

Interactive comment on “Effects of nitrate and phosphate supply on chromophoric and fluorescent dissolved organic matter in the Eastern Tropical North Atlantic: a mesocosm study” by A. N. Loginova et al.

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Autor comments to : Interactive comment by A. N. Loginova, C. Borchard, J. Meyer, H. Hauss, R. Kiko, and A. Engel entitled “Effects of nitrate and phosphate supply on chromophoric and fluorescent dissolved organic matter in the Eastern Tropical North Atlantic: a mesocosm study.” submitted to Biogeosciences and coded bg-2015-181.

1. DIN and DIP should be fully abbreviated AC: DIN and DIP will be defined, when first used (Abstract: Page7210 Line 3, Introduction: Page7214 Line 16). Afterwards,

C5152

abbreviations will be used.

2. “Fluorescence properties of CDOM (FDOM) allow discriminating between different structural CDOM properties” Here, “Fluorescence properties of CDOM (FDOM)” should be replaced by “Fluorescent DOM (FDOM)”. AC: It will be replaced.

3. “where effects of DIP (“Varied P”) and DIN (“Varied N”) supply” is confusing that should be revised AC: This sentence will be changed to: “Here we present results from two mesocosm experiments (“Varied P” and “Varied N”) conducted with a natural plankton community of the ETNA, where effects of DIP and DIN supply on DOM optical properties were studied”.

4. “The bound-to-protein amino acid-like FDOM component” should be replaced as “protein-like or aromatic amino acid-like” AC: The bound-to-protein will be changed to protein-like.

5. Page 7225, Lines 15 to 20: This study should more properly explain about FDOM components. Each component (aromatic amino acids or protein, fulvic acids or humic acids) are mostly composed of two peaks, one at shorter wavelength region and another is longer wavelength region. That discussion should be properly written. Another most important issue of this study is that authors should not use the Raman Unit that make changes the component excitation and emission wavelengths and changes fluorescence intensity. I strongly recommend, not to use Raman Unit, Author can use the arbitrary unit (a.u.) or standard Quinine sulphate unit (QSU). Such effect causes a lot of differences in excitation emission wavelengths in Table 3 from other references that mentioned in the Table. Authors can find the differences from the following reference how does differ with other peaks and wavelengths and EEM spectra too. [Reference: Mostofa KMG, Liu CQ, Yoshioka T, Vione D, Zhang YL, Sakugawa H (2013) Fluorescent dissolved organic matter in natural waters. In: Mostofa KMG, Yoshioka T, Mottaleb A, Vione D (Eds), Photobiogeochemistry of Organic Matter: Principles and Practices in Water Environments, Springer, New York, Chapter 6, pp 429-559]. AC: The de-

C5153

scription of secondary peaks will be added to results. Raman Units are widely used for measurements in open ocean and, therefore, using RU in our study was crucial for comparison of data from ETNA with general open ocean FDOM levels. As well, Stedmon and Markager (2005) appeared to be very important for motivation and discussion of our results, as they used mesocosm and nutrient amendments. They also used RU. We believe that the units, in which FDOM is measured, do not change the relative location of peaks. As taking QS calibration line is laborious procedure, it is time-demanding; therefore, the QS calibration curve is often taken in different day than the actual measurements. Thence, when QSU are used, both, samples and QS solutions are calibrated by Raman Spectrum first. The shifts in peak locations, compared to the literature in the table 3, would be rather caused by different packaging status (such as molecular composition, isomeric structure, condensation etc.) as result of different pH, salinity, temperature, light conditions between different studies etc.

6. Author then rewrite the next paragraph and the related explanation regarding FDOM. AC: Please, see previous comment.

7. Authors did not show the three fluorescent components as an EEM Figure that should be needed to show in the manuscript. AC: The figures in the current manuscript are rather numerous, therefore it was decided that the figure with the fingerprints and spectral loadings of modelled components goes to the attachments of the manuscript. However, we understand the importance of including it to the text body and will include the figure now.

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C5154

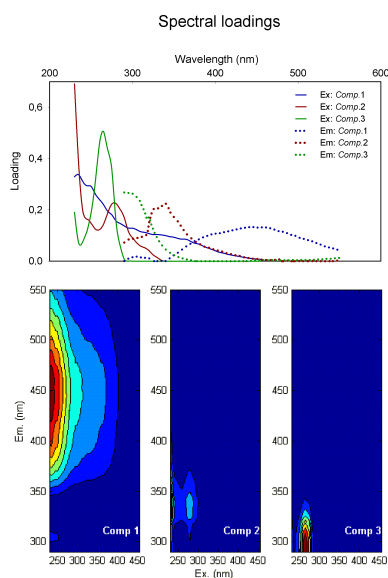


Fig. 1.

C5155