



## SO277 (GPF 19-2\_012)



### 5. Weekly report, 7.9.-13.9.2020

We are looking back on a busy week during we completed the seismic operations and focused on the acquisition of CSEM and water column data and sediment sampling.

On Monday we finished the planned P-Cable lines at 10:00 in the morning. Afterwards we began to acquire more 3D seismic data in the numerous gaps caused by avoidance of fishing gear. At 17:00 a fishing line with hooks got entangled in the segment between streamer 11 and 12 and damaged the cross cable segment and the T-junction. The port side paravane and streamers 11 to 16 had to be taken onboard and the cross-cable segment had to be replaced. Afterwards we continued filling the gaps in the P-Cable cube.

In the early afternoon of Tuesday we finished the P-Cable acquisition in spite of some remaining holes in the fold map. These could not be filled because of fishing gear that was floating permanently at those locations. Apart from this we are quite satisfied with the data that are now being processed. The 3D seismic system was back on board at 14:30 and the back deck was set up for CSEM operations. The CSEM system was deployed between 16:00 17:00 and we collected a second CSEM profile beyond the shelf edge northeast of Gozo throughout the night.

We recovered the CSEM system until 9:30 in the morning and found that the CSEM system had worked well with all receivers collecting data. At 10:30 we deployed the AUV close to Gozo and then started a first video-CTD transect near Sikka-i-Bajda reef. This was completed by 16:00 when we returned to the AUV station and retrieved the vehicle. We then started a second video-CTD transect at the pockmark field east of Gozo. Within the pockmarks the water was more turbid but no signs of fluid escape could be found. The station was finished at 22:00 and we collected several parallel parasound profiles on the shelf to ascertain that there are no obstacles for the CSEM track on the next day.

At 08:00 on Thursday, we started to recover four of the OBEM receivers. This was completed successfully until 11:00. Afterwards we conducted two video-CTD transects in the east and north of Gozo. During the first dive we could see the water column imaging anomaly east of Comino, but we could not detect a signal in the CTD and other sensors. The second site confirmed the impression that the pockmarks below the escarpment are not active. At 16:00 we redeployed the CSEM system for another transect east off Gozo.

The CSEM transect was finished by 04:30 on Friday and the system was recovered until 06:30. Afterwards we steamed to the meeting point off Comino to take onboard the spare USBL modem for the AUV. This was delivered by boat at 09:00. From 10:00 to 11:30 we deployed four OBEM on a transect off northern Malta and the Comino channel and from lunch time to 16:00 we collected the first gravity cores for which we finally got the permission from the superintendence of cultural heritage. The first core consisted of fine sands and carbonate debris and it was possible to centrifuge pore water. At the other two coring sites there was no penetration but some carbonate debris in the core catcher. During the night we conducted another CSEM tow north of Gozo.

The CSEM system was successfully recovered in the morning and at 8:30 we deployed the AUV at the most prominent water column imaging anomaly southeast of Comino. Afterwards we collected three more gravity cores north of Gozo with mixed success before recovering the AUV at 14:00. Afterwards we retrieved the eight ocean bottom seismometers and throughout the night we collected parasound data to survey the track of the next CSEM deployment.

On Sunday morning at 10:00 we met with Dr. Owen Bonnici the Maltese Minister of Education who came out to visit us on a pilot boat. He was accompanied by Prof. Aaron Micallef and Dr. Axel Steuwer the University of Malta's vice rector. Because of coronavirus it was not possible for them to come onboard Sonne but it was possible to exchange presents and talk over the side of the ship. Afterwards they stayed on to witness the deployment of the video CTD at the site of the most prominent water column anomaly in the multi-beam data.

When a violent thunderstorm came up they left back for the harbor. The thunderstorm delayed our following AUV deployment until 14:00 because it was not safe to work on deck. The AUV carried out a short 1.5 hour-dive at the easternmost of the water column anomalies NE of Malta and from 16:00 onwards we began to acquire the next CSEM profile east of the Sikka-i-Bajda reef.

Now we only have five days left in the study area off Malta before sailing off to Sicily on Friday night. We will focus on the acquisition of more CSEM and water column data and gravity coring to obtain pore water samples.

Every body onboard is well.

On behalf of all on board,

Christian Berndt, Chief scientist

GEOMAR Helmholtz Centre for Ocean Research Kiel



*Michel Kühn and Florian Petersen during the recovery of the P-Cable making sure the cross-cable drums up properly on the winch. Photographer: Jonas Liebsch.*