

MSM140 – 4. Weekly Report

More of the same!

Unfortunately, our hopes for good weather that we had a week ago were not entirely fulfilled. I already wrote this sentence in the last weekly report, but it is even more valid for the past seven days. We started the week with a new test of the fibre-optic telemetry of the CAGEM electromagnetic source, but the test was still not successful and we reverted back to the old DSL-telemetry. However, the tests gave us time to change the seismic streamer from a 2D to a 3D configuration. Around noon on Monday we started deploying the 3D-P-cable system and the airgun, and after a soft start we finally acquired the first high-resolution 3D seismic data at ODP site 642. The P-cable system is composed of a transverse data cable that is towed between two trawl doors roughly 120 metres behind the vessel, and to which 16 short streamer segments are attached. Sea state, unfortunately, did not evolve as expected and by 04:00 the next morning we had lost one channel completely and had data drop-outs on other channels. We started recovering the system in daylight and converted the streamer back to a 2D configuration that allowed collecting good quality seismic data over an area with previously unknown features for the top of the basalt (Fig. 1). The basalt shows faulted and probably tilted blocks with overlying sediment packages also faulted. This is a strong contrast to the area of Skoll High with rather undisturbed sediment packages.

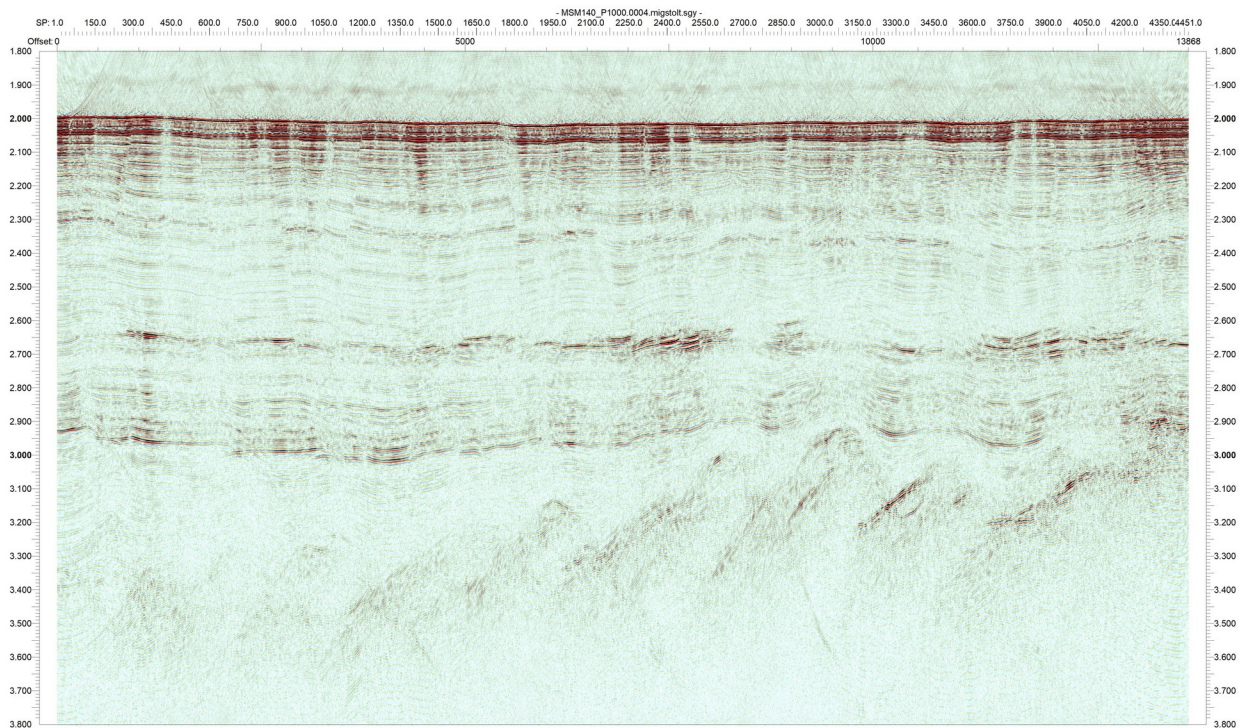


Fig. 1: 2D-seismic profile running NE-SW from left to right and showing a strongly faulted and probably tilted top of the basalt.

By Wednesday morning we recovered the seismic system, and with winds constantly in the range of 6-7 Beaufort and wave heights around 3 metres deployed the OBEM. Once all twelve receivers in place, data acquisition with the “old” CAGEM electromagnetic source started immediately and continued until Thursday afternoon. Both CAGEM source and the OBEM receivers are equipped with acoustic pingers to allow precise measurements of their respective distance (Fig. 2), a parameter that is crucial for the analysis of the recorded signals. With the remainders of tropical depression “Gabrielle” looming south of us, we filled remaining gaps in our bathymetric map during the night. The storm reached our working area a bit later than expected so that we could start recovering some of the OBS that were still on the seafloor, but by mid-afternoon on Friday we had to stop all operations and endure the storm. Mid-day on Saturday we were able to deploy the ship’s CTD and acquire a new sound velocity profile for the hydroacoustic systems. For the rest of the day and the night we collected more bathymetric data and by Sunday morning conditions had calmed down sufficiently to allow safe recovery of the remaining OBS and the OBEM, the latter of which are currently re-deploying for a fifth and final deployment.

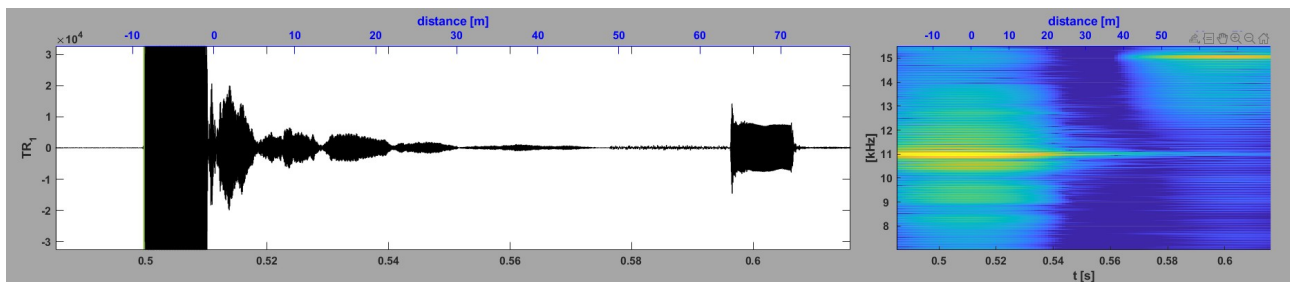


Fig 2: Measurement of the crucial distance between CAGEM sender and OBEM. Left panel shows the emitted pulse and the answer of the OBEM, right panel shows the frequency spectrum of signal and answer (yellow bars).

Weather and sea conditions were challenging during the past week and will likely be so for the upcoming week as well. We already collected a good dataset, but more favourable working conditions would be most welcome.

So far wind and waves could not deter us from pursuing our work in high spirits, and we are all looking forward to another week at sea.

On behalf of everyone onboard I am sending best regards,
Ingo KLAUCKE
Chief Scientist MSM140