

RV MARIA S. MERIAN - MSM112 "RioM ROFI"

The Rio Magdalena Delta Region of Freshwater Influence

07.10. - 14.11.2022, St. John's (Canada) - Cartagena (Colombia)

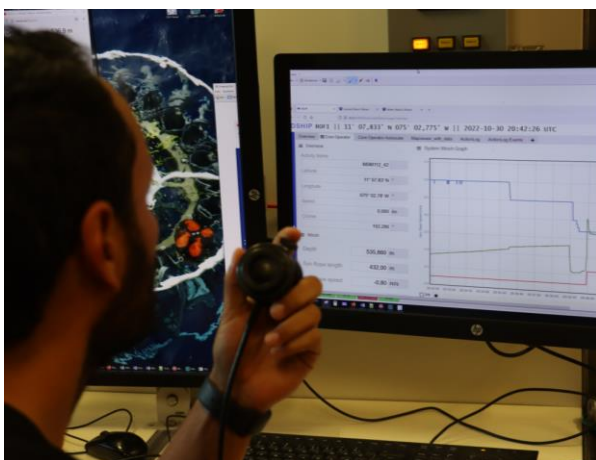


5th Weekly Report (31.10. - 06.11.2022)

The Expedition MSM112 targets three very different survey areas off the Caribbean coast of Colombia. First, we had surveyed and sampled two submarine canyons off the mouth of the Rio Magdalena and measured its river plume at several cross sections. In addition, we deployed a lander that is now recording hydrodynamic data offshore the river mouth.

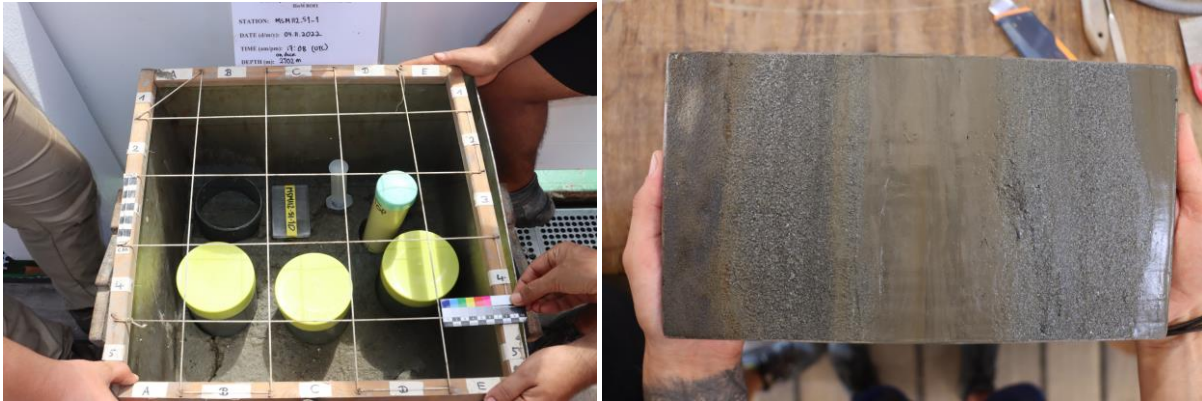
For the last week, another highlight was on the agenda: The *La Aguja Canyon*, which cuts deep into the seafloor just in front of the impressive mountain range of the Sierra Nevada de Santa Marta. A place of extreme gradients: From the peaks (5775m) to the coast, it is only about 50km, from there to the 3800m deep Colombian Basin again only 80km. The canyon is of tectonic origin, but today characterized by submarine erosion, landslides and sedimentary deposition and determines the transport pathways of sediments from the shelf to the continental rise. The 115km long meandering channel is morphologically similar to those previously studied offshore the Rio Magdalena - but without their fluvial influence.

We have now made a new, very detailed mapping of the seafloor by surveying with the multibeam echosounder and gained a good insight into the shallow subsurface by imaging with the parametric echosounder. The high resolution bathymetry details the steep slopes, slumps, meanders, and corresponding sedimentary deposits that we track in a series of stations with large box cores and 10m gravity cores from the coast to the continental shelf. Because of the great depths, sometimes hours pass before the equipment is back on deck after lowering down from the surface to the seafloor and hoisted back aboard. This time, however, is well spent by carefully sampling and labelling, describing and packing each of the previous stations.



*Left: "Winch stop", watching the rope tension diagram, the bottom contact of the instruments are monitored.
Right: Well secured, a box grab arrives on deck. (Photos: C. Winter)*

Even the preliminary analysis of the sediments reveals the different depositional conditions and the sorting of the sediments depending on the distance from the river mouth. This is the background of many discussions, but a quantitative analysis of the sediments is pending. This will take place in the laboratories in Colombia and Germany.



Left: Sub-sampling of the box corer. Samples and short cores are labelled, packed and analyzed at home in the different laboratories. Right: Preparation of a sedimentary sequence. (Photos C. Winter)

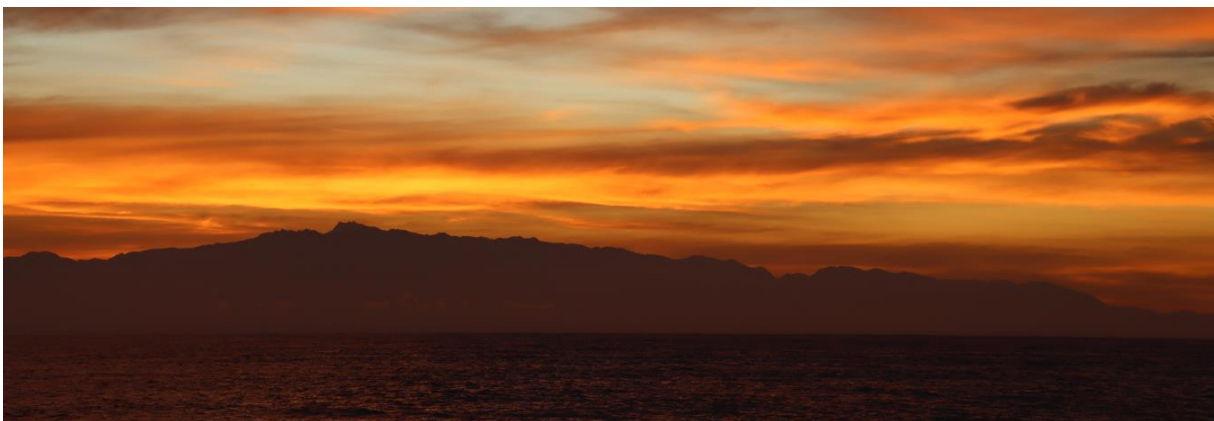
In the evenings, we meet for scientific talks, report to each other and sort out the new data. It is a great pleasure to combine the different expertise and ideas, to share experiences, and to get new insights into the diverse marine systems every day.

The wind has increased a bit in the last few days, and so have the waves - but thanks to her geometry, fabulous stabilizers, and well-chosen courses, the MARIA S. MERIAN is calm in the sea. The cooperation with the ship's command and crew is excellent and things are really going well. So far, all planned stations can be worked on in the scheduled time and we are looking forward to the next – already last – week on board!

Greetings on behalf of all cruise participants,

Christian Winter

(Kiel University)



Early morning view of the Sierra Nevada de Santa Marta (Photo: Marius Becker)