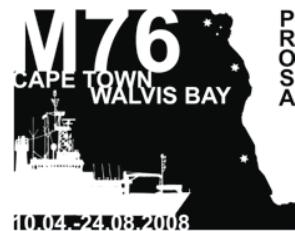


Fifth Weekly Report
M76/3b-Guineco Leg 2

11.08.-17.08.08



The fifth week of the GUINECO leg 2 was a quite dramatic experience, foremost for our ROV team, but also for all scientists on board hoping for more dives to the deep sea of the West African margin. After steaming out the ROV cable several times until no further twisting (Picture 1) could be observed in the night of the 10-11 August, the dive 224 was planned to explore a new habitat: the southwestern clam fields of REGAB, which probably represents the habitat with the highest density of chemosynthetic vesicomyid clams known today. But at about 1500 m water depth, the ROV suffered a complete black out. As a consequence, the ROV team and ship had to carry out one of the most dreaded maneuvers: a dead-vehicle recovery. This



Picture 2: One of the possibilities tried:
asking oil exploration platforms for spare
parts

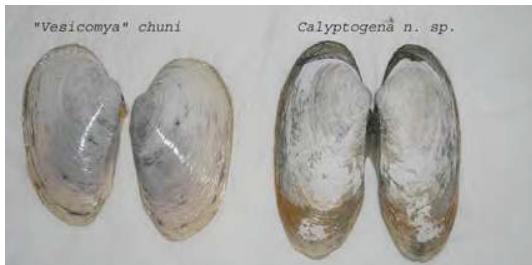
means the ROV cannot be controlled, its thrusters are shut off, and it has to be recovered by its sensitive cable. Luckily and thanks to the excellent support by the deck and bridge crew, the recovery went smooth and without problems. In less than an hour after recovery, the ROV team was able to locate the error: In the last 20 cm of the cable, close to the connection to the ROV, the fiber which transports all data - including those controlling the vehicle - showed a disconnection.

This is what we had feared most: a new termination was impossible, because after all the previous problems, all spare parts were already used up. But after the first shock we started thinking of possibilities to fix the problem and to allow for further dives. After many discussions and phone calls to land during the 12 August, which was spent with Parasound transects and gravity coring, it was decided to initiate the delivery of these spare parts from Bremen to Luanda by courier. We steamed to Luanda on the 13 August, and were lucky enough to be able to pick up the needed parts already in the afternoon of the 14 August. Thanks to the effort of the ROV team, an immediate repair was carried out and a new dive was planned already for the night of the 15 to 16 August.

Picture 1: ROV cable "salad"
– unfortunately a common
view during M76/3b (Source:
T Wilkop)



Picture 3: Steaming to Luanda for a pick
up of spare parts

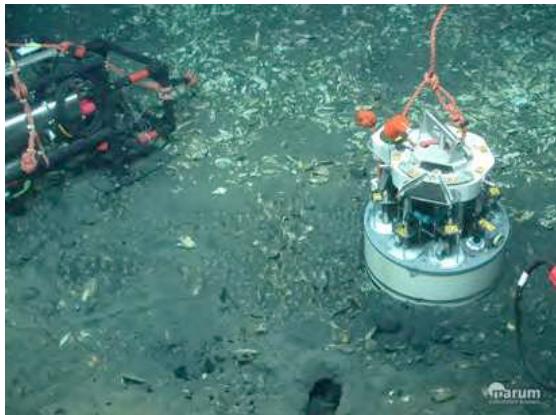


Picture 4: New clam species populating the reduced pockmark sediments
(source: K Olu, C Decker)

Luckily, the dive 225 made up for all the extra effort. It was the first dive during the cruise, which lasted for 16 hours bottom time, and allowed for retrieval of samples, in situ measurements and interesting video footage for all scientists on board. The goal of dive 225 was to explore and sample a new site with clam beds (bivalves of family Vesicomyidae) in the Southwestern part of the REGAB pockmark (Picture 4). This site was previously described as the largest clam field of the REGAB pockmark, during its first exploration by the ROV VICTOR in 2001. Most interestingly, two different species of chemosynthetic

clams populate the sulfidic sediments. It is also curious, that such an active site is found far away from the center of the pockmark with its hydrates and gas ebullition site, indicating the complexity of the gas and fluid system feeding the pockmark from below.

Already during dive 225 we planned two further dives to use all the remaining time for sampling and diving with the ROV, but as soon as the ROV was on deck, much to our disappointment we faced another major cable failure. The ROV team agreed once more to a full suite of cable cutting, termination and testing, to make sure we have one more dive to recover some experiments and manage at least one detailed videomapping of the active center of the pockmark. Dive 226 will start in a few hours and will be the last dive of this mission, hopefully being as successful as dive 225.



Picture 5 and 6: The dense Vesicomyid clam beds of the southwestern REGAB pockmark. Left: respiration measurements with benthic chambers. Right: Close up of living clams dwelling the sediments for sulfide.

Further details of our daily work and the scientists on board can be found on the expedition BLOG hosted by www.planeterde.de.

With regards - Antje Boetius and the Scientific Crew of GUINECO leg 2