

Weekly Report No. 3
SO260/1
22.01.2018 – 28.01.2018



We continued sediment and water sampling beginning last week with a focus on erosion structures and canyons. Box corer, multi corer (MUC), gravity corer, and grab corer were deployed again. The recovered sediments were sampled by each scientific group, including geochemistry, microbiology, and organic geochemistry (Figure 1). During the night of January 23 to 24, CDT/Rosette and *in situ* pumps were deployed and water column samples were collected. Our colleagues from MARUM and the Faculty of Geosciences are interested in sampling nepheloid layers within the water column and near the seafloor to gain information about the origin of particles within these layers.

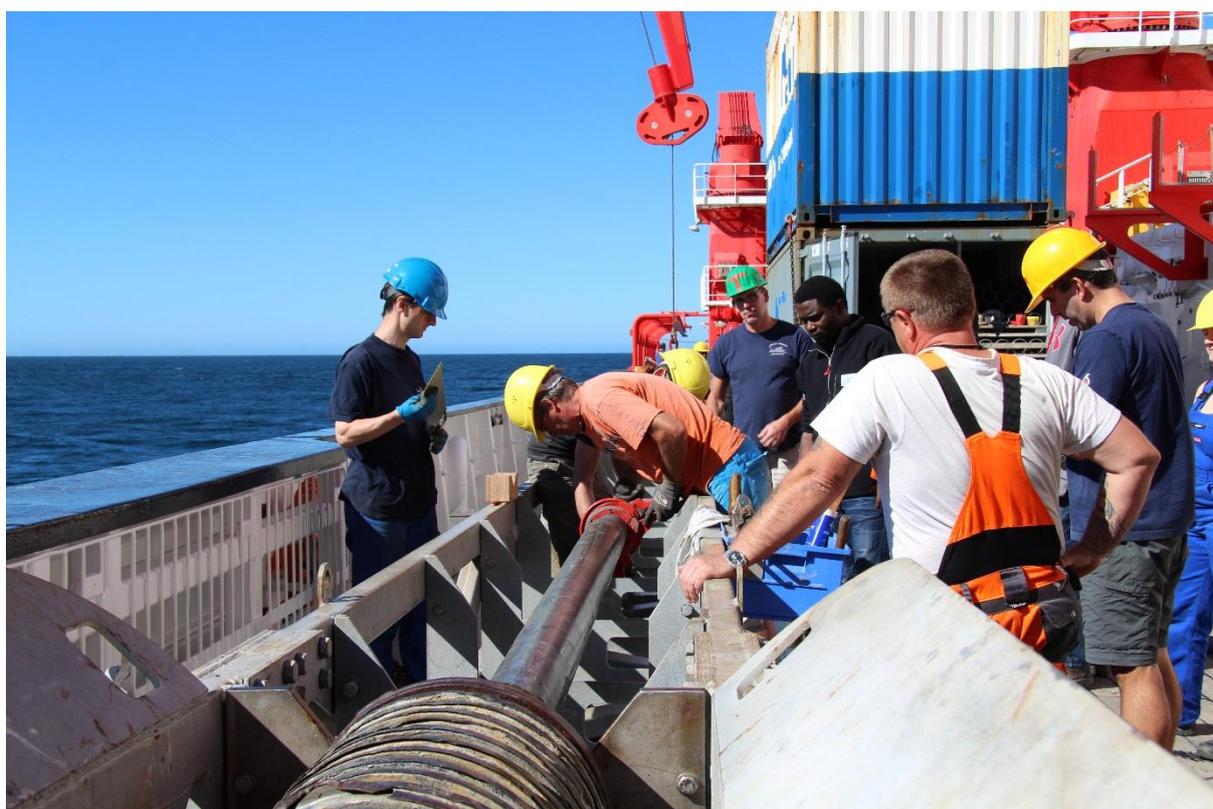


Figure 1: Cutting and sampling of a gravity core on deck of the RV SONNE (Photo: Sabine Kasten)

According to the weather forecast, on January 24, wind intensity increased to 5-7 with gusts reaching 9. Despite the tough weather conditions and waves up to 4 meters high, the RV SONNE stayed steady in the waters and we were able to continue our sediment sampling program using MUC and gravity corer at a designated biogeochemistry-MeBo station. Unfortunately, during the day the weather conditions worsened, with increasing waves, and coring activity had to be stopped. We decided to move to the most northern station in our planned research area for further water column sampling. This location was intended to sample the transition to the warm Brazil current from the cold Malvinas current in the uppermost water column. Preliminary shipboard results indicate that the plankton-community in the warm surface water differs distinctively from the community found in the cold Malvinas current sampled in the southernmost research area, which is characterized by Antarctic species.

In the night of Thursday to Friday, strong winds were chased away by sunny weather and blue sky and a calm sea. The remaining part of the week was used for seismic survey to find a suitable location for MeBo70 deployment during the second leg of SO260. During the cruise, the richness of seismoacoustic data from multibeam, sediment echosounder and multichannel seismic has revealed a particularly detailed image of the seafloor, which is a clear step forward in understanding the seafloor processes shaping the Northern Argentine Margin. Based on the combined survey and sampling program to visit the most relevant structures as channels, scours and canyons and associated contouritic deposits, we could develop a possible sampling strategy for the upcoming second leg of our cruise.

As most of the work has concentrated on the Ewing Terrace north and south of the Mar del Plata Canyon, sampling may allow the evaluation of the influence of the canyon on alongslope currents and deposition. Several potential areas had been picked for more detailed surveying. A particularly suitable site has been found in ~1100 m water depth, representing a very fine-grained succession of drift sediments – Parasound penetrates over 80 meters - resembling the rapid fill of a previous depression (Figure 2). This site will likely provide a good stratigraphic and contouritic records and will document biogeochemical processes and zonation on the terrace.

South of the Mar del Plata Canyon, several sites had been surveyed, including scours, the most recent drift body on the terrace and an area of mixed erosion and accumulation next to a contourite channel. Further data processing and site selection will keep us busy until next week, when the first MeBo deployment is planned.

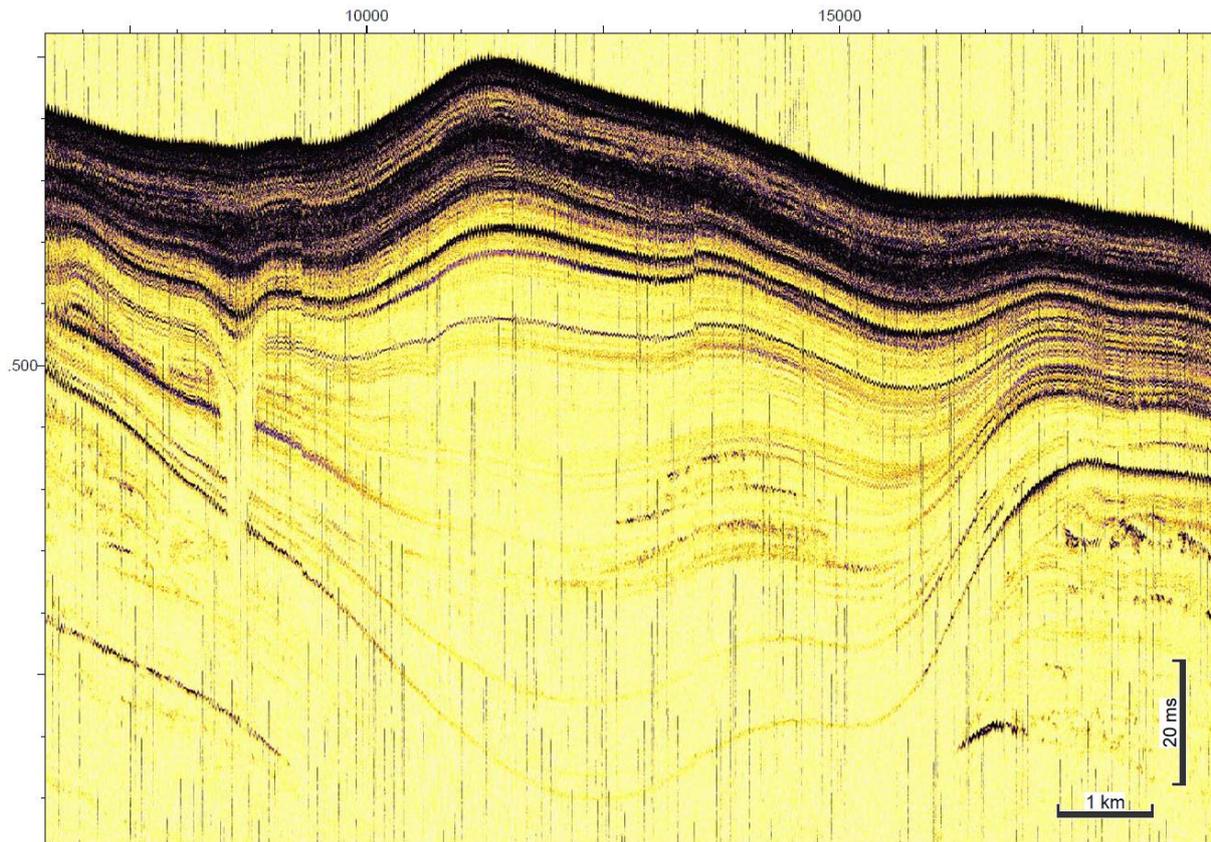


Figure 2: Parasound profile showing a rapid fill of a previous depression. Parasound penetration is more than 80 m.

Meanwhile, the last two working days of our first SO260 leg started and we will finish our leg in Montevideo on Tuesday. Despite the brief time of our first leg, we were able to recover many exciting new cores and samples of fantastic quality – mainly due to the mostly good weather and the incredible support by the captain and crew of RV SONNE.

With warm regards from the crew and scientific party of RV SONNE expedition SO260,

Sabine Kasten (Chief Scientist)