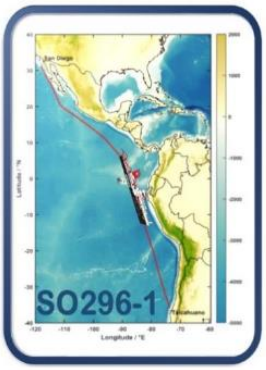
RV SONNE – SO296/1

27.12.2022 – 18.01.2023

Port Hueneme (USA) – Talcahuano (Chile)



1. Weekly report (26.12.2022 – 01.01.2023)

On December 26th, 2022, twelve scientists and one Chilean observer embarked the RV SONNE (Fig. 1). We were welcomed by the crew and the Captain, and all newcomers realized an antigen Corona test due to current Covid-19 regulation. All tests from the scientific crew were negative.

Figure 1: RV Sonne in Port Hueneme, USA. (Photo: B. Klostermann)

After a short tour in the ship and the safety briefing, the scientific party could settle down, and start to unload the contained and settle the laboratories. In the evening of December 26th around 18:00 (Pacific Time), SONNE left the pier on her way to the transect. After finishing all laboratories set up, a scientific briefing took place in the conference room of the ship to discuss details and the strategy of the water sampling.

From our starting point to the final pier, almost 10 000 km separate these two locations. Along the transect, we will collect surface water to measure natural parameters and organic pollutants along the continental shelf of eastern Pacific. Our main goal is to investigate the influence of changing environmental conditions due to climate change as well as the direct impact of humans on the marine ecosystem.

In the afternoon of December 27th, SONNE arrived at the roadstead off Ensenada, where the ship dropped the anchor to embark the two observers from Ecuador. While we waited for the observers, the crew underwent safety training. The observers were transferred from a pilot boat, and SONNE continued her journey in the late afternoon.

Our first station took place on the night of Dec 27th, around 10 pm local time, and we started our sampling. Back in the laboratories, we filtrated water for Suspended Particulate Matter (SPM), Particulate Organic Carbon (POC) and Chlorophyll, and made extractions for Dissolved Organic Matter (DOM; Fig. 2), UV-filters and estrogens (Figs. 3 and 4). Also, samples for nutrients and Dissolved Organic Carbon (DOC) were taken from the filtered water. While most of the mentioned parameters can only be measured in the laboratory in Rostock, we are able to measure on board nitrate, silicate, and phosphate thanks to the nanomolar measuring system that we brought with us.

Figure 2: Acidified, filtrated seawater is running over columns for extraction of DOM (Photo: H. Frazao).

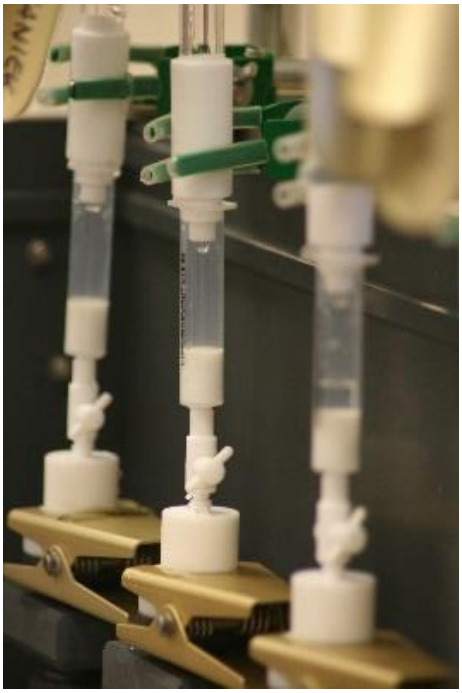


Figure 3: Hormone samples run through an Extraction column (Photo: A. Estelmann).

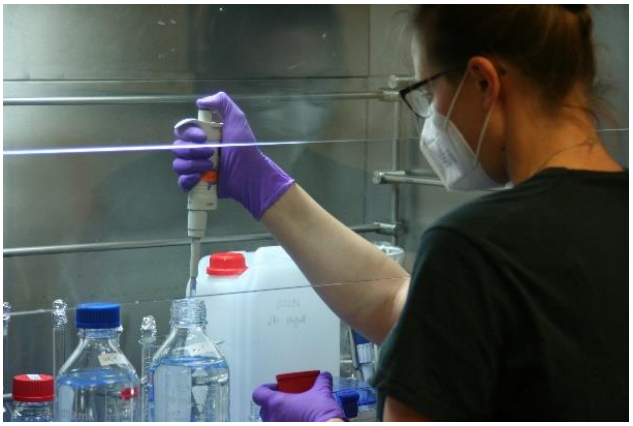


Figure 4: UV-Filter and hormone samples are spikes with Internal Standards (Photo: A. Estelmann).

During our transit time, SONNE will cruise on a constant speed of 10 knots and will never stop during sampling. Water samples are taken every 30 nautical miles (approximately every 3 h) using the ship's seawater pump system installed at 4.5 m. While SPM, DOC, POC, Chl, nutrients and estrogens are sampled at every station, samples for UV filters will only be taken every four stations during the first week while the transect is still close enough to the coast. DOM is sampled every 60 nautical miles. In addition, surface water runs permanently through a filter for posterior microplastic analysis. The filter is changed every eight hours. Organic pollutants are also extracted during 9.5 h every day.

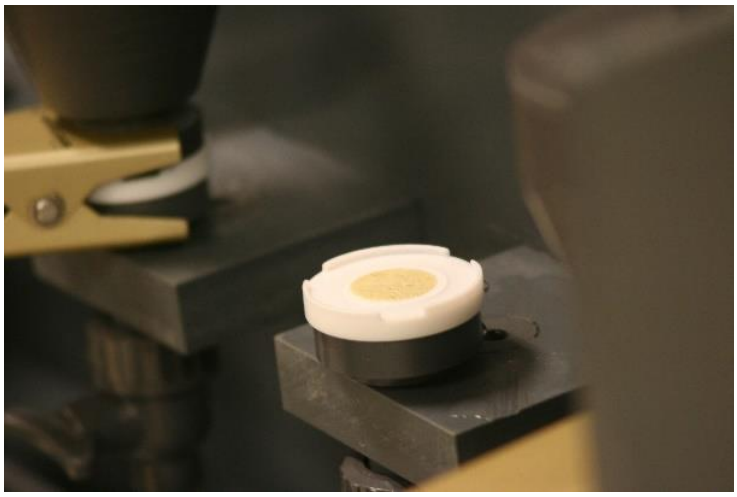


Figure 5: First Chlorophyll filter –visible coloration of the filter. During the first day, the chlorophyll concentration decreased. (Photo: A. Estelmann).

Our measurements together with the continuous recording system of the ship will contribute to the Initiative “underway data” of the Deutschen Allianz für Meeresforschung (DAM).

Figure 6: A group of Boobies has been always on our side. (Photo: B. Klostermann).

Greetings in the name of all participants,

Detlef Schulz-Bull

(Leibniz Institute for Baltic Sea Research Warnemuende)

Figure 7: The scientific party of SO296-1 expedition, including the three observers.