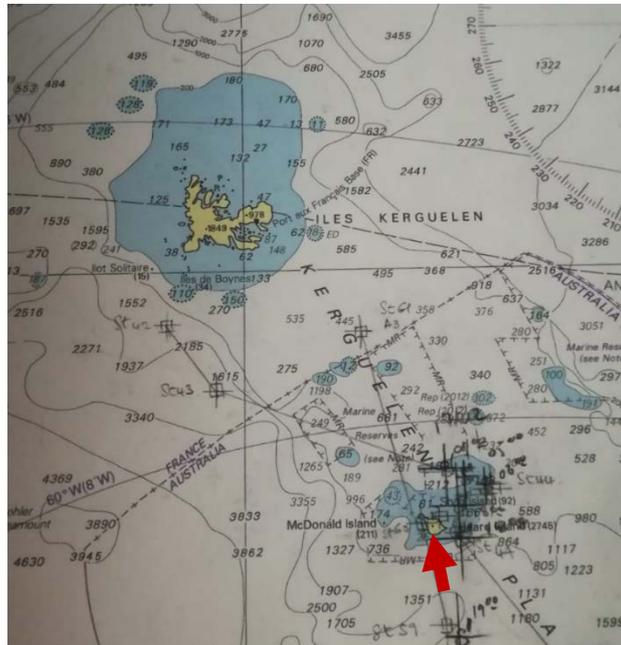


Heard Island!

Hi all!

With a little bit more of delay, here is a small document which will hopefully show you how beautiful Heard Island was. Heard is an Australian volcanic island, in the south of Kerguelen, which is French. So, yes yes there is a border between France and Australia!! :)



We were near the island because we wanted to be protected from a storm.

There was up to 90 knots of winds and waves as high as 12m. On the picture below, we can see the wind when the picture has been taken (50.2 knots) and the maximum wind measured during the day (90.2 knots). The ocean was white and the sea foam (écume de mer in french, I am not sure about the translation) was reaching the windows of the bridge, at 17m above the sea level! Lucky we have windscreen wipers (not sure about the translation of that word neither, oopsy!).



It was impossible to sample in such conditions. We therefore went behind the island to get protected. It was the only solution to take deploy our instruments and to not only wait in front of the wind and the waves until the storm calms down. There, the wind was still super strong but we were protected from the waves. It was so beautiful to see the foam from the waves fuming above the sea: it was making many small rainbows. Hopefully you can guess one on the picture below.



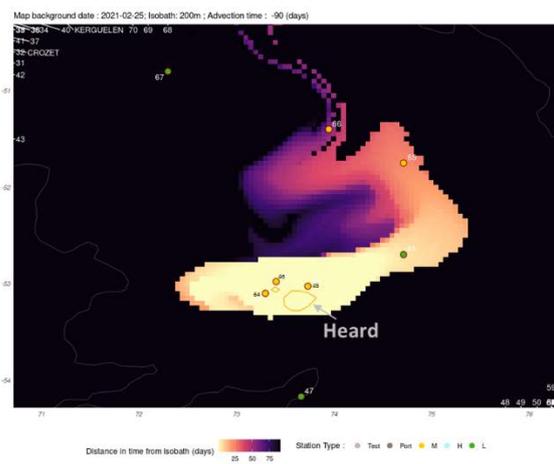
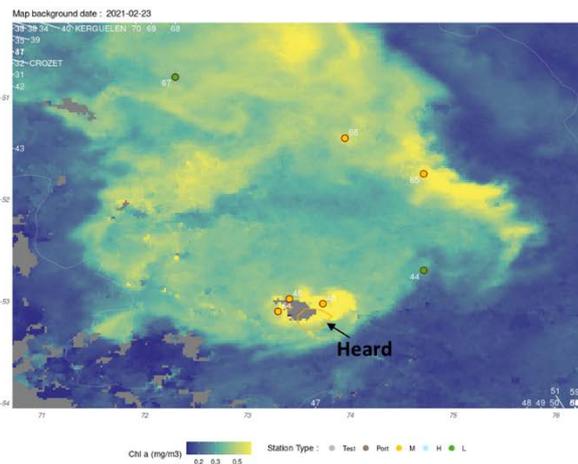
And again, thanks to this storm, we had the chance to see the cliffs of Heard Island from very close by. From the grassy cliff on a side to the icy cliff on another side, with on top, the volcanic mount (called Big Ben!). SO BEAUTIFUL!



We shared our time between ‘magic/touristic’ moments (and I assure you we all enjoyed it!) and working moments. Despite the strong wind, we were able to deploy the rosettes with their bottles (below: picture of the left), the in-situ pumps and biologists like Hugo continued working on their incubations (below: picture of the right).



Similarly to other sub-Antarctic islands (see the document on Crozet island and the fertilisation), it has been shown that Heard Island also fertilises the surrounding waters. On the left map below, we can see the concentrations of chlorophyll-a, a pigment from phytoplankton (high quantities in yellow): the phytoplankton grows at proximity but also further east and north-east from the island (up to stations 44, 65 and 66). This phytoplankton can grow as it has enough nutrients.



The 2nd map, on the right, shows the time (number of days) since a water parcel was in contact with Heard Island (short time in yellow). For example, the water at respectively stations 44, 65 and 66 has been in contact with the island approximately 25, 35 and 75 days before. This confirms that nutrients taken by phytoplankton in these areas come from the island. These great maps have been produced by Sara (a super oceanographer working on currents on board - you already saw her on a picture from a previous document).

The phytoplankton in the north-east from the island is growing thanks to the advection of nutrients. These latter are released into the water after erosion of the island led by the glacier and the strong rainy storms there. Currents transport the chemical elements towards the north-east and this is the origin of the fertilisation and of the phytoplankton growth. The SWINGS cruise is the first one studying the plume from Heard island (!) and it will be a good opportunity to compare the impact of the different islands on the natural ocean fertilisation. We already noticed a difference between Heard Island and the other sub-Antarctic islands: the sediments from Heard are a lot blacker than others, which are grey ish or tend to even be white or green. We still need to understand why.



**Manu is happy after recovering the successful sediment corer!!*



In brief, Heard has already been fantastic and will let us beautiful memories :) The scientific results are also promising!



