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# I09N 2025 CRUISE WEEKLY REPORT

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With the issues left behind and the beautiful weather, this past week has been very productive. The most productive one so far. We occupied **19 stations** (stations 32 to 50) and deployed **seven** surface drifters, **six** Argo floats, **two** SQUID (EM-APEX) floats, and **one** BGC. Of the **19 stations**, six were combined with Bio and took place during daylight, typically the first or second cast of the day. We even did an independent Bio cast (0 to 1000 m) at the BGC deployment station to meet the water demand!



Second BGC deployment by Guillaume Linigier (MBARI). Photo: April 5, 2025. Allen Smith (ODF/Scripps)

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**What changed since our last weekly report?** Besides the calm seas and light winds (which helped a lot), the R/V Thompson has fixed the z-drive and bow thruster problems (at least for now). With that, we can go faster between stations and deploy the CTD package as soon as we arrive at stations. Kudos to the R/V Thompson crew!

The only problem that continues to bother us is the altimeter malfunction, which makes approaching the ocean bottom harder than usual. We have swapped altimeters, changed cables, checked configurations, etc., but still, we don't have a reliable measurement of the bottom's location. In the last week, the altimeter failed us in most stations, but it miraculously started to behave in the last two. We have no clue what is happening. Considering all stations since the beginning of the cruise, the altimeter failed in 45% of them so far.

LADCP bottom track information indicates that the package had been too close to the bottom at several stations where the altimeter failed to function. Subsequent statistical analysis has shown that the multibeam tends to report a deeper bottom than what is observed by the LADCP. As a precaution, we now stop 30 m above the multibeam reading when the bottom is flat and keep more distance from the bottom over complex topography. This approach has proven effective when the altimeter is not operational. We still have the CTD package!!!

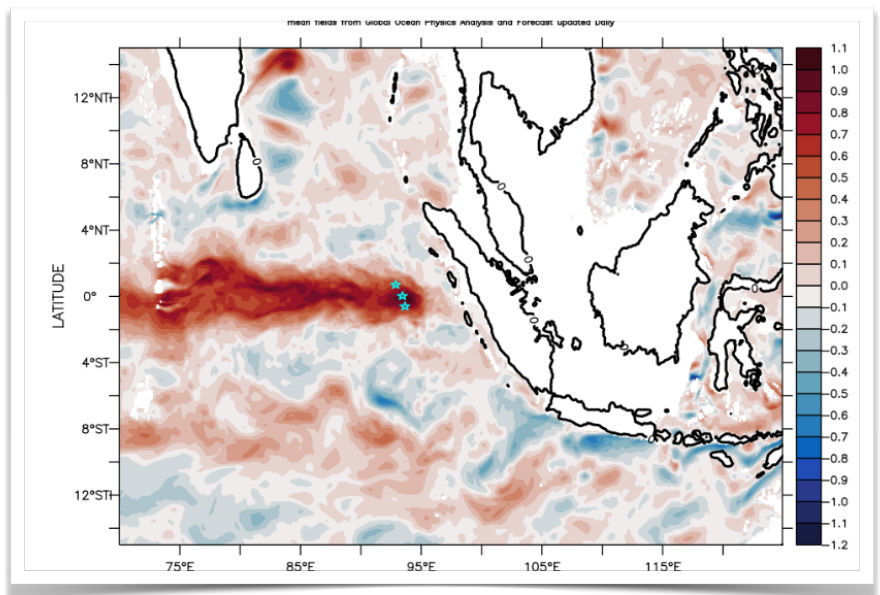
## Great Week

Things went so well this week that we added two stations back to the plan, which now has 90 stations. **This means we have completed more than half of the planned stations (55.6%).** If fair winds and following seas continue, we may add a few more stations back. Right now, our calculation indicates that we could occupy all nine stations at Bangladesh EEZ (at the northern end of I09N) as initially planned and arrive in Phuket, Thailand, by the end of April 26. Our deadline is April 27, 0800 local time. If we can do these northern stations, we will have occupied 94 stations in total. It's not bad if we think about how things started. But we should not put the cart before the horse ... This is a decision for another day.

The stations we added back are near the Equator (at about 0.6°S and 0°). Numerical model forecasts from CMEMS Operational Mercator indicate that the near-surface eastward **Wyrki Jet** along the Equator is developed, and our track will cross its core in the eastern basin, as seen in the map. Wyrki Jets occur during boreal spring (April-May) and fall (October-November) within  $\pm 2^\circ$  of the Equator and are important features in the transport of heat and mass between the western and eastern Indian Ocean.

The map shows the zonal current (m/s) at 110 m level on April 11 (our crossing date). In the model, the Wyrki Jets are strongest at this depth.

At the time of this writing, we are on station number 51, located at 0.34° S, the most southern cyan star on the map. The previous station has already revealed a bit of the Wyrki Jet, with an intensity of about 0.5 m/s and a core at 124 m. The model, however, suggests the jet can be twice as strong. We will see at this and the following stations.



Zonal Velocity (m/s) at 110 m. Forecast for April 11, 2025. Cyan stars show three our equatorial stations

Speaking of the Equator, many of us will cross it for the first time. As tradition dictates, we will have a line-crossing ceremony, and the science party is very involved in this. As part of that, all polliwogs (new sailors) have been taking care of individually marked eggs and will present a talent during the ceremony. Since this began, talking about 'eggs' has become a must. Eggs have been broken, lost, and even stolen! Polliwogs are getting creative in making artifacts to protect their eggs and keep them safe; even a crochet cover has been created. However, as measurements take precedence, the line-crossing ceremony has been postponed until tomorrow (slightly after the equator crossing) to avoid interfering with deployment and sampling. King Neptune granted.

## I09N Blog

If you haven't had a chance yet, visit the I09N Blog: <https://www.go-bgc.org/expedition-logs/indian-ocean-2025> ! We have three posts and more to come (weekly updates). You will have the opportunity to know more about our team that is making the I09N possible :)



[The amazing shrinking styrofoam cup: a deep-sea physics adventure.](#) **Ilmar Leimann** is a PhD Candidate at the University of Bremen, Germany, working on internal wave energy dissipation. On the I09N, he is responsible for the LADCP.



[Roxanne Mina reflects on Week 1 of her first research cruise experience.](#) **Roxanne Mina** is a recent graduate from California State University Maritime Academy and an incoming master's student at the University of South Florida;



[A day in the life of a CTD Watchstander](#) from a modeler's perspective. **Genevieve Clow** is a PhD candidate at the University of Colorado Boulder in the Department of Atmospheric and Oceanic Sciences;

Best from almost the Equator,

Viviane Menezes (Chief Scientist)

Leah Chomiak (co-chief Scientist)