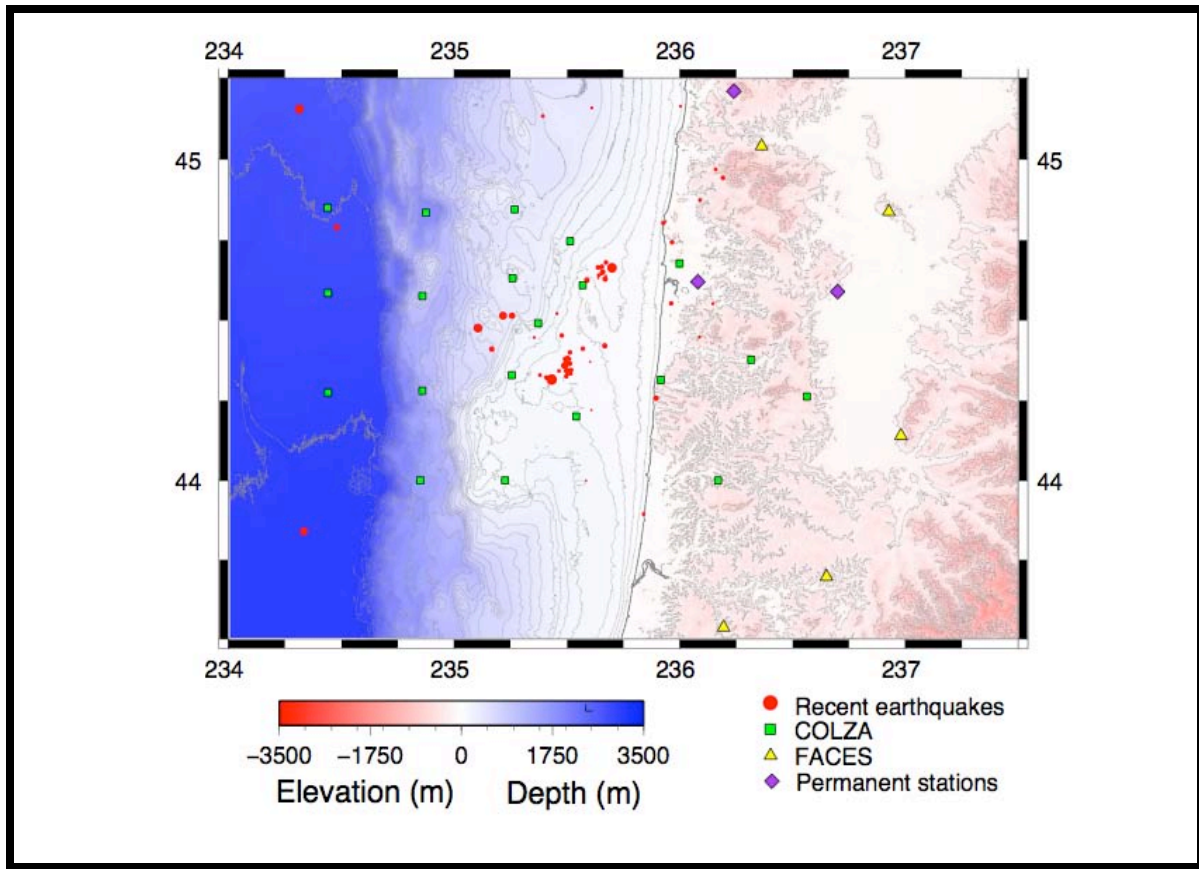
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## I. Summary of OBS Activities

In support of the Trehu Cruise W0808B, we made 10 total deployments of ocean bottom seismometers (OBS) off the coast of southern Oregon. Our research vessel, the R/V Wecoma, was employed between 08/15/2008 and 08/21/2008. The complement of seismometers included 7 short period L28s, 3 long period T240s. All OBS Instrumentation is from Scripps Institution of Oceanography, OBSIP (FIG-1 & FIG-2).



**FIG-1:** Locations and descriptions of OBS deploy sites (2008).



**FIG-2:** Seismometer Deployment Site Locations provided by Anne Trehu

## II. Instrumentation

### SIO LC4X4

The Institute of Geophysics and Planetary Physics at Scripps Institution of Oceanography (IGPP/SIO) in conjunction with the Ocean Bottom Seismology Instrument Pool (OBSIP) provided ten total LC4X4s for this experiment. The sensors on the short period LC4X4s include a hydrophone and a three component L-28 seismometer. The sensors on the long period LC4X4s include a Trillium 240 seismometer, and a dynamic pressure gauge (DPG). Each instrument is comprised of an anchor, a McLane glass float assembly on which the lifting bail is attached, two syntactic foam blocks are added for additional floatation to compensate the full payload of lithium batteries for this particular experiment, and a polyethylene frame holding the sensors, an acoustic release transponder, a 4X4 data logger, and a mechanical release system.

### SP 4X4

The short period OBS, the float and frame components are stored separately in a custom rack system, and are assembled and tested prior to deployment on a square preparation platform, which is bolted to the deck. The complete instrument weighs approximately 300 pounds in air. The anchor is a 100-pound

iron grate held to the base of the poly frame by a single 2" oval quick-link when the release mechanism is cocked and secured. After the anchor is released for recovery, the four 12" glass balls in the float package, as well as the syntactic foam blocks provide sufficient buoyancy to lift the instrument at about 43 m/min to the sea surface. To increase visibility at the surface, an orange flag on a 48" fiberglass-resin staff is attached to the floats. The recovery aids also include a Novatech low-pressure activated strobe beacon and radio, which operates at 160.725 MHz.

#### **LP 4X4**

The long period OBS, the float and frame components are preassembled and secured to a pallet. The Trillium seismometers are stored independent of the frame, and are attached and tested prior to deployment. The complete instrument weighs approximately 900 pounds in air. The anchor is a 100-pound iron plate held to the base of the poly frame by an AmSteel lanyard through two stainless U-bolts mounted to the anchor. Two release mechanisms are utilized at either side of the lanyard. After the anchor is released for recovery, the eight 12" glass balls in the float package, as well as the syntactic foam blocks provide sufficient buoyancy to lift the instrument at about 43 m/min to the sea surface. To increase visibility at the surface, an orange flag on a 48" fiberglass-resin staff is attached to the floats. The recovery aids also include a Novatech low-pressure activated strobe beacon and radio, which operates at 160.725 MHz.

The acoustic release transponder developed in conjunction with ORE/EdgeTech is comprised of a main circuit board, a SIO developed battery array, and an ITC-3013 transducer manufactured by International Transducer Corp. These are all installed in and on a 4-5/8" aluminum pressure case. All SIO transponders interrogate at 11kHz and respond at 13kHz. Alkaline batteries provide 18 volts power for the burn, 12 volts power for the transponder, and 9 volts power for the circuit board logic. The release mechanism includes two double wire burn elements. When fresh, two battery strings are combined to provide the 18 volts to burn one of two release wires in an average of 6 minutes for water depths encountered during this experiment.

### **III. Areas of Concern**

None.

#### IV. Ships Equipment and Condition

Excellent. The addition of the articulated crane has made the recovery and deployment efforts routine. Also, there is ample deck space & dry storage.



#### V. Journal of Events in Chronological Order

Local Time is Oregon - USA

All times and dates in this report are local unless otherwise noted.

##### 1. Loading

08/14/08 09:00

Our gear was promptly loaded onto the R/V Wecoma at the Yaquina OSU marine facility. Setup of the lab was routine. We had to cold-start the GPS to get it to lock, but that was the only anomaly.

08/15/08 10:00

We departed the OSU Marine Facility and are anticipating an approximate 8-hour transit to the NOAA hydrophone mooring, which we will assist with the recovery effort.

##### 2. NOAA Buoy/Hydrophone Recovery

08/15/08 17:16

The buoy recovery went fine. It was secured on deck at 20:30.

##### 3. Rosette Test 2950M

08/15/08 23:55

The rosette was lowered to ~2700 meters off the starboard mid-ship A-frame. All 11 of the acoustics worked perfectly. For the 10 OBS to be deployed, the deepest site is expected to be just over 3100 meters.



#### 4. OBS Deployments

##### Site OBS9.1 (T240) 2950M 4CH/50Hz

08/16/08 01:28

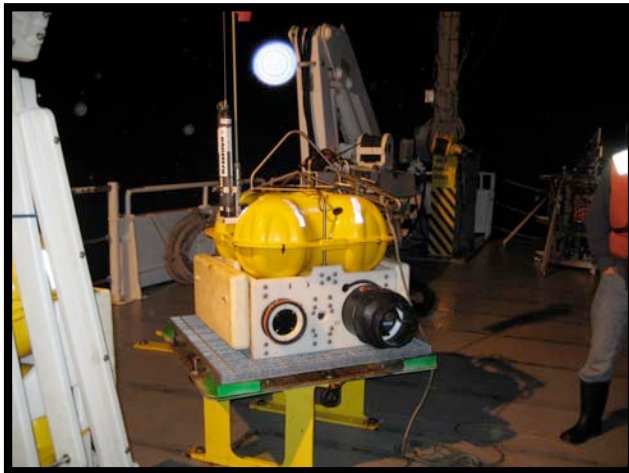
The setup and deployment for this site went smooth. The descent rate for the LP4X4 was calculated to be ~61 m/min.

The ranging survey was performed at 8kts and a radial pattern of 1.5km.



##### Site OBS14.1 (T240) 1534M 4CH/50Hz –Broken Flag

08/16/08 06:22



The setup and deployment went perfect with exception to the pelican hook getting hung up in the flag, and snapping the pole off.

The survey is going perfect at 8kts/1km radius.

##### Site OBS15.1 (L28) 124M 3CH/100Hz

08/16/08 20:28

The deployment went perfect.  
The survey went perfect.

##### Site OBS10.1 (L28) 1323M 4CH/100Hz

08/16/08 23:29

The deployment went perfect.  
The survey went perfect.

**Site OBS17.0 (L28) 523M 4CH/100Hz**

08/17/08 02:22

The deployment went perfect.

The survey went perfect.

**Site OBS6.1 (L28) 792M 4CH/100Hz -No Flag**

08/17/08 05:16

The deployment went perfect.

The survey went perfect.

**Site OBS2.1 (T240) 1852M 4CH/50Hz**

08/17/08 19:18

The deployment went perfect.

The survey went perfect.

**Site OBS1.1 (L28) 2838M 4CH/100Hz**

08/17/08 22:42

The deployment went perfect.

The survey went perfect.

**Site OBS5.1 (L28) 2902M 3CH/100Hz**

08/18/08 01:54

The deployment went perfect.

The survey went perfect.

**Site OBS18.0 (L28) 631M 4CH/100Hz –No Flag**

08/18/08 14:54

During the deck checkout we discovered a bad release wiring harness. The burn #1 voltage would not reach the burn wire. A simple process of elimination traced the issue to the harness.

The deployment went perfect.

The survey went perfect.





**UPDATE:**

The instrument deployed at site OBS12.1 (SP4x4) washed up onto Seven Devils Beach near Coos Bay and was discovered by beach walkers, reported on 08/20/08 to Jeff Babcock. The OBS was successfully recovered with coordinated assistance from the Oregon State Parks and Recreation services as well as community contributions.

With exception to the absence of the anchor, quick-link, drop-pin, and the inundation of sand & seaweed, there was no apparent damage to the OBS. All parts were accounted for, including both burn wires, which were fully intact.

