



M197

(30.12.2023 – 06.02.2024)

2nd Weekly Report (01.01.2024 – 07.01.2024)

On 04.01.2024 the container ship transporting our equipment finally arrived in the Port of Limassol, Republic of Cyprus. Our equipment containers were loaded onto the RV Meteor on 05.01.2024 and, after several days of limited activity, all the scientists and crew were busy unpacking the containers and setting up equipment on deck and in the laboratories. In the morning of 06.01.2024 we set sail from the Port of Limassol and headed south to our first working area.



Figure 1. *Departure from Limassol, Republic of Cyprus.*

The first operation on 06.01.2024 was deployment of our so-called 'tow-fish', a water sampling device that is positioned at a few meters water depth and pumps seawater into one of the laboratories on the ship. Because of an all-plastic tubing and pump system, which is rigorously cleaned with acid in the home laboratory, this seawater pumped onboard remains

untampered with trace elements (such as iron and zinc) and can be used for experiments to assess the factors regulating the growth of marine phytoplankton.

On 06.01.2024 starting at 06:00 ship time we started our first full station. We are running a highly multidisciplinary programme which requires a sequence of different deployments. Firstly, we deploy a stainless-steel conductivity-temperature-depth (CTD) package equipped with 10 L sampling bottles, which we use to sample water at various depths between the surface and the seafloor. Secondly, we deploy a second CTD system, with a frame made of titanium. This titanium-frame CTD is operated with a dedicated winch system equipped with Kevlar cable. Together, the titanium frame and the Kevlar wire prevents contamination of the collected seawater samples with trace elements. Once the titanium frame CTD is on deck we transport the seawater sampling bottles to a dedicated 'trace-metal-clean' laboratory where the seawater can be sampled without contamination. We also deploy so-called 'in situ pumps' which are fitted to a wire and sent down to specific depths where they pump thousands of litres of seawater through filters in order to collect a high abundance of marine particles for various chemical and biological analyses. We then deploy a video camera system to record video scenes of life in the deeper ocean, with a focus on observing the types and abundances of gelatinous zooplankton (jelly fish) in this region. Finally, a series of nets are also deployed to collect additional zooplankton for estimation of their abundance in seawater and for taxonomic identification.



Figure 2. The so-called 'tow-fish', which is used to pump seawater into a laboratory on RV Meteor. This water is uncontaminated with trace elements and can be used for experiments to test the controls on phytoplankton growth in this region.

All together these deployments require ca. 19 h of station time. Following the final deployment, we will sail to our next site and the process will begin again. In this way we will steadily collect the samples and data required to characterize the biogeochemistry of this part of the Eastern Mediterranean in detail.

Figure 2 (below). First CTD deployment at 06:00 local time on 06.01.2024.

We are thankful to Captain Apetz and the crew for assisting us with rapid unpacking of the equipment containers and setting up of our laboratories. We are very happy to be getting going at last with our science activities. Despite the delay we have been very well taken care of over the last week in port with good food and positive mood.

With best regards from 32.38 °E 33.36 °N,

Tom Browning and the M197 research cruise participants

