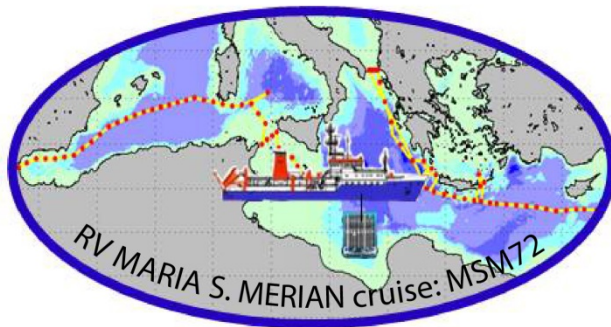


## R/V MARIA S. MERIAN Cruise MSM72

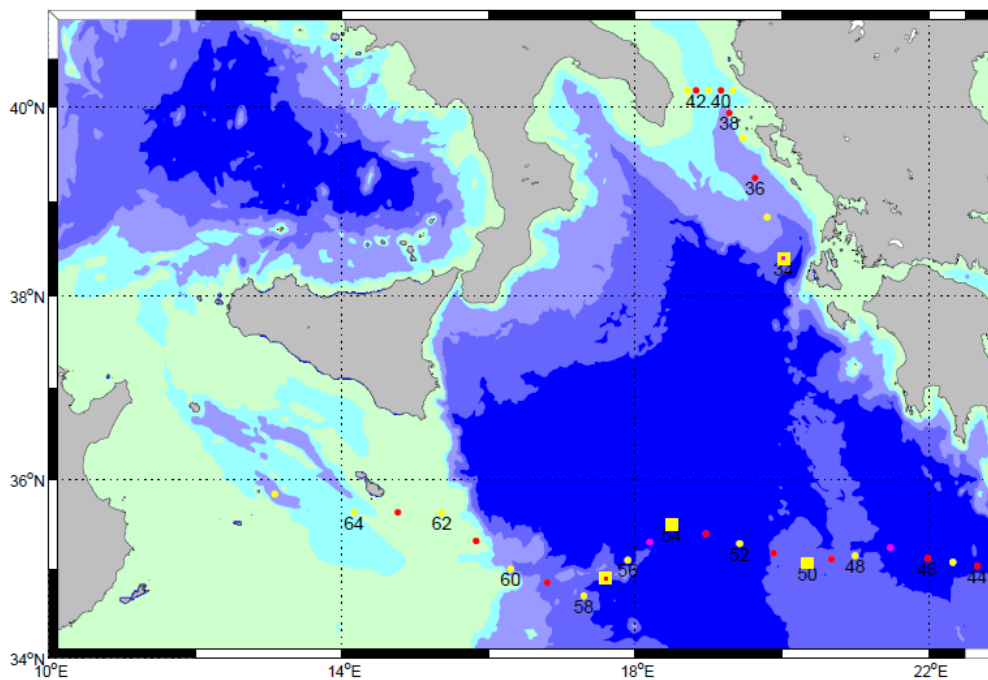
Heraklion – Cádiz

02.03.2018 – 03.04.2018

3<sup>rd</sup> weekly report: 19.03.2018



In the third week of our cruise we finished the section through the Ionian Basin to the north. Our northernmost stations were in the Strait of Otranto. The section through the Strait of Otranto is repeatedly taken on cruises by us, as the Adriatic Sea is the most important producer of deep water in the Ionian Basin and we are interested in the changes in the outflow of deep water over long time scales. After this northernmost section a long transit route followed back to our section across the Mediterranean Sea, which we resumed with station 44 west of Crete. On the transit, we continued to continuously collect data with the ADCP and ran an uCTD approximately every two hours. On stations 50, 54 and 56 surface drifters and additionally an AVOR Float (station 56) were deployed. At station 34 we dropped the only PROVOR BIO Float.



*Fig. 1: Stations taken during the second week of the cruise. Red dots: CTD stations including chemical sampling. Magenta dots: CTD stations with two casts. Yellow dots: CTD stations without chemical sampling. Yellow square: Additional deployment of ARGO Floats.*

Unfortunately, we continued to have considerable technical problems with the use of the CTD this week. After we had essentially solved the problems with the defective releaser unit of the Kiel rosette in the previous week, the CTD operation ran smoothly for some stations with the ship's own rosette and CTD. From the evening of March 14, both oxygen sensors showed only noisy profiles from approx. 1000 m, combined with a sudden offset. Now everything started again from the beginning, we exchanged cables, sensors and even the winches again. But all this did not help here either. Finally we decided to connect our CTD including sensors with the ship's own rosette. But for this we had to build an adapter cable, because the rosette of the ship uses different plugs (Subconn) than for our CTD (Seacon). This system now seems

to be working. Many thanks to the WTD of the ship and to Andreas Welsch, our technician, because they solved this problem for all of us.

It should also be mentioned that we placed our CTD in a deep sea brine pool at station 47 with a depth of 3528 m. This is a "salt lake" on the seabed, whose salt content is three to eight times higher than the salt content of the surrounding water and hardly mixes with the surrounding water due to its very high density. These brines contain hydrogen sulphide and the water samples brought along smell accordingly when they arrive on deck. The laboratories were ventilated long after the event. Probably we came across the "l'Atalante Basin".

In the meantime, all groups have started to analyze their data, carry out quality controls and produce initial preliminary results (Fig.2 and Fig.3).

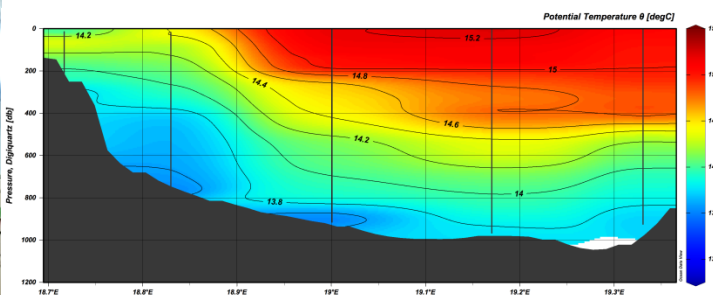


Fig. 2: The water samples are processed in the laboratory. Fig. 3: Temperature distribution in the Strait of Otranto.

In the temperature distribution in the Strait of Otranto, the outflow of cold and less salty Adriatic bottom water can be seen very nicely in the western part of the Strait. In the near-surface layers in the eastern part, the inflow of warmer and saltier water from the Ionian Basin, whose origin lies in the Levantine Basin, predominates.

So far we have been lucky with the weather. The sea was calm, which is a prerequisite for our uCTD measurements. After all, on Saturday we were hit by a storm with 9 Bft. We had to stop our uCTD measurements, but CTD stations were continued.

A highlight of our social life on board this week was the engine tour by the 1<sup>st</sup> engineer. All participants were enthusiastic about this tour through the ship. Despite the storm and technical problems with the CTD, the mood continues to be good on board.

Greetings on behalf of all scientists on board

*D. Hainbucher*

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