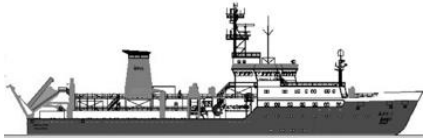




# MSM 82

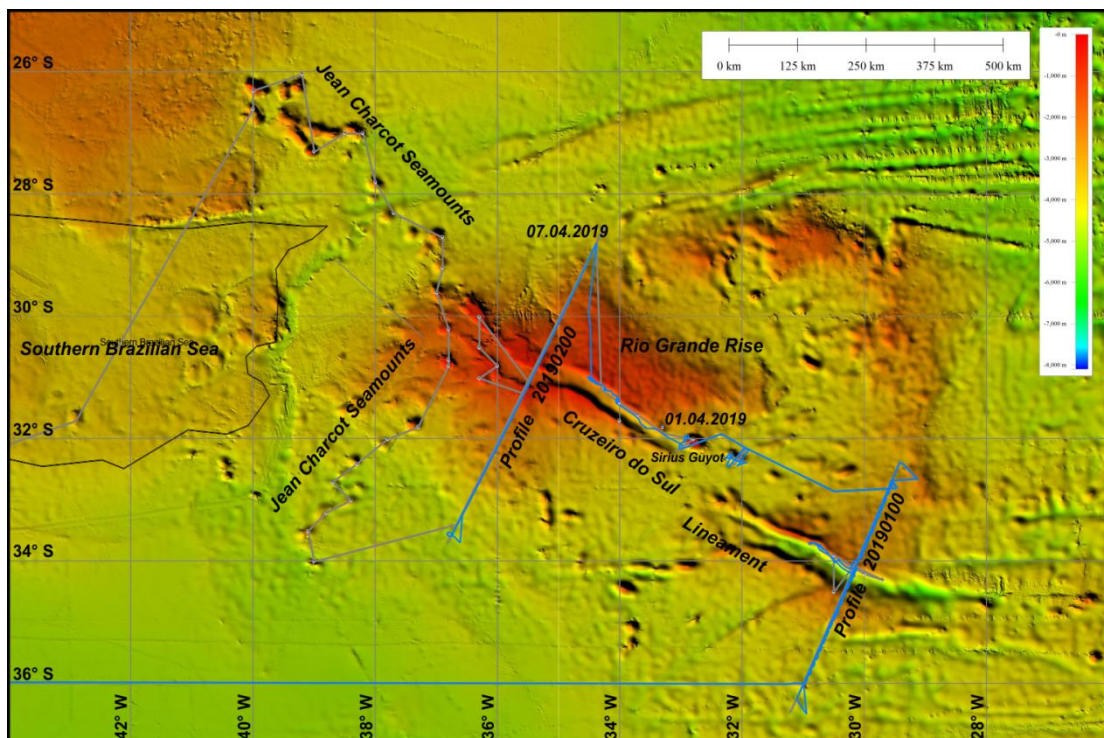
## Rio Grande Rise

3<sup>rd</sup> Weekly Report  
01.04. – 07.04.2019



**MARIA S. MERIAN**  
28°47'S / 34°22'W

At the start of week three we arrived at Sirius Guyot, an impressive seamount located to the southeast of the central Rio Grande Rise. Because of its location we could assume that its formation is closely related to the evolution of the deep graben structure. Therefore, we tried to dredge samples from its flanks but because of easterly winds we had to search for a suitably steep slope in the bathymetry data. Unfortunately, we were not successful this time because during both attempts the dredges became stuck and had to be freed by the ship's officers. When it was clear that the dredges did not contain any rock samples we decided not to try again and to continue on our way to the northwest. During the course of Monday and Tuesday we planned to dredge more samples from the flanks of the deep graben in the central Rio Grande Rise. During our transit across the northern flank of the graben we mapped to seafloor to look for a suitably steep slope we could dredge in an eastward direction. Unfortunately, the wind continued to blow from an easterly direction with 4 to 5 Bft. Northeasterly winds would have been better for dredging. The success rate of the individual dredge hauls has varied but as of Tuesday evening the petrologists have sampled a few good rocks from the graben.



*Cruise track until 07.04.2019 (marked in blue).*



*A buoy swims exactly on our track. (Photograph: Stefan Krumm)*

Wednesday morning (3.4.) we arrived at the northern end of the second seismic profile. On our way we mapped the seafloor and measured magnetic data. Before we deployed the first ocean bottom seismometer (OBS) we again measured the water sound velocity to calibrate the multibeam swath echo sounder to establish the water conditions in our new study area.

Deployments of the OBS proceeded quickly. One reason was that the officers of *Maria S. Merian* maneuvered very precisely from one position to the next. Another was that the OBS team was quick in preparing the instruments before the deployments. And finally, the deck's crew with all their experience quickly slipped the instruments into the sea in just a few minutes so that the vessel could move on quickly to the next deployment position. But suddenly there was an interruption. Close to the eight deployment position, some unknown obstacle was observed right in front of the vessel. On reaching the obstacle, it became clear that it was an old buoy from a harbor. This obstacle could have represented a serious danger especially at night, because we could have collided with it during our measurement along the profile. The master decided to return to the buoy after we had deployed the eight OBS. In the meantime, the buoy had drifted slightly southwards, but more or less along our track. Therefore, the decision was made to flag the obstacle. Within minutes, a daughter buoy was manufactured in the deck workshop. It was equipped with a flag, a radio beacon and a flashlight, all the things that we normally use to identify the OBS when they surface. Our hope is to identify the buoy easily in case it is still close to our track during seismic profiling.

Around the buoy we observed different kinds of fish. Even if the buoy itself represents garbage, it is like a little oasis in the wide ocean.



*... now with a daughter buoy for better identification.  
(Photograph: Stefan Krumm)*

Thursday at noon (4.4.) we deployed the last of the 30 OBS. We moved some miles further south to reach the start point of the seismic profile. There we started to deploy the airguns. Our marine mammal observers Jennifer and Jean were already on watch to take care that no whales or other marine mammals would be too close to the vessel when we started our measurements. Indeed, they observed a sperm whale, but a long way from the vessel. After all our preparations were finished and we were sure that no marine mammals were close to the vessel we could start with the seismic measurements in the late afternoon.

The weather conditions were fine over the course of the week, with the exception of the unfavourable wind directions during the dredge operations at the start of the week. So, on Friday (5.4.) our marine mammal observers were able to spot a female together with a young fin whale crossing our track a large distance from the vessel.

On Friday night since all the OBS were deployed and no deck work was on the schedule we took the opportunity to celebrate the half-way point in the cruise (Bergfest) Our cooks Mike and Georg, together with stewardess Sylvia, prepared a very nice barbecue. All on board could enjoy a nice evening sitting together on the working deck. Yes, indeed, half of the cruise is already over. But even if there is still a lot to measure and sample, we have to think already about freight lists, packing and arrival to Montevideo, now less than three weeks away.

We are presently almost at the end of our second seismic profile. Due to good preparation, we have been able to measure without any breaks. After lunch we will recover the airguns and in afternoon we will start with the recovery of the 30 OBS.



*Two fin whales crossing our path a large distance from the ship.  
(Photograph: Jean Purdon)*

All on board are in good form and we are looking forward to the new week, particularly the petrologists because dredging will again be on the schedule. But more about this in the next weekly report.

Wolfram Geissler & Scientific Party of MSM82