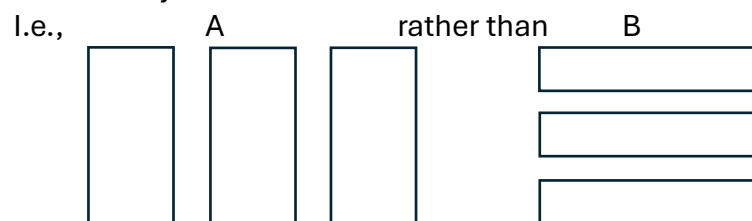
Schulz et al. present a comprehensive data set of hydrography and nitrate and nitrite (concentrations and isotopes) for a single transect spanning the Equatorial Indian Ocean into the central Bay of Bengal (BoB). The hydrography data are then used to define the water masses and their vertical and regional distributions. The nitrate/nitrite data are used to investigate the potential for loss of fixed nitrogen in the BoB.

The main conclusions are that the two regions are essentially separate with little mixing, the general circulation controls the distribution of N and N isotopes at depths greater than 300m, and that the N isotopes indicate loss of fixed N via anammox somewhere in the depth interval of approximately 100 – 300 m. Overall the data support these conclusions and the idea that some fixed N loss does occur in the BoB, even though it is not absolutely anoxic.

Specific queries:

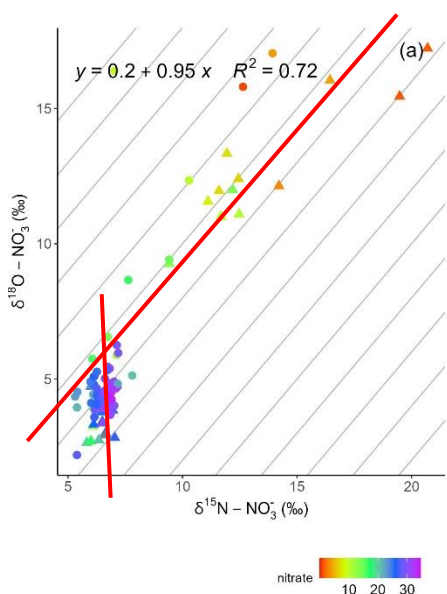
L170: The aberrant data are from the first, most southern, station. Is there any logistical/practical reason that they might be different? Problem with the sampling? It is indeed striking how different those data are, since everything else is quite consistent with water mass identity and an abrupt hydrological boundary seems unlikely.

Section 3.1. I find myself wanting to see depth profiles of PO4 concentration. PO4 concentration is essential for the Ndef calculation so it would be good to see how variable it is. Why not include it in the profile data shown in Figure 3? We are given the value for the average (N/P)deep but not the actual PO4 distributions. I think those data would be appropriate to include in a paper that presents such a comprehensive basic data set.

Figure 3. This is an unusual aspect ratio for depth profiles. I would much rather see the more usual elongated Z axis and narrower X axis. That way, it would be much easier to compare the depths of important features, especially if several of the profiles were lined up horizontally.
I.e.,          A                rather than      B

Section 3.4. What exactly is being correlated here? The text says the isotope data were not correlated with the water mass variables. With at 2 or 3 water mass variables and 2 isotope variables for each region, there are at least 4 possible correlations but the text lists two for each region. So we can't tell exactly what correlation analysis is being reported. More importantly, it would be very useful to see the plots of $\delta15N$ and $\delta18O$ against those water mass variables (especially sigma-t, with labels for water mass identity). That would make it

possible for the reader to see how the strength of the correlations varies with depth interval – which is described in the text but would be much more compelling if we could see the plots.

L300:  It looks to me like there is a significant Ndef deeper than 100m in the EEIO in Fig 3.  Is Ndef defined as Ndef less than zero?  There are many blue points deeper than 100m in both 3.i and 3.j.

L311:  I understand that the 1:1 relationship between $\delta$15N and $\delta$18O in Figure 6.a indicates NO3 assimilation in the surface water.  The correlation is made using only surface samples. Since the color coding in the figure is by nitrate, not depth, it's not entirely obvious which points in the figure were included in the correlation.  AND, the tail of that distribution, the portion NOT included in the correlation, also tells a story.  Changing  $\delta$15N with no change in $\delta$18O indicates nitrification (with partial nitrate assimilation) (Fawcett et al. 2015), which the authors address later without referring to these data.  I suggest discussing this feature more completely and including two regression lines in Figure 6.a.  One for the surface points and one for the deep points.  Something like this:

Minor comments:

L42: Bristol et al. (2017) is not an appropriate citation for the calculation of the volume of OMZs. Bristol et al. (2017) simply cited Codispoti et al. 2001 and that's what these authors should do. Or upgrade their citation to DeVries et al. 2012, who refined the estimate to about 30% (rather than 20 – 40%).

L123: Please clarify what you mean by drying filters for two nights. Does that mean 48 hr?

L165: please specify that the ammonium concentration data are not shown. The reader might look for them, expecting to see them in a supplemental figure since they are mentioned here.

Figure 4, Section 3.3. There appears to be an interesting feature in panels a and b, looks like maybe an eddy? Stations 18 - 27 where the is a feature defined by anomalously high O2? Worth a mention?

L229: "Further, *other* studies"

L230: "The ASHSW *spreads* eastward…"

L235: "…the BOB *is* attributed…"

L320: …deposition that *is reflected* in low…."

L365: "…we *conclude* that the main differences…"

L380: "Anammox *bacteria* are known…"

Figure 7. This is a nice summary figure. I don't see any purple points/nitrite data, although nitrite is included in the caption.

Codispoti, L. A. et al. 2001. The oceanic fixed nitrogen and nitrous oxide budgets: Moving targets as we enter the anthropocene. Scientia Marina 65, 85–105

DeVries, T., Deutsch, C., Primeau, F., Chang, B., and Devol, A. 2012. Global rates of water-column denitrification derived from nitrogen gas measurements. Nature Geo 5 | AUGUST 2012 | www.nature.com/naturegeoscience.

Fawcett, S. E., B. B. Ward, M. W. Lomas, D. M. Sigman. 2015. Vertical decoupling of nitrate assimilation and nitrification in the Sargasso Sea. *Deep-Sea Research Part I* 103:64-72