

R/V METEOR

Cruise M167 (GPF 18-2_040)

11.10.2020 - 05.11.2020

Emden – Emden



4. Weekly report (26.10.2020-01.11.2020)

At the beginning of this week we decided to steam towards the western part of the Gulf of Cadiz, in order to sample some deep-water mud volcanoes (MVs) and a new MV field. The deeper MVs are interesting because they are following the traces of both Lineament South and Center. They can potentially show different source fluids/sediments than the bigger expulsion features on the eastern part of the accretionary prism, thus painting a more complete picture of the Gulf of Cadiz mud volcanism.

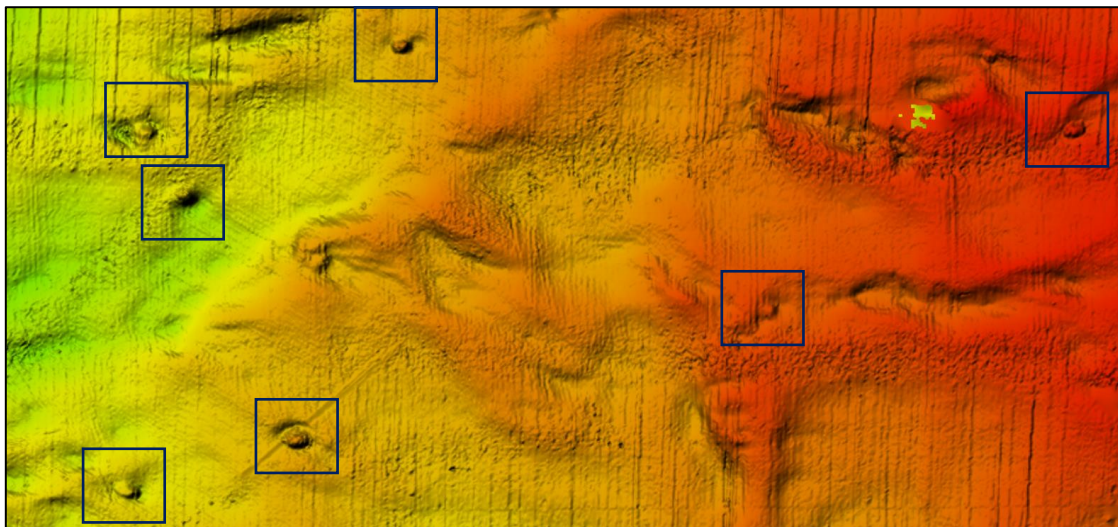


Figure 1: seafloor bathymetry map produced during the M167 expedition, with seven new MVs discovered.

We reached the new MVs field in the Portuguese EEZ on the morning of the 27th, after a night spent by thoroughly mapping the area. Some structures in this area were discovered during the M149 in 2018, but no complete map was done until now. We managed to sample and confirm two of the MVs, but then the winch used for gravity coring broke down and it took a team of 4 ship mechanics 8 hours to repair it, making coring operations unfeasible for the rest of the day. Taking advantage of a window of good weather, on the 28th we headed to the

Lineament Center, at the location of the CORK observatory. Despite an hydraulic malfunction which impeded the use of the ROV mechanical arm, the ROV team managed to build an extension for the same arm, making the retrieval of the CORK possible. After this unexpected but welcomed success, we closed our scientific program by coring different structures along the northern boundary of the Southern Lobe. Again, we discovered a new MV and sampled the known Atlas, Student and Jesus Baraza MVs which showed an amazing variety of mud breccias, confirming once again the extreme variability of these seafloor features in the Gulf of Cadiz. Finally, on the 29th afternoon we started our transit towards Emden.

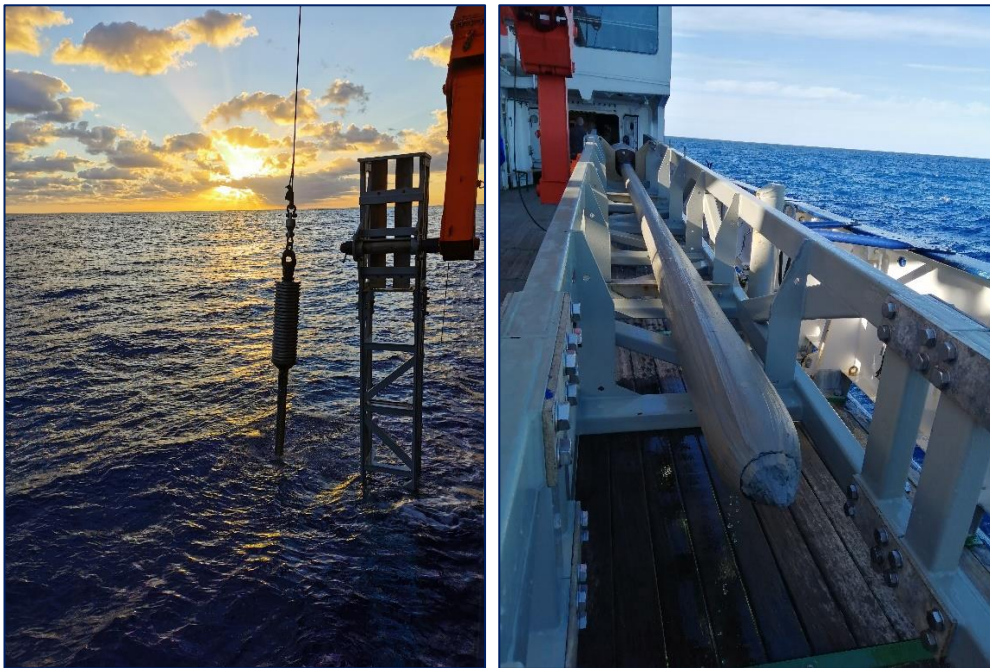


Figure 2: a) gravity coring at dawn (Photo: Natasha Morales), b) full recovery of extremely dense mud breccia (Photo: Leonardo Tamborrino)

The M167 expedition is now coming to an end, with the R/V METEOR entering the English Channel tomorrow after passing almost through the Gulf of Biscay earlier today. The scientists onboard are still busy with packing, writing down results, and enjoying the last days onboard, before disembarking on the 05th November in Emden. In conclusion, I would like to express my appreciation to the work of both scientists and crew, which allowed a smooth and successful completion of this research expedition.

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

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