

# MSM121

Nuuk – Ponta Delgada

September 23 – October 16, 2023

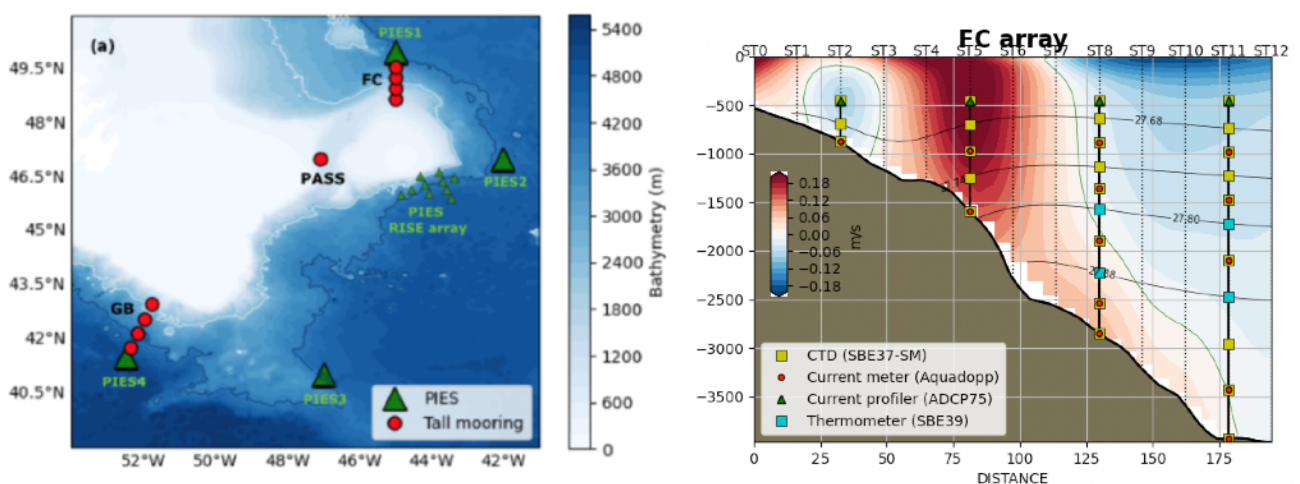
Weekly Report No. 4

(October 9 – 15, 2023)

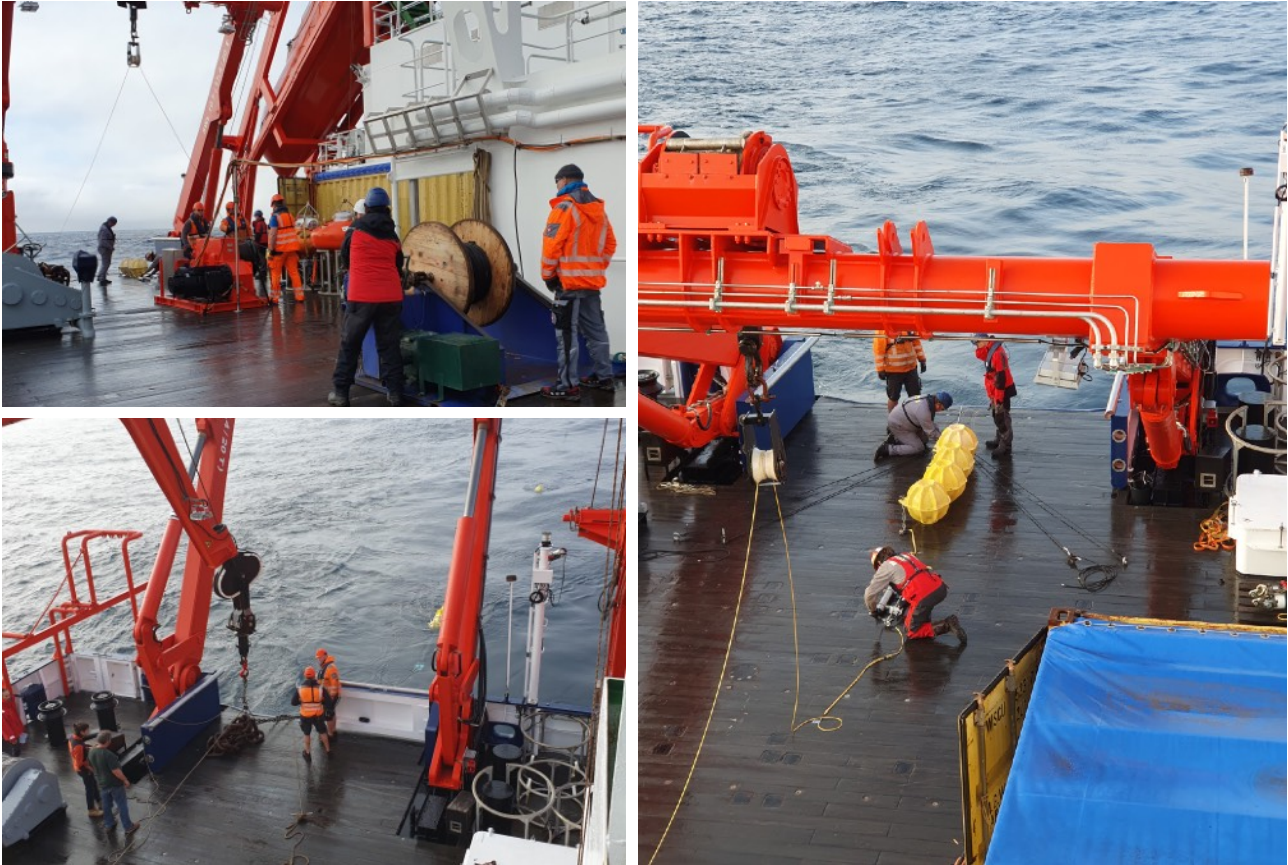


The past week of cruise MSM121 began with the deployment of a second mooring array north of Flemish Cap, consisting of four moorings with lengths between 500 and 3500 meters. Each mooring has a large top buoy containing an upward-looking ADCP that measures the current velocities at different depths between the instrument and the water surface. The other instruments in the moorings are acoustic current meters and so-called MicroCATs, which measure the temperature and conductivity of the seawater. First, the longest of the moorings (FC4) was deployed on Sunday afternoon. Due to the rough weather of the previous days, the swell was still high, but there were no problems during the deployment. On Monday, the weather had completely calmed down and so we were able to deploy three more moorings on the same day (FC3, FC2, FC1). Finally, the last mooring of our cruise was then deployed in Flemish Pass the following morning. So, despite the initial lack of anchor weights, for which we were only able to get replacements by making a short stopover in St. John's, Newfoundland, all moorings planned for this cruise were successfully deployed. These moorings will now measure for two years the Deep Western Boundary Current upstream (north of Flemish Cap, FC), inside (Fleimish Pass, PASS), and downstream (Grand Banks, GB) of the North Atlantic "transition zone" that separates the subpolar and subtropical gyres.

After a transit to the work area south of the Flemish Cap, we have continued the deployment of the inverted echo sounder array on October 11. We were also able to use this last day of scientific



Left: Moorings arrays and PIES deployed during MSM121. Right: Schematic representation of the mooring array north of Flemish Cap. The colored contours show the expected flow velocities. Symbols indicate the different instruments (Figures: Damien Desbruyères).



Deployment of moorings on MSM121 (photos: Dagmar Hainbucher).

work for a CTD Tow-yo, where the CTD is left in the water for an extended period of time while it is alternately raised and lowered over the desired depth range (yo-yo). The ship thereby moves forward at very slow speed, typically 0.5 kn. The advantage is a much higher horizontal data coverage, while also saving time. The Tow-yo station started at 12:00 LT and ended at 23:00 LT. During this period 13 CTD cast were made that covered an interesting part of the continental slope east of the Flemish Cap.

The scientific programme ended in the early morning of October 12 with the deployment of the last inverted echo sounder. A total of 14 instruments is now in the water south of Flemish Cap to measure Deep Western Boundary Current variability and possible interactions with the North Atlantic Current. The inverted echo sounder array will also stay in the water for a period of two years. On the following transit to Ponta Delgada we had the opportunity to recover the telemetry buoy of a GEOMAR mooring, that had torn off in the central Labrador Sea in December 2022. On Saturday evening, we were able to take advantage of the calm weather for a final barbecue on deck. On Monday morning we will arrive in Ponta Delgada. Already now we would like to thank Captain Ralf Schmidt and the whole crew of MARIA S. MERIAN for the excellent cooperation during this cruise.

Best wishes from the scientific party of MSM121 to all families, friends, and colleagues on shore.

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