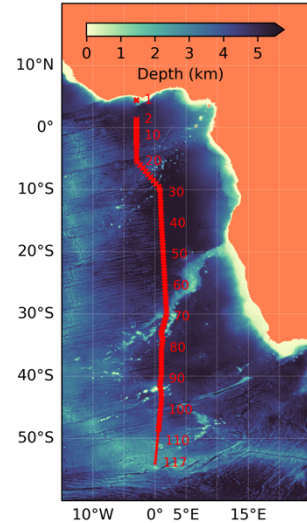


A13.5 2024 Cruise Update: Part 6 of 7

We passed through the “Roaring Forties” but are hitting rougher weather, which has caused us to either halt operations or transit slower while sampling to ensure safety on the main deck. We still expect to make it south of 50°S but will have to cut some stations from the end. Hoping to get as far as we can over the next two days! Stats since last update:

Stations completed: 24 (total: 106/117)
Core Argo deployed: 0 (total: 0/4)
BGC Argo deployed: 1 (total: 10/11)
EM-Apex deployed: 1 (total: 5/7)
SVP Drifters deployed: 4 (total: 12/18)



Completed (x's) and future (dots) stations.

This past week has seen us most of the way through the “Roaring Forties”, as we near the end of our voyage. We are currently at 48°30'S and hoping to get as close to our desired end point of 54°S as we can. March 16th will be our last full day of CTD stations, although we may be able to work through the early hours of March 17th.

We hit some rough weather on Tuesday, causing operations to stop for about 16 hours while we rode out winds reaching 40 knots, as well as the high sea states that come with that sort of weather. We have also been sailing through rougher weather during sampling after each CTD cast. The *Langseth* doesn't have a sheltered bay to sample from, so we have stationed the CTD as far inboard from the deck as we can. While this normally works well enough, we have had some significant waves come over the side of the boat during the transit periods while we are sampling, including one large wave on Wednesday, March 13th which swept a few sampling bottles over the side! Thankfully nobody was hurt, and we were able to recover quickly from the loss of a few samples. However, in order to mitigate the chance of this happening again, we are transiting slower between stations while in rough weather, which adds time onto each transit.



Screen shot from the ship's video camera just before and during the "monster wave" while sampling Station 101 on March 13th. The CTD is located 10-15 feet inboard from the bottom of these images.

Today (Thursday, Mar. 14th) we woke up to icebergs! These were amazing to see, but also pose hazards to the ship, especially at night. We will be reducing ship speed during nighttime transits so that the bridge has adequate time to recognize and respond to potential icebergs in our path. Another complicating factor is fog in the morning, which when combined with the danger of icebergs may reduce our speed further.

The combination of the 16 hour delay due to rough seas and transiting slower between stations means we will almost certainly not make it through 117 stations as planned. We have two options to consider. The first is to increase the spacing between each station, such that we will still make it to 54°S with fewer stations; the second is keep our spacing intervals at 1/2° of latitude and end north of our intended target. While it is tempting to try and go as far south as possible, increasing our station spacing doesn't give us back much extra time – for each station we gain only the amount of time it takes to do that station, about 2-3 hours. However, if we stop short of our destination, for each station we eliminate we gain 8-9 hours of extra time: 2-3 for the station itself, 3+ for the transit to the station, and 3+ hours of final transit time to Cape Town. We are therefore planning on keeping our 1/2° station spacing as long as we can, and eliminating stations from the end of the line as needed. Depending on weather the next few days, our last station is expected to be somewhere between 51-53°S.

Next week we will finish sampling and start our journey back to land! It is a 6.5 day steam to Cape Town, South Africa. The first three days we will be doing underway samples, and after that – weather permitting – we will start packing up as much as we can, as well as finish samples, data processing, and cruise reports.

- Zach and Jesse

Mar. 14, 2024



Iceberg near 48°30'S, 0°30'E. Photo by Max Pacatte (UCSB).