

R/V METEOR

Cruise M167 (GPF 18-2_040)

11.10.2020 - 05.11.2020

Emden – Emden



3. Weekly report (19.10.2020-25.10.2020)

The week started in the Alboran Sea, the first of our two study areas. During the night we could extensively map the Carboneras fault, being able to produce a series of interesting Parasound profiles through it. Taking advantage of the beautiful weather and the perfect sea conditions on Monday the 19th we deployed the ROV SQUID in order to retrieve the first CORK, a long-term observatory installed on the seafloor by MeBo in 2018. The dive was extremely successful, the instrument was safely retrieved, and we could then steam away in the direction of the Gulf of Cadiz.

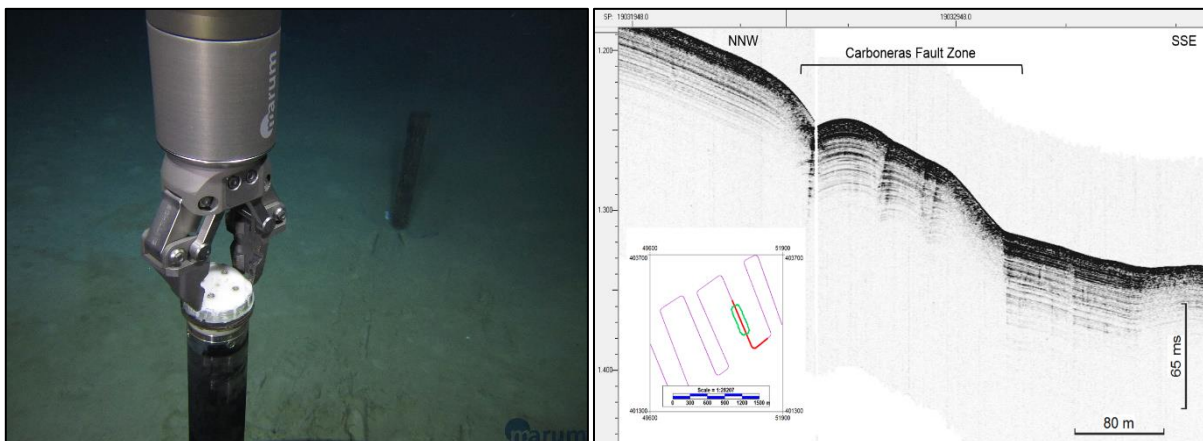


Figure 1: a) recovery of the first CORK and empty borehole rod in the background, b) Parasound profile crossing the Carboneras Fault, showing uplifted area of ductile and fragile deformation, separating well-stratified parallel and continuous reflections.

We reached the Gulf of Cadiz on the morning of the 20th and, due to the prohibitive weather condition for a safe SQUID deployment, we finally had the hance to get out first sediments cores from the seafloor. We managed to retrieve different mud breccia facies, a typical sediment constituting the main solid emissions of mud volcanoes, from different structures of

the Moroccan mud volcanic field: Ginsburg, Yuma, Boabdil, and Averroes. These sample will be studied in order to determine the geochemical composition of the porewater, as well as the presence of microbial activity, in an effort to shed some light on the origin of the fluids and the life which they could fuel.

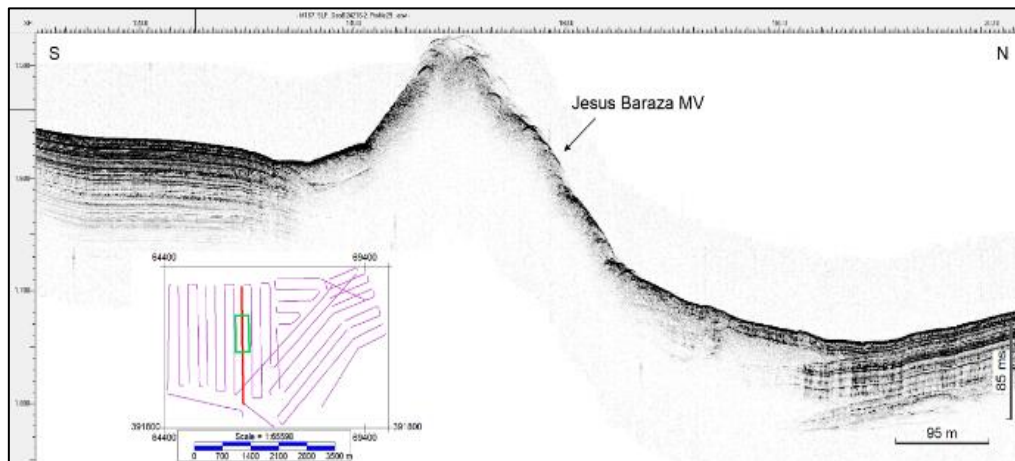
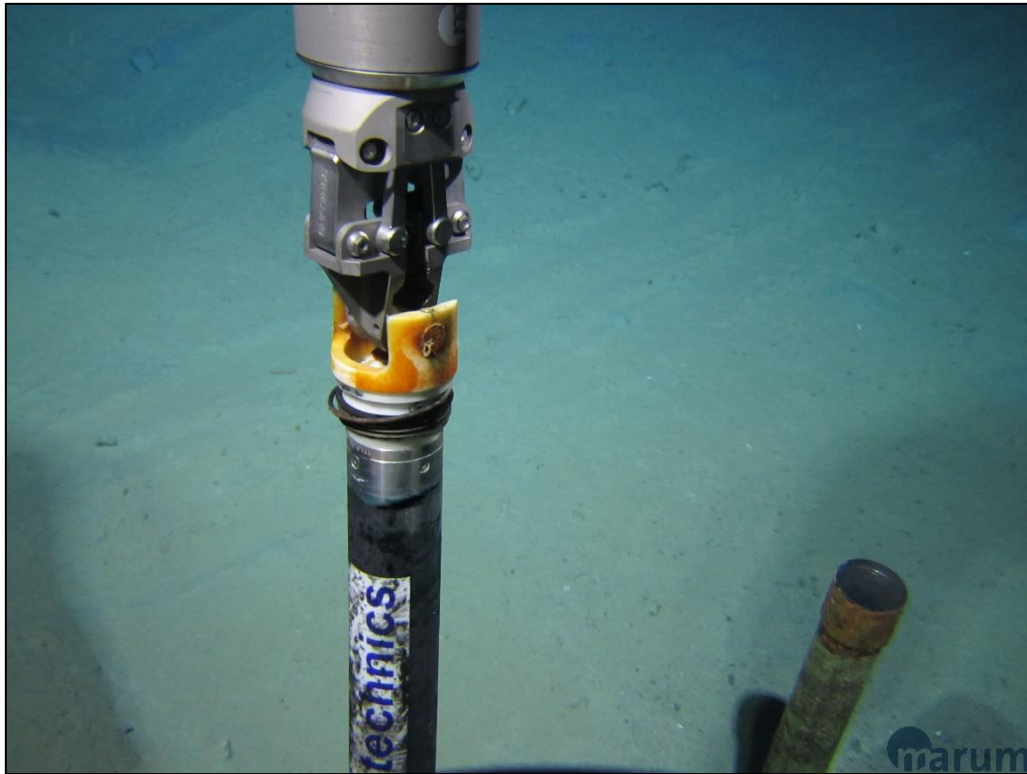


Figure 2: a) recovery of the second CORK observatory, b) parasound profile crossing through the Jesus Baraza Mud Volcano, showing the characteristic “Christmas tree” structure, with transparent acoustic lenses interspersed with parallel, laminated sedimentary layer being observed in the flanks of the volcano’s cone

On the 21st and part of the 22nd we continued coring different structures which then proved to be newly discovered mud volcanoes, in the northern part of the Moroccan mud volcanic field. In the afternoon of the 22nd the wave height <2m made possible an ROV deployment,

which again concluded with a flawless retrieval of the second CORK observatory, installed on the active Ginsburg mud volcano. On Friday, Saturday and Sunday (23rd, 24th and 25th), due to excellent weather, we were able to dive again on Ginsburg MV, on the Lineament Center and on a coral mound structure, respectively, in order to produce a 3D Photomosaiking reconstruction of the seafloor on these extremely interesting targets. Meanwhile, we also continued coring and surveying various morphological features, which proved to be unknown mud volcanoes, circular depressions, diapiric ridges and coral mounds.

Everyone on board is contributing to the success of this expedition and, as the days go by, the scientific team gets more united, making the work on board very pleasant.

*On behalf of the entire M167 Team
Walter Menapace (Chief Scientist)*

