

Interactive comment on “Influence of the Amazon River on dissolved and intra-cellular metal concentrations in *Trichodesmium* colonies along the western boundary of the sub-tropical North Atlantic Ocean” by A. Tovar-Sanchez and S. A. Sañudo-Wilhelmy

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We thank Dr Twining for his very valuable comments. Our responses to his inquiries are as follows:

Response to comment 1: Scavenged/extracellular Fe:P ratios (plotted in Fig.3) normalized to P were calculated as: $(\text{Fe:P})_{\text{extra}} = (\text{Fe}_{\text{total}} - \text{Fe}_{\text{intra}})/(\text{P}_{\text{total}} - \text{P}_{\text{intra}})$

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Response to comment 2: Abundances refer to the total quantity (mol/colony).

Response to comment 3: The reason that the intracellular Fe:P ratios are higher than the total cellular ratios is because only a small fraction of the P pool in *Trichodesmium* was found inside the cell (about 20% of the total P) (see Table S1). Therefore, calculated intracellular $\text{Fe}_{\text{intra}}:\text{P}_{\text{intra}}$ values are higher than $\text{Fe}_{\text{total}}:\text{P}_{\text{total}}$ (or scavenged) ratios (Table S1 and Figure 3). Therefore, the axis in Figure 3 is properly labeled.

Response to comment 4: We used the Principal Component analysis as an exploratory tool to try to identify relationships among the different variables that we measured. These relationships are described by several inter-correlated variables that are not necessarily elucidated by simple correlation analysis (Abdi and Williams, 2010). As indicated in the manuscript, results from our PCA are consistent with recent studies that indicate biochemical use of these elements in *Trichodesmium* (e.g. Ni; Ho and Hu 2010). We are aware that the biological use of these elements and their relationship with N-fixation must be validated with experiments in the lab.

Reference - Abdi H. and Williams L.J. Principal component analysis. Wiley Interdisciplinary Reviews: Computational Statistics Volume 2, Issue 4, pages 433–459, July/August 2010

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