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Prof. Gerhard Herndl
Associate Editor,
Biogeosciences,
c/o
Natascha Töpfer
Copernicus Publications
Editorial Support

Attn: Review of the revised manuscript 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.

Dear Prof. Herndl,

After reading the manuscript by Loginova et al., submitted to Biogeosciences and coded bg-2015-181, I recommend **to accept** this manuscript for publication in this journal after **minor technical corrections**.

General opinion

This study presents very well documented, very well written and discussed results of mesocosm experiment in the Eastern Tropical Atlantic (Cape Verde). Experiment was designed to test influence of inorganic nutrients concentrations and mutual concentrations proportions on the production of chromophoric and fluorescent DOM and DOC as consequence of the phytoplankton growth and microbial processing. This experiment was very well thought and conducted. Collected results are novel and very well analyzed statistically. In my opinion achieved results have provided new insights on autochthonous production of DOM by phytoplankton. Author have been testing the kinetics of this process with limiting supply of inorganic phosphorus and inorganic nitrogen in different proportions. Authors have found that dissolved inorganic nitrogen has the largest impact on accumulation of DOC and chromophoric and fluorescent fraction of DOM.

I have very high regard on results achieved and documented by Authors. Author have adequately answered to all my comments and suggestions. The unnecessary threads have been removed from Discussion sections. The discussion on DOM components identified by PARAFAC model has been improved. In my opinion manuscript is ready for publication as it is now. I have spotted some minor inconsistencies that can be corrected during technical manuscript preparation for print. No further revision is needed.

Point for technical corrections:

Figure 6

Panels showing linear regression between $\Delta a_{\text{CDOM}}(\lambda)$ and ΔDOC in the Varied N and Varied P experiment are hardly readable. There are too many regression lines. Please include only those most significant.

There is inconsistency in units of carbon specific CDOM absorption shown on Y axis on lower panels of Figure 6. Please note:

When you use ratio between $a_{\text{CDOM}}(\lambda)$ and DOC with absorption coefficient unit given in $[\text{m}^{-1}]$ and DOC concentration given in $\mu\text{mol L}^{-1}$, before you calculate ratio, you shall have both quantities in SI units. The DOC concentration in $[\mu\text{mol L}^{-1}]$ is equal to $[\text{mmol m}^{-3}]$, therefore the unit of the ratio will be: $[\text{m}^{-1}] / [\text{mmol m}^{-3}] = [\text{m}^2 \text{mmol}^{-1}]$. This unit explains a physical meaning of the carbon specific CDOM absorption coefficient; this is an absorption cross-section per unit of mass of given substance, or per number of molecules of given substance (this your case as you expressed concentrations in moles). Please correct accordingly.

Best regards,

Piotr Kowalczyk