



Cruise: MGL0903

Vessel: RV Marcus Langseth (LDEO)

Port of departure: Nukualofa, Tonga

Port of arrival: Suva, Fiji

Captain: Stan Zigler

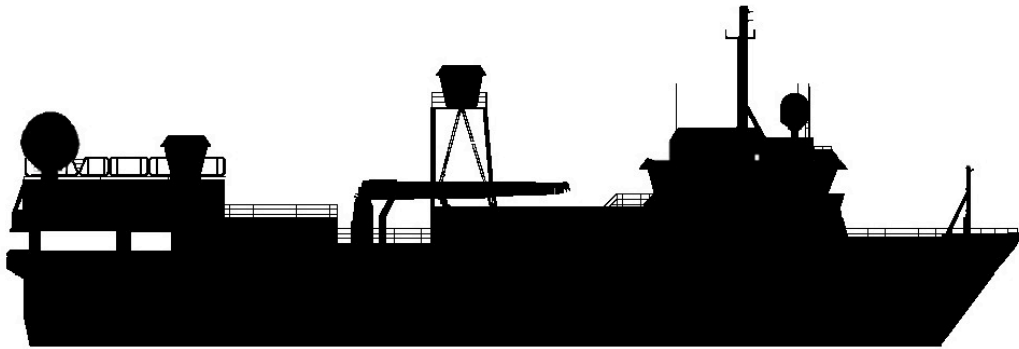
Chief Scientist, 1<sup>st</sup> PI: Robert A. Dunn

SIO Personnel: Crispin Hollinshead, Martin Rapa and Philip Thai

WHOI Personnel: Dave DuBois, Allen Gardner and Timothy Kane

OBS Sample Rate: 4 channel/200Hz

Cruise Date: (01/24/09 – 03/08/09)



**RV Marcus Langseth**

#### Summary:

The operation to explore the Eastern Lau Spreading Center (ELSC) required the combined efforts of two OBSIP groups. By working together the two groups managed to deploy and recover 59 instruments, 21 of which belonged to WHOI and 38 to SIO. The active source for this cruise came from a 36 air gun array towed by the R/V Marcus G. Langseth. With the help from the experienced crewmembers onboard the Langseth both OBSIP groups recovered 100% of their instruments and were able to fill in a 150Km grid along the ELSC with a total of 84 deployments and 84 recoveries including the 25 picked up and relocated mid cruise.

## General Overview of Operations:

### Lab/Deck Setup:

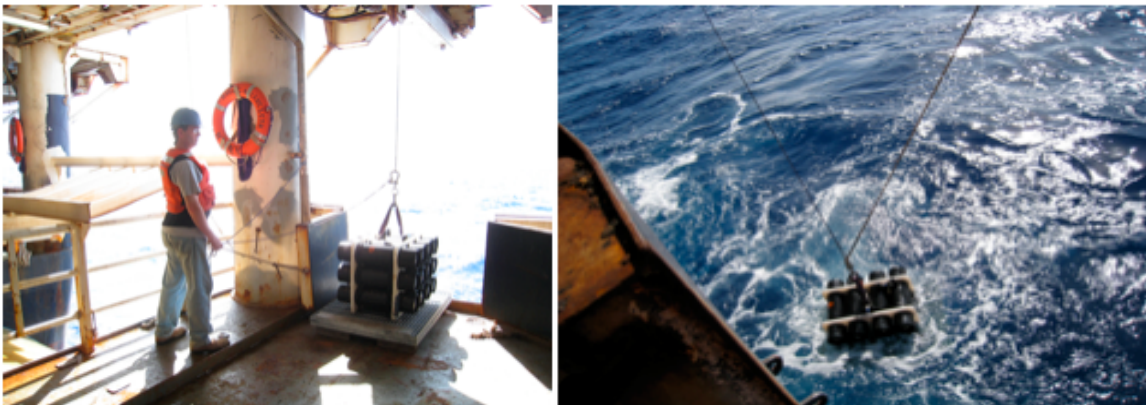
Upon arrival all the instrument racks for the SIO fleet were stored on the highest deck of the boat. They were taken down using the knuckle crane on the OBS deck level and brought down to the main deck. They were then split into two and all the frame racks were split and assembled two high in order to fit into the wet lab.



The float racks were then bolted together in rows and secured on the main deck. The splitting of the racks was done using the A-frame and the winch in order to free up boat personnel to attend other issues. The launch pad was strapped down to the main deck under the A-frame and the anchors were brought down to the main deck as well. The dry lab setup went smoothly and a monitor was brought in so that we could have access to GPS information and video feed of the deck and various labs on board.

### Rosette Test:

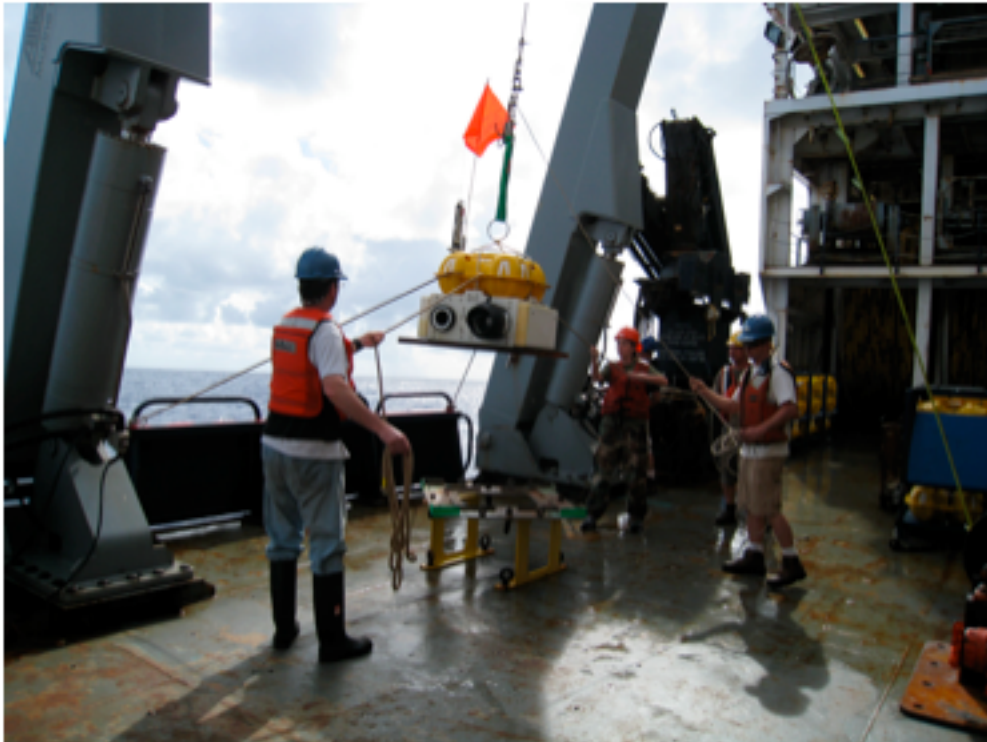
The rosette test was a bit tricky. They managed to get the two rosettes to the aft of the ship using a series of pulleys and then deployed the rosette off from the rear using a



tugger winch, which lifted it up and was able to boom out to get the rosette away from the ship. The package was then hooked onto a streamer winch and the load was transferred over. The streamer winch then took the rosette down to depth and the same series of steps had to be taken during recovery as well. The total time it took for three rosette tests was about 12 hours. This process can be avoided if they had a proper winch that could be run through the A-frame. Also all but three of the acoustic units in the 12 piece horizontal rosette had to be retested in the 24 piece vertical rosette.

#### Deployments/Recoveries:

Early on the two OBSIP groups separated into two teams both running 12 hour shifts. The deployments and recoveries of the instruments were done using a removable winch installed prior to this cruise. The winch fed directly to the A-frame, which allowed us to avoid using the knuckle crane. The problem with the set up had to do with the fickle nature of the winch. Sometimes it would get stuck mid lift and the buttons had to be jostled back and forth in order to get it working properly. In addition to this problem tension had to constantly be applied to the block on the A-frame or the line would jump the block and get stuck. Even with a load there were several occasions where the line jumped the block, which delayed the deployment/recovery processes for anywhere between 15 minutes to an hour and a half. On recovery we would tag the instruments and on the end of the line attached to the lifting bail would be a quick link that we could secure onto another quick link on the line running through the A-frame.



In order for proper deployment/recovery to take place with the current setup we would require at least 5 people on deck; one working the A-Frame one working the winch and three to attend the instrument. If everything worked smoothly we found that the average time for deployments between sites was about 45 minutes and the average recovery between sites was about an hour and a half.

Problems encountered during the operation:

- One of the first problems we encountered during deployments was the amount of water the deck of the Langseth took on during slightly heavy seas.



The water that came over was enough to completely destroy the float racks we had secured along the main deck. In addition to the fact that every once in a while there was enough water to come and sweep people to the ground. This happened to both Crispan and Martin on separate occasions. The seas were not rough enough to stop operation but the way the deck took on water made it to be quite dangerous at times. In another incident the water came onboard and swept a float unit into the side of the WHOI van and shattered a glass ball.

Another problem we came across early on was that one of the floats had a bent lifting bail. Martin made it clear that it was not to be deployed. This ended up working in our favor because now we had a whole instrument we could salvage parts from to fix other problems we encountered. We used a glass ball from this instrument in order to replace the broken one. We were lucky the WHOI guys had the right size wrench to disassemble the hardhats we didn't pack one.

An additional issue that came up was the incorrect orientation of the L28 sensors in the frames. If the orientation is flipped the cable for the L28 sensor interferes with the placement of the float. In several cases we had to flip the orientation of the L28 canister

because there was no possible way to fit the float onto the frame. This was the reason why the float hardhat was sitting on the deck when the wave took it and smashed it against the WHOI van shattering the glass ball.

Another issue that occurred is that the rings on the loggers get cross threaded quite easily so then nothing can be tightened by hand. Not a big issue but it does cause frustration during assembly while on deck.

Electronic issues encountered:

- Test box went a bit flaky, Reset button doesn't function used spare and it worked fine.
- Logger 136 had trouble syncing, strange drift problem occurred, replaced the CPU with logger 78's CPU and everything worked fine.
- Logger 78 had cold solder on run plug. Fixed with sea kit and replaced the seascan with spare in order to correct the drift problem that occurred on the CPU card traded with Logger 136.
- Logger 83, didn't power on after recovery, CF card was empty. After reseeding all the cards the logger powered on but we didn't reuse this logger due to uncertainties.
- Logger 7 had bad 12 pin comm. Port. Didn't fix just bypassed with a spare comm. Cable to sync, was able to redeploy.
- Logger 1 clock battery pack connector broke, fixed with sea kit
- Logger 138 was one second fast on recovery. It had almost a 200 ms drift but the second counter was 1 second fast on display.
- Logger 85 came up and we discovered that the sensor cable at the L28 was not plugged in. It was dummied off with a dust cap. We replaced the cable and redeployed unit
- 4 units came back up with larger than normal drifts. We noted it and should bring replacement Seascans for future cruises.