

ANT XXIII/3 Weekly Report No. 3
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On our way back from Antarctica we carried out an intensive succession of CTD stations very close to each other (9 nm on average) along the satellite ground track again. Thus we repeated the same section as 10 days before, which is the time interval between two satellite passes. This repetition will provide an unprecedented insight into the variability at small time scales in the transport and water column structure and help understanding the satellite observations.

The light tracer group needing less vertical resolution than on the way to Antarctica, we could arrange to leave 11 bottles (out of 22) from the rosette to the always-thirsty Geotraces people. Some water was also gathered for the fish group to change the water and keep the living fish in good conditions. The scientists involved previously with mooring work joined the CTD shifts and water sample analysis thus making the rapid succession of CTD bearable and even providing people with a little spare time to enjoy life on board. So all the scientists were happy.

LADCP continued working properly after we changed the cable. The preliminary data, horizontal velocities, have small error bar estimates thanks to the bottom tracking. To obtain the bottom tracking the CTD/Rosette/LADCP has to come as close as 100 m to the bottom. This was achieved all the time. However, on two occasions the instrument touched the bottom because the depth sounder on board was indicating a larger depth than reality due to the change of sound velocity in cold and fresh water. Fortunately there was no damage to the instrument but the cable termination had to be redone. On Polarstern the crew is responsible for the termination and does it swiftly.

The Drake Passage section crosses the Yaghan basin to the north and the Ona Basin to the south. The depth in each basin varies between 3500 and 4200 m. The basins are separated by the West Scotia Ridge the top of which is less than 2000 m from the sea surface.

An active mixing takes place in the Ona Basin and at several stations the temperature, salinity, oxygen and velocity structures had dramatically changed in 10 days.

We carried out two extra stations to explore the flow near the West Scotia Rise where we had encountered velocities higher than 30 cm/s at 3500 m on the way in. The two extra stations will permit to compute horizontal pressure gradient in two directions and help understand the physics behind those intensified deep currents.

The major fronts (Subantarctic Front and Polar Front) which are located in the Yaghan Basin also displayed a large variability in 10 days. The horizontal velocity at the Polar Front nearly doubled in less than 10 days.

As we finished the section on February 6th, shortly after 8 pm the sun illuminated Tierra de Fuego, Isla of Estado and Lemaire Strait. We completed our last station. We celebrated it enjoying the last rosette campari-

orange tradition on board Polarstern. For the last cast, one or two 12 l bottles from the rosette sampler are filled with campari orange. Then the CTD does its profile. When it comes back on deck the campari orange is at the correct temperature and to everyone a glass is offered. A nice tradition we shall import on French ships.

A rapid status: smooth deployment of 10 moorings, 105 CTD/LADCP/rosette stations down to the bottom with tracers, 15 Geotraces stations, 52 GPS buoy stations carried out, more than 200 fish caught.

A highly successful cruise, a lot more done than expected.

On Tuesday morning the kind farewell party organised by the Master gave us a nice excuse to interrupt our packing, cleaning, reporting... By the afternoon thanks again to the organisation and efficiency of the crew everything was packed.

We very much appreciated the unique ship/AWI organisation based on experience. This organisation anticipates, prevents any problems and allows smooth progress.

So far the fish are doing well even though they got a big shock in changing from 500 m depth pressure to the surface. There have been only three casualties: the octopus and two fish.

The ultimate evening with the entrance in Magellan Strait under a gorgeous peaceful sunset was another magic moment.

This cruise has been a unique unforgettable experience and scientists leave the crew and ship with sadness.

Scientists and crew send their best wishes to everybody at home.

Christine Provost