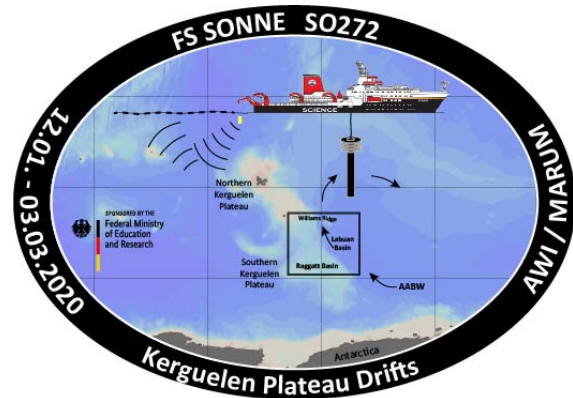


**Expedition SO272  
Post Louis – Cape Town**

**Weekly report No 6  
17. February – 23. February 2020**



It is the hour of Geology. Or rather, the days of Geology. Our Geology colleagues have watched patiently while the seismologists collected their data, they have studied both seismic reflection and Parasound™ profiles to identify location for geological sampling. In this way a number of locations were found where old layers come to the surface and wedge out. Here, they can be sampled, their age and material can be determined. On the seafloor, over million of years, sediment layers have been deposited that can represent a history book of the past regional but also global climatic conditions. The sediment package is comparable to a layered piece of cake. To probe the cake we use a 6 to 12 meter long hollow pipe called gravity corer. But to get to the lower creamy layers the gravity corer would simply be too short in the centre of the layer cake. Hence, we identified locations at the edge of the cake that typically are the areas where the seafloor resides from the shallow plateau, 1,500 m water depth, to the deep basin, > 4,000 m, water depth.

After successful deployment of the corer, the retrieved sediment sample has to be taken from the corer and processed right away to be transported back home. One of the first steps is to open and describe the core. Later, at home, more sophisticated time consuming analysis will be performed. Ideally, see photo, we get a thin layer of young sediment followed by much older layers. This is comparable to the icing on a cake. The exact age of the older layers can be determined by studying tiny fossils, normally shells of long extinct organisms. Now the age of the respective seismic reflector outcropping at the sea floor is determined. The reflector then can be traced and mapped across the entire working area. Based on these findings, we then can identify the ideal location where scientific ocean drilling should go to drill the entire layer cake. In this way, we learn about the development of the climate many millions of years ago.

After retrieving the last core on Monday, we set sail for Cape Town. It is a long way, and we have to move against the east-setting winds and currents. On top of this, a nasty storm low has developed west of us. So, we had to move northwards to sail around this low. Now we are heading west, everybody is tidying up and packing up the equipment.

(Photo: T. Westerhold)



We send home cheerful greetings.

Southern Indian Ocean, February 23 2020, 42° 12.21' S / 57° 35.8' E

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MARUM

<https://www.awi.de/en/science/geosciences/geophysics/research-focus/gateways-of-the-southern-ocean.html> under *Southern Indian Ocean circulation is archived in Kerguelen Plateau structures*

<https://www.awi.de/forschung/geowissenschaften/geophysik/expeditionen.html>