

## ***Interactive comment on*** “Spatial variation in $N_2$ -fixation rate and diazotroph activity in the Tropical Atlantic” *by* J. P. Montoya et al.

**J. P. Montoya et al.**

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We appreciate the careful review and have made the following changes in our manuscript. Our responses are in bold type below.

Page 1740, line 21: Unless “which” refers to “Trichodesmium”, “occurs” may have to be replaced by “occur”.

**Done**

Page 1742, lines 2-4: You do not have to cite Voss et al. twice in a sentence (i.e. how about changing to “Voss et al. (2004) have used ?E North Atlantic”.

**Done**

Page 1742, line 7: Delete “Voss et al. (2004)”?

**Done**

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Page 1744, line 2: “W” in “Western” to be in lower case?

**Done**

Page 1742, lines 9-12: The zones of highest N\* in Fig. 4(b) could be seen in Fig. 4(a) as well; it is just that in the former case the values are higher due to larger depth integration? Although it is not directly relevant to the paper, does it mean that a larger portion of material produced by N<sub>2</sub>-fixers gets degraded at relatively greater depths (>300 m)?

**An excellent point. The depth horizons were chosen to reflect the middle and bottom of the subtropical mode water in the western basin, which contains a large N\* signal. The difference between the two panels does indeed imply that diazotroph organic matter is remineralized below 300 m. The mechanisms that lead to this differential remineralization are not at all clear but we’ve added text making this point in the "Implications and Conclusions" section.**

Page 1748, lines 5-6: “with an eastward increase “ instead of “with an increase to the eastward”?

**Done**

Page 1750, lines 10-12: The lower integrated N\* just off the upwelling coast off Mauritania due to sedimentary denitrification?

**The low integrated N\* feature actually appears to be offshore of Senegal and a bit south of the Mauritanian upwelling. The river may contribute to the signal, but the relatively broad shelf in that region seems like a likely site for sedimentary denitrification.**

Page 1758, Fig. 2(b): What do the open circles denote?

**These are outliers. We’ve added text to the figure legend to clarify this.**

Page 1760, Fig. 4: The integrated N\* unit does not seem to be right (I think it should be mol/m<sup>2</sup>).

**Thank you for catching this – the units are indeed mol m<sup>-2</sup> and we’ve corrected**

**BGD**

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the labels in Fig. 4.

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Interactive comment on Biogeosciences Discuss., 3, 1739, 2006.

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