

Interactive comment on “Contrasting biogeochemistry of nitrogen in the Atlantic and Pacific oxygen minimum zones” by E. Ryabenko et al.

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The replies to the reviewers comments are in one point not quite satisfying and need to be addressed further.

Editor #1 points out that the very low delta 15N-NO₃ values in the Atlantic need an explanation aside from atmospheric deposition. Figure 5 shows app. -4 permill in 50m depth, not in 20m data as the authors state in their reply. This can hardly be a signal from atmospheric deposition. How much N is deposited with dust and in which form? Does this dry deposition deliver significant amounts to surface waters? The authors argue in their reply that remineralised organic matter can also hardly produce these

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values. But this depends strongly on the delta 15N of PON. Had POM been analysed for 15N?

Moreover I was wondering about the calculation of the fractionation factors. The closed-system formulas had been used here, which do not address the horizontal advection. For this reason the modelling approach used by Brandes and Devol (GBC, 2002) should be applied.

Finally one comment; the role of the isotope signature in NO₂ for the overall delta 15N NO₃+NO₂ depends on the percentage of NO₂ on the total, not the absolute concentrations.

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