Supplementary material

A synoptic assessment of the Amazon River-Ocean Continuum during boreal autumn: from physics to plankton communities and carbon flux

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1. Removal (%) method

The mixing lines for DIN, PO_4^- and SiO_2^- were constructed from Amazon River estuary surface samples (Key et al., 1985; Fox et al. 1986; Ternon et al. 2000; Araujo et al. 2014) and from mean oceanic concentration determined during our cruises, resulting in the following endmembers (Figure 1S):

Ocean water: Salinity>34.9; NO3-=11 μmol l^{-1}; PO_4^-=0.1 μmol l^{-1} and SiO_2^-=1.1 μmol l^{-1}.

River water: Salinity=0; NO3-=16 μmol l^{-1}; PO_4^-=1 μmol l^{-1} and SiO_2^-=142 μmol l^{-1}.

The removals of NO3-, PO_4^- and SiO_2^- in the N region (Amazon River plume) were calculated according to Noriega et al. (2013):

$$\text{Removal}(\%) = \frac{c_0 - c^*}{c_0} \times 100 \quad (1S)$$

where c_0 is the NO3-, PO_4^- or SiO_2^- concentration at zero salinity, and c* is the effective concentration in each station.

Figures

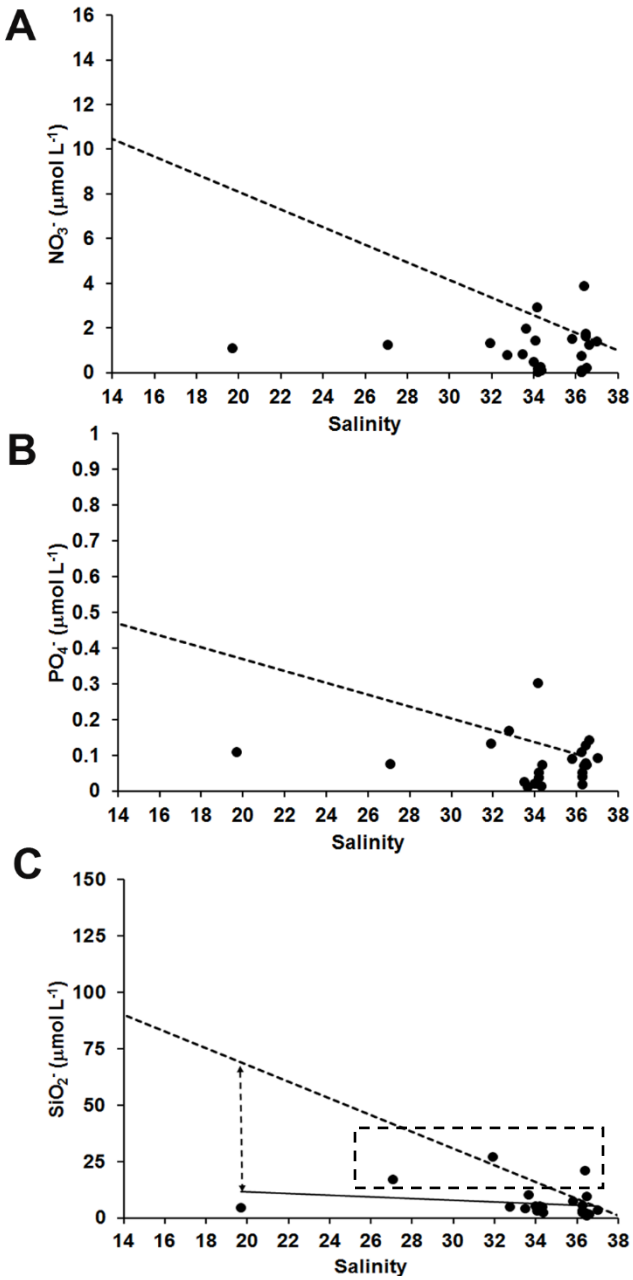

Figure 1S. Plots of NO_3^-, PO_4^-, and SiO_2^- vs salinity (a, b and c, respectively). The dashed line represents the conservative mixing between river and sea waters, whose endmembers are defined in the text. The solid line represents the mixing line obtained in CF3 cruise for SiO_2^-. Vertical dashed line in (c) indicate maximum depression of SiO_2^-. The box indicates where the greatest amount of diatoms occurred (mainly *Fragillaria sp*. and *Pseudo-nitzschia pungens*).

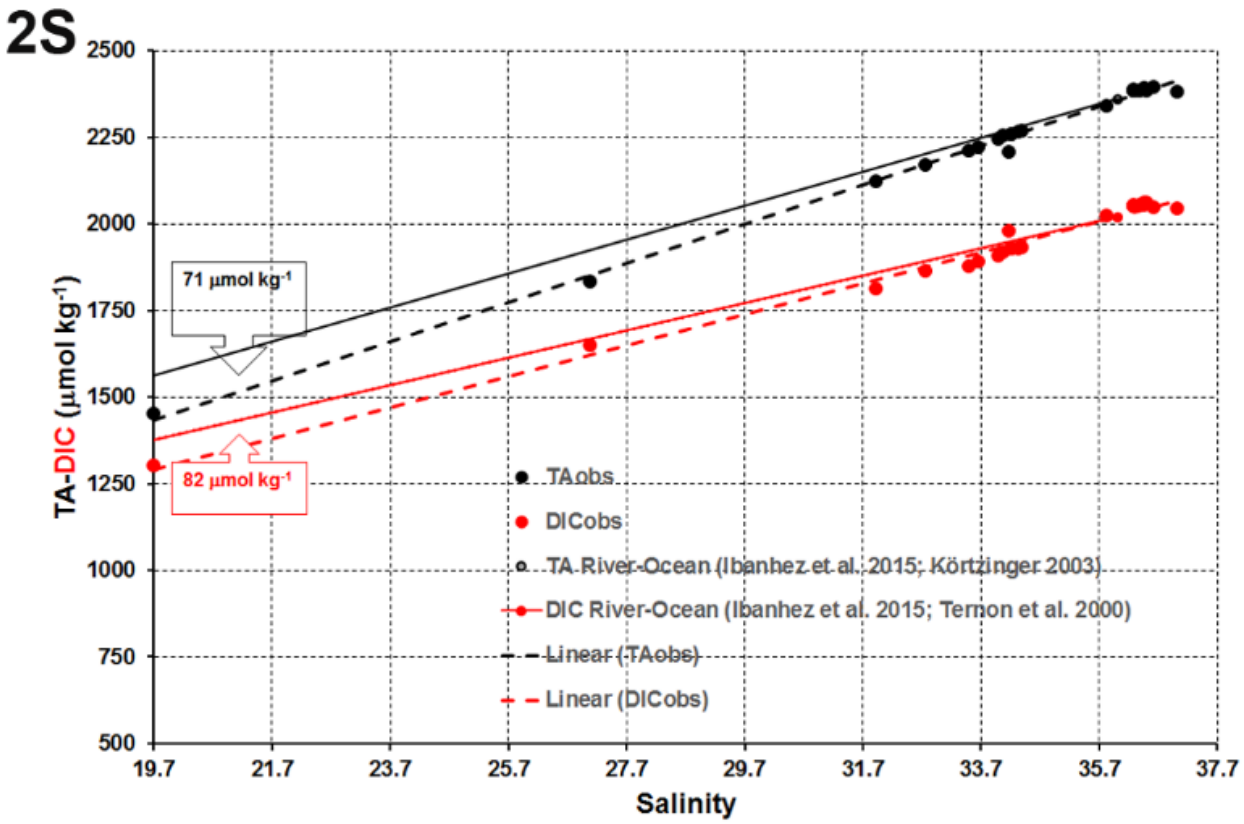

Figure 2S. Plot of TA and DIC vs salinity. The solid line represents the conservative mixing between river and sea waters, whose endmembers are defined in the text. The dashed line represents the mixing line obtained in CF3 cruise.

References

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