Biogeosciences

Discussions

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Interactive comment on "Use of flow cytometry and stable isotope analysis to determine phytoplankton uptake of wastewater derived ammonium in a nutrient-rich river" *by* Calla M. Schmidt et al.

Anonymous Referee #2

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The manuscript by Schmidt et al. provides an interesting case study of the application of a very promising and little-used technique, by using flow cytometry as a sample preparation step to analyse d15N of phytoplankton to study nitrogen cycling in river systems . The ms is well written and data interpretation is generally solid.

I have relatively minor suggestions for improvement:

-While the focus of the manuscript is evidently on nitrogen cycling, it might be interesting to also report and discuss d13C values for the flow cytometry sorted phytoplankton

samples – I assume these were analyses in the same run ?

-the authors sampled following a Lagrangian approach – but it should perhaps be mentioned somewhere that the residence time of particles in a river system is expected to be higher than the water travel time in a river system, and some discussion on how that might affect the interpretation of results.

-page 5, line 7: I assume this should be 0.7 μm GFF filters (not 70 μm) ?

-Methods: while the authors refer to Polissar et al. (2008) for the 'micro-EA' setup, the latter does not use a GasBench as interface, and the authors provide no details on the trapping/focussing of the eluting gases. Some more details would be of interest to readers who wish to setup a similar configuration.

-The nutrient concentration profiles clearly suggest that nitrification could be an important process affecting nutrient cycling in this system – it would be worth discussing this aspect and checking if there are data that might shed some light on this. Are there dissolved oxygen data available ? Have others measured nitrification rates in this system ?