We thank the reviewer for their constructive and helpful comments and suggestions about our paper. Following, we reply to each issue individually, and explain the changes we will make to the revised manuscript to meet the reviewer's criticism. Reviewer comments are written in bold italics; our answers are kept in plain font.

General comments:

The manuscript looks at the nitrogen cycling in the Bay of Bengal as well as East Equatorial Indian Ocean. The methodologies are detailed, the data well presented and the discussion follows a logical pathway.

Motivation:

The authors make a good case of why the Bay of Bengal OMZ is important to study. It is not clear, however, why they chose EEIO. Please include a section about why you study this region.

We focus on the EEIO because the Indian Ocean as a whole remains understudied compared to other major ocean basins (Harms et al., 2019; Ummenhofer and Hood, 2024). Observational data from nitrate stable isotopes from the EEIO are still scarce. Additionally, comparing isotope signatures between the BoB and EEIO enables us to explore the process differences between the oxygenated waters of the EEIO and the OMZ in the BoB. We will elaborate on these motivations in the revised version of our manuscript.

Specific comments:

L21: "Below". Do the authors mean "subsurface waters"?

Yes, we will change this part according to the reviewer's suggestions.

L27: Please change to "unavailable for most organisms"

We will change that part of the manuscript according to the reviewer's suggestion.

L31: Denitrification may also be autotrophic. Please restructure this sentence.

We will change the sentence to: "Denitrification is a stepwise dissimilatory process, which can be either heterotrophic or autotrophic, that reduces nitrate (NO_3^-) to N_2 via nitrite (NO_2^-), nitric oxide (NO) and nitrous oxide (N_2O)."

L41: Define "low oxygen" and "anoxic"

In L43-45 we elaborate on the oxygen limits of anammox and denitrification. We will rephrase this section in the revised to manuscript for .... e.g. "Nitrogen loss processes are inhibited by the presence of oxygen, which is why oxygen minimum zones (OMZs, with oxygen concentrations < 20 µM) account for 30 % of fixed nitrogen loss (DeVries et al., 2012), despite only covering only 1 % of the global ocean. Anammox has in some cases..."

Please note that we adapted the estimated nitrogen loss from OMZs and reference as a response to a comment of reviewer #1.

L43&44: Add references for "...oxygen concentrations upto 20µM" and "...concentrations of 6µM"

We cited the corresponding references in line 47. However, we agree with the reviewer that they should appear directly after the concentration values, and we will revise the manuscript accordingly.

L59: "dual": please mention N and O in parentheses.

We will add "(nitrogen and oxygen)" here.

L87: "large amount of freshwater input": a number would be helpful

We will add the freshwater runoff from the major rivers to the Bay of Bengal of 1.6×10^{12} m^3 yr^{-1} (Sarma et al., 2016) to the revised manuscript.

Figure 2: I would recommend adding BoB and EEIO in the figures too.

We will add labels for BoB and EEIO to figure 2.

L124: How was particulate nitrogen measures? Did the authors scrape material from the filter paper or pellets or any other way?

For the measurement of particulate nitrogen (TN), we used a laboratory hole puncher to extract defined pieces from the filter (punch area: 20.43 mm^2). These punched-out filter pieces were then analyzed directly, without scraping material from the filter or using pellets. We will add this information to the revised manuscript.

L133-134 : The international standards are reported for NO3- and not Nox. I suggest writing NO3- . Same goes for the samples: since the authors have ensured nitrite removal.

Thanks to the reviewer for spotting this, we will change NO_x to NO_3^- in the revised manuscript.

L165: Where is the figure for ammonium concentrations?

We will add plots showing the ammonium concentrations to figure 3 in the revised manuscript.

L177: "heaviest isotope signature....upto 13.9‰ " yet Fig 3e shows δ15N>20‰

Thanks for catching the mistake, we will correct L177 in the revised manuscript.

Figure 3: Please keep the labels identical for all . (a)-(j) are on the bottom right while (k)-(n) on bottom left.

We will change the figure according to the suggestion of the reviewer.

L201: It is not clear what is a "strong oxygen minimum zone"?

We will remove the "strong" and change the sentence to: "North of 5°N a oxygen minimum zone existed in 100 to 750 m with oxygen concentrations < 20 µmol kg^{-1}, reaching minimum values below the detection limit of 3 µmol kg^{-1} in 120 to 220 m water depth."

L340: Is the calculation of δ15N of nitrite shown?

We calculated δ^{15}N-NO_2^- using the following formula, which is also shown in L158.

$$\delta^{15}NO_2^- = \frac{\delta^{15}NO_x^- \times c(NO_x^-) - \delta^{15}NO_3^- \times c(NO_3^-)}{c(NO_2^-)}$$

We decided not to present the calculated values in detail in the manuscript, because due to low nitrite concentrations in the water column, the calculation is prone to errors, which we also elaborated in the manuscript (L342) and only discuss the general trend of the data.

L367: I would like to see the authors discuss a few more Indian Ocean studies. For e.g. how distinct is it to the Arabian Sea OMZ?

We appreciate the reviewer's suggestion to broaden the discussion by incorporating more studies from the Indian Ocean. While a comprehensive comparison is beyond the scope of our current manuscript, we agree that including additional references from the Arabian Sea OMZ will enhance the context and depth of our current discussion. Accordingly, we will revise L367 to incorporate findings from Martin and Casciotti (2017), who, in line with Gaye et al. (2013), reported deviations of $\Delta(15, 18)$ indicative of coexistence of coupled anaerobic and aerobic nitrogen transformation processes. We will also include a short paragraph highlighting the differences of nitrate isotopic enrichment in the Arabian Sea OMZ (Gaye et al., 2013; Martin and Casciotti, 2017; Naqvi et al., 1998) and Bay of Bengal OMZ in the beginning of section 4.2.3.

Technical corrections:

L98: onboard R/V Sonne

Thanks, we will correct "on board" to "onboard".

L124: Dried filters were used "to"

We will add the "to".

L127-132: The authors use the past tense in some sentences and the present tense. I believe the past tense is more appropriate.

We will change everything to past tense.