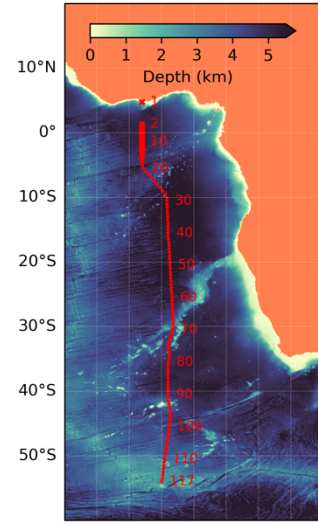


A13.5 2024 Cruise Update: Part 2 of 7

This week we ran into a few snags, both legal and mechanical, but have persevered and are back to doing stations. Stats since last update:

Stations completed: 17 (total: 17/117)
Stations skipped: 12
Core Argo deployed: 0 (total: 0/4)
Deep Argo deployed: 0 (total: 0/1)
BGC Argo deployed: 2 (total: 2/11)
EM-Apex deployed: 1 (total: 1/7)
SVP Drifters deployed: 2 (total: 2/18)



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

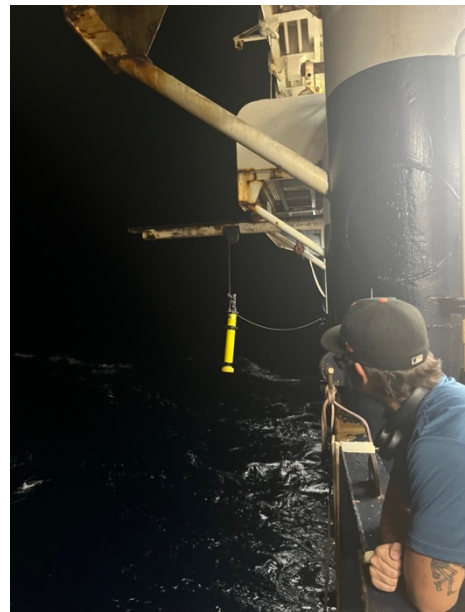
This past week has been a little bit topsy-turvy, and not just because we've entered the Southern Hemisphere. We started out the week in the Ghanaian Exclusive Economic Zone (EEZ) at our first station, which at 36 nautical miles away and approximately 1800 m deep was actually the third closest to the coastline of our planned schedule. We decided to start farther away as a security precaution, so that our station closest to the Ghanaian coast was in the early morning (rather than at midnight) and not until after we had finetuned our CTD procedures with a few more casts. Cast 1 went well and we proceeded north to our second station, at about 25 nautical miles from the coast and 1000 m deep.

As we came on station, we were challenged by a Ghanaian Navy ship as to our intentions in their waters. We had previously received permission from the Ghana Ministry of Foreign Affairs to conduct marine scientific research in their waters, but came to learn that their Navy had not been informed of the status of our request. We also, belatedly, realized that our ship's course - and possibly one of our stations - was within a recently created security zone near an oil field that is new since the previous full occupation of A13.5 in 2010. After 18 hours of limbo and with a lot of assistance from the U.S. State Department and the U.S. Embassy in Ghana, we agreed to suspend all science operations and were escorted out of Ghana's EEZ by the Navy vessel. Our first 13 planned stations were all within the Ghanaian EEZ; we were able to finish one of them but are currently seeking final guidance as to whether the data from that station can be made public. The second station from this cruise, at 1°20'N, may therefore become the northern terminus in the final dataset. Our final number of expected casts of this cruise is now 117 (down 12 from 129). We will reevaluate that number as we get further into the cruise and also further southward into rougher weather. Our expected southern terminus is 54°S, but in contrast to most GO-SHIP lines we do not end at a coast. So, we have some flexibility to end either farther north or south, depending on available time and sea state.

The next few days and 9 stations went well, and we crossed the equator at 3°W on Sunday (2/11) afternoon. We had and solved (mostly) our fair share of issues during this time, the most pernicious of which is adequate cooling of laboratory spaces in the equatorial heat – especially important when measuring gasses that come out of solution when water samples warm up! All of us are greatly looking forward to the cooler temperatures as we slowly move out of the equatorial zone.

On Station 11 (1°40'S), we had some connectivity issues between the primary winch cable and our CTD rosette which presented as the inability to close bottles with no interruption of real-time data. We regularly subject this equipment to pressures of over 500 atmospheres, and over the course of a 52-day cruise expect these sorts of issues to occur at least a few times. Standard procedure is to shift operations to the ship's secondary winch and cable when these connectivity issues arise, and troubleshoot during steams between casts to save time. Unfortunately, at about 400 m depth on our first cast of the cruise with the secondary winch, the ship ran into significant issues with the winch itself. After several hours we managed to get the CTD back on deck, and our CTD team pulled out another herculean effort (see last week's update) to quickly fix and prepare the primary cable for an ultimately successful cast. We are now back to full operations on the primary winch and cable, but are currently operating without a functional secondary winch. Hopefully we will be able to share a resolution of this issue in next week's update!

Along with our CTD stations, we are also deploying a smorgasbord of floats and drifters. This past week we deployed our first five: two BGC Argo floats (data from first [here](#)), an EM-Apex float, and two SVP drifters. Due to limited space on the main deck and labs, these are all stored on the second level ("streamer") deck. Our first deployment, a BGC-Argo float, was deployed by hand using a rope from the streamer deck. While the deployment ultimately went well, the height above water (about 20 ft) led to concern about potential for floats to bump the side of the ship in rougher waters during deployment. For the next three deployments, we moved location down to the main deck and intend to deploy the rest of the assets from there for the rest of the cruise.



Deploying an EM-Apex float off the main deck, with Max Pacatte (UCSB) watching.

Next week should see us in normal operational mode, transiting ever further into the Southern Hemisphere. Hoping for a continuation of the good weather we've been having thus far!