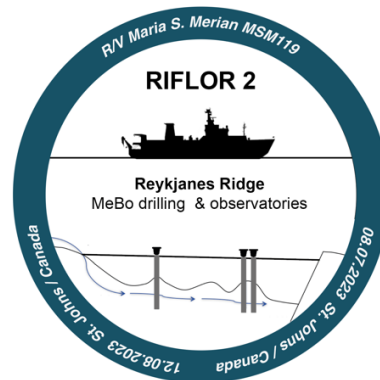


R/V Maria S. Merian

Expedition MSM119 “RIFLOR2”

08.07.2023 – 12.08.2023

St. John’s – St. John’s



#### Weekly report #4

In the week from 24.-30.07. For the first time on this expedition, we also had weather conditions that did not allow station work for almost 2 days, as there were strong winds and wave heights of up to 8 m in the working area. In the remaining time we were able to use a wide variety of devices: gravity corer and dredge, numerous measurements with the in-situ temperature lance, CTD rosette, hydroacoustic data acquisition with Multibeam and Parasound, and use of the MARUM MeBo70.

The seabed drilling rig in particular was able to be used twice despite a hydraulic repair and the weather break. First, a 43.7m deep borehole was drilled in the Squid Pond. After the swell after the storm had largely subsided, it was possible to drill down to 30.2m below the seabed at a second location, despite the high loads on the umbilical of the heavy robot. In both cases, basaltic series and overlying sedimentary layers were drilled.



**Figure 1** Left: Safe station work was out of the question for 2 days when the sea was raging.  
Right: The strong wind blew a visitor from distant Newfoundland on board.

The main focus of our research work is on the different magmatic rocks that we were able to extract in the MeBo cores, the dredges, and the gravity cores. In the case of the basalts, their porosity and permeability as a function of age and degree of alteration are of particular interest, since they control both the hydrothermal circulation and the potential for any storage and mineralization of CO<sub>2</sub>. Samples also include small chimneys with zoned walls, glass crusts on the surfaces of fine-grained basalts, and naturally calcite-mineralized fissures and pores.



**Figure 2** From top left to bottom left: small basaltic conduit (15 cm diameter); mineralised vein in basalt; altered basalt with authigenic calcite vein fill; vesicular basalt with some pores filled with precipitates.

At the moment we are taking temperature measurements near the spreading axis in order to send MeBo on a drilling mission to the Reykjanes Ridge again soon. The weather is stable again and gives us good working conditions in the coming days.

*Kind regards on behalf of the entire MSM119 team  
Achim Kopf (Chief scientist)*