

## ARG Mooring Recovery Trip

The field campaign to collect data had been scheduled to last for two or three months – November through January. Instead, because of the shipping fiasco, the mooring didn't go into the water until mid-January. And so our field season would be mid-January until the end of the winter. We were hoping for a wet late winter. Marios Anagnostou, a graduate student at the University of Connecticut, and Dr. Eric Defer, from the National Observatory of Athens (NOA), agreed to operate the land-based instrumentation, in particular, the XBand radar at Methoni, and the dense rain gauge network in Finikounda. They actually stayed in Athens most of the time, and drove to Methoni when the weather forecast predicted rain. Dr. Eyal Amitai also spent two weeks in the field working with Marios and Eric. But for the oceanographers, the mode was to wait and hope to not receive a message from the emergency beacon that had been placed on the top float of the mooring. A message from the beacon would indicate that the mooring had broken and prematurely surfaced. The winter passed with no message. The radar crew recorded data from about 6 weather events. Had the underwater Acoustic Rain Gauges (ARGs) also recorded data? Would they still be there when we got back?



*The R/V Philia waits at the dock in Pylos, Messinia*

It was decided that by mid-April most of the winter rains would be over, and that it would be time to recover the mooring. Easter is a big holiday in Greece, and so the recovery trip was scheduled to occur the week after Easter. Eric Boget and Jeff Nystuen, from the Applied Physics Laboratory (APL), scheduled our arrival in Greece for Tuesday, the first working day after Easter. We would rent a car and drive directly to Pylos. But Captain Kokos, and the R/V Philia, could not leave the dock until he received formal orders from his boss, the Hellenic Center for Marine Research (HCMR). This didn't happen until Tuesday morning, and then Captain Kokos reported that the winds

were very high in the straits between Crete and Peloponnese. They couldn't cross and had to spend the night in Kissamos-Kastelli, the western-most anchorage in Crete. By Wednesday morning, the estimated time of arrival in Pylos was Thursday morning, but the winds in the straits were still 40-50 knots, and the Philia was diverted for a Search and Rescue mission for 5 hours. They finally crossed the straits and anchored somewhere on the south coast of Peloponnese at 1 am, 6 hours from Pylos, and didn't arrive in Pylos until just after noon on Thursday. We were waiting and quickly loaded our gear onto the ship, but the weather was still rough and we don't want the sun to set if there was trouble recovering the mooring. We would wait until dawn on Friday.

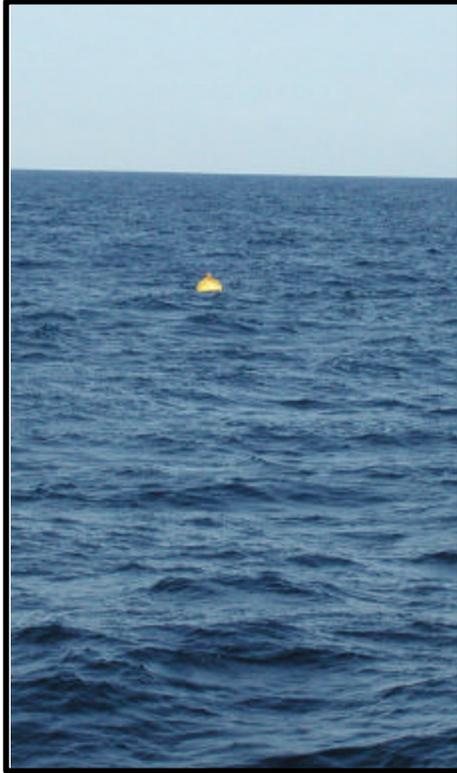


*Steaming out to the ARG mooring location at dawn on Friday*

We boarded the ship before dawn on Friday and left at 6:30 am. Immediately, there was a problem. The deck box for the acoustic release had “popped” when Eric plugged in the ship’s power. Perhaps it was the transformer? We took the transformer apart. It was ok. Eric took the back off of the deck box. He could smell smoke. This piece of equipment is used to communicate with the underwater acoustic releases on the mooring. A transducer is lowered into the water in the vicinity of the mooring. An acoustic code is broadcast into the water. If the acoustic release “hears” the code, it “wakes up” and replies. The ship is then moved closer to the mooring, and a “release” code is sent down. The acoustic release “releases” and the mooring comes up. The deck box does have internal batteries, but everybody uses ship’s power, and so nobody had checked the battery level, nor had a spare battery pack been shipped. It needed 24 volts. The spare battery pack for an ARG is only 12 volts. Eric was worried that if we put a jumper cable across the leads on the circuit board, something else would blow out. Normally he packs two, but not for this trip. If we couldn’t get it to work, we would have to call Seattle and have another sent over, or find one in Greece. He put the jumpers across the leads and we tried to charge the batteries from the ship’s power. Would it be enough?

The Captain put the ship on the estimated mooring location. The transducer was lower into the water. The “wake up” code was broadcast into the water using the recharged batteries. The battery level was still too low to transmit a code into the water.

Eric decided to power the deck box with the jumper cables. The “wake up” code was broadcast again. It was audible from above the water surface, so we know that it was sent. No reply. Eric was lying on his back in the lab next to the deck box. He sent the message again and again. He decided to send the “release” code. It takes many minutes for a mooring to rise to the surface, but the top float is only 50 m underwater, and so it should appear within a couple of minutes, if we were near the mooring. Eric sent the messages again and again. We had been on station for 15-20 minutes and the ship was drifting. Eric decided to tell the Captain to move back to the estimated mooring location. Suddenly, there was a shout from the deck: “There it is!” (in Greek) Never mind about the deck box – problem solved. Let’s go get the mooring. [We think that a component of the receive circuit blew out, and so the deck box couldn’t receive the replies from the acoustic release.]



*The top float of the mooring popped up about 100 meters from the ship.*

back to port, I checked each ARG for data. Data files are present and look ok. I copied them to hard disk, CDs and memory stick. Success!!

*Eric Boget and Michalis Souvlas lift an Acoustic Rain Gauge onto the ship deck.*

We grappled for the float and began hauling the line in. The first ARG appeared, and then the second, and the third, the fourth, and finally the acoustic releases and their floats. On the way



*The acoustic releases. The one on the bottom has “released” the metal bar, which held the line to the anchor, on the left.*