Research Vessel METEOR
M196: Piräus (Greece) – Limassol (Cyprus)
1. Weekly Report: December 4 to 10, 2023

In order to alleviate water scarcity under changing climatic conditions, alternative water sources such as offshore freshened groundwater (OFG) have become the focus of scientific attention. It is estimated that the volume of groundwater in OFGs worldwide amounts to half a million cubic kilometres, which corresponds to the global fresh water consumption of 1000 years.

On M196, which is carried out within the Helmholtz European Partnering Project SMART, we are investigating OFG occurrence in the seafloor in the Gulf of Corinth, Greece. The planned measurements include seafloor electromagnetic soundings, hydro-acoustics and geochemical sampling that will be combined with existing IODP borehole data in the eastern part of the Golf of Corinth to infer the spatial extent of OFG within the Gulf.

Departure from the harbour of Piraeus (left), inspection of a drill core (right).

Our team consists of scientists from 8 countries, coming from 7 different institutes in 5 countries. The snow chaos in Germany made for an exciting and long journey for the participants from Germany due to flight cancellations and re-bookings. By 23:00 in the evening, however, the last scientist was on board with her luggage so that we were able to set sail as planned and in good weather on the morning of 5 December. The 36-hour transit took us around the Peloponnese to the Gulf of Corinth and was used to set up the laboratories, unpack boxes, prepare equipment and carry out safety drills. Our first activity in the working area on the evening of St Nicholas' Day was a releaser test combined with sound velocity measurements of the water column, which also aroused the curiosity of a large number of dolphins. To our great astonishment, only a torn rope was still hanging where the sonar probe was attached to the winch wire. It is not possible to reconstruct what happened to the probe, but a briefly increased load on the wire while the equipment was in the water led to speculation that a dolphin or even a large shark that occurs at greater depths might have mistaken our silver coloured device for a gift from St Nicholas.

Deployment of electromagnetic transmitter.

During the next working days, 6 Ocean Bottom Electromagnetic (OBEM) stations were deployed along the Gulf and the USBL Posidonia system was calibrated again. Up to now we managed to acquire 5 gravity cores. The number of bathymetric and high-frequency acoustic profiles is growing steadily, mostly at night. On Friday evening, the 800m long controlled source electromagnetic (CSEM) streamer was launched. The special geographical location of the Gulf leads to very rapid and local wind changes, which is why we are very grateful for the excellent weather forecast from the meteorological service on board. Gusty, strong and shifting winds led to challenges on the bridge during the launch and the first few hours of the profile. Fortunately, the wind then calmed down. In the morning of the 2nd of Advent after a profile length of 30 miles in 36 hours, the streamer was recovered safely.

Everyone on board is well, the mood is good, also thanks to the beautiful view of the mountains around the Gulf and a lovely, home-made Advent calendar for scientists and crew.

Greetings on behalf of all participants,

Marion Jegen, FS METEOR, Sunday Dec 10th 2023.