

Research Vessel SONNE

SO279 (GPF 20-3_089)

04.12.2020 – 05.01.2021, Emden – Emden

2nd Weekly Report: 7 – 13 December 2020



The second week of NAPTRAM (SO279) started on **8 Dec.** with our first station in 3-4 m swell and winds above 8 Beaufort. Nonetheless, the CTD rosette was deployed at 8 a.m. from the hangar, a massive, enclosed deck space with retractable walls for deploying gear. RV SONNE is exceptionally well-designed and outfitted. Together with an experienced ship's crew, gear deployments are efficient and smooth. Weather conditions that might halt operations elsewhere warrant hardly a pause here.

The CTD approached the seafloor at 4400 m and returned with samples from throughout the water column. Five in situ pumps were deployed next on a single line down to 300 m depth (Fig. 1). The pumps each collected particles from about 1500 L of water before being retrieved.

The first attempts to collect sediments with the multi-core and box core were unsuccessful, so we switched to towing the multi-net while it was still dark. We try to schedule station work with the net operations at night to capture zooplankton that migrate vertically. The multi-net has nine nets that can be opened and closed remotely, and it collects samples between the surface and 3000 m depth. The net returned with an array of interesting specimens, including an iridescent *Sapphirina* copepod (Fig. 2).

Net operations finished around daybreak, and two subsequent attempts to collect sediment box cores were both successful. The sediment processing team was occupied for the rest of the day collecting samples of the sticky carbonate mud (Fig. 3). Sediments and porewater will be processed back in home laboratories for microplastic distribution, various geochemical parameters, and benthic biota.

So far, we have not seen a lot of plastic debris in our samples. It will be interesting to see how this compares with stations in the gyre accumulation zone south of the Azores.

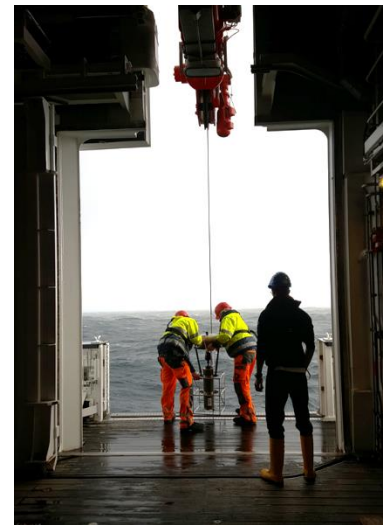


Figure 1. Deploying the in situ pumps from the hangar as stormy weather approaches. © A. Beck/GEOMAR



Figure 2. *Sapphirina* copepod collected with the multi-net. © U. Panknin/GEOMAR

After the station was successfully completed in the afternoon of **9 Dec.**, RV SONNE continued transiting southward. Weather conditions steadily worsened, with swell above 4 m and winds around 10 Bft. We decided to postpone the second planned station and travel directly to our primary working area south of the Azores. A high pressure system in that region promised much better weather, and we hoped to take advantage of the good conditions to complete as much work as possible.

We continued transiting southward on **10 and 11 Dec.** with little change in the weather conditions. On **12 Dec.**, we awoke to the relative calm of 2-3 m waves and 6-7 Bft winds and were able to deploy the trace-metal clean towfish. The towfish is a stainless-steel torpedo designed to hold clean tubing so that the inlet samples only water untouched by the ship's hull. The towfish travels alongside the ship while we transit for continuous collection of water.

Today is **13 Dec.**, and we will arrive on station west of Madeira and the Canary Islands around midday. The weather is as promised, with relatively calm seas, bright sunshine, and air temperatures approaching 20°C. We are all looking forward to seeing what the next samples from the deep sea bring!



Figure 3. The sediment team subsampling cores from the box core. © I. Schulz/GEOMAR

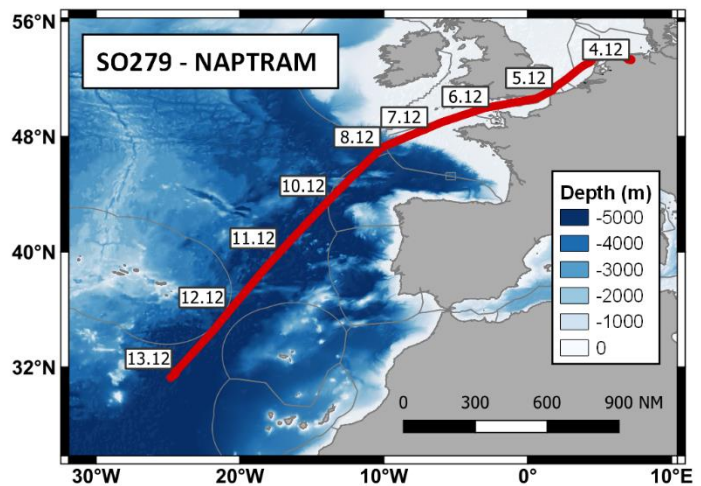


Figure 4. Map of the SO279 ship track. © A. Beck/GEOMAR

On behalf of the SO279 cruise participants, greetings from the blue Atlantic,

Aaron Beck, GEOMAR

FS SONNE, Sunday 13 December 2020