Biogeosciences Discuss., 7, C3897–C3899, 2010
www.biogeosciences-discuss.net/7/C3897/2010/

Biogeosciences Discussions

Interactive comment on "Fluvial organic carbon losses from a Bornean blackwater river" *by* S. Moore et al.

S. Moore et al.

s.moore@open.ac.uk

Received and published: 18 November 2010

We thank you for your comments on the manuscript and have compiled the following responses:

8323: Kya is the local name given to the source of the River Sebangau (Haraguchi, 2007).

8324: When filtering, the cellulose acetate filters were rinsed through with some sample first, the filtrate disposed of and fresh sample water was re-filtered. Other work suggests that this is effective at removing any organic contamination. These methods will be clarified in the final manuscript.

8325(i): While we appreciate that there is a possibility of some inorganics remaining,

given that the Sebangau catchment is heavily dominated by peat soils, it is likely that this will be a very small fraction. Particulates are also generally <10% of the DOC concentration, so any such small change to this fraction will not alter the TOC value significantly nor the conclusions of our study.

8325(ii): Yes, adding the Sulphuric acid will have driven off any inorganic carbon, but the aim of this research was to quantify the organic carbon loss (as stated in the title). Alkali-titration analyses were conducted in the field before addition of Sulphuric acid to examine the proportion of carbon present in the inorganic form, the results of which indicated that no DIC was present. Given the very low pH (3.2-3.8), this is consistent with expectations.

8325(iii): We agree that a salinity probe would have been the ideal instrument, but EC is a commonly used indicator of salinity and salinity and EC measures can easily be converted from one to another. Re the issue of depth profiles, we would have liked to have collected samples from different depths in the water profile, especially in the estuary, but such research could probably form another study in its own right. Sampling from a depth of 50 cm was consistent throughout the study and there is a clear progressive increase in EC towards the river mouth from what are low levels in the upper river (<50μS cm-1). The primary aim of sampling was to capture the salinity transition from freshwater to sea-water, and to study DOC dynamics through this transition.

8328: I am not entirely sure I understand - DOC was generally lower during high tide (dry season) and POC generally lower during low tide (wet season). It is not clear from the review which carbon isotope is being referred to (13C or 14C). DOC flux within the peat and 14C were measured and confirm higher peat-derived DOC loss with water table drawdown, but these results will form part of a separate manuscript. Such high DOC concentrations cannot be explained by any other source that we're aware of, and with a peat-dominated catchment, it seems reasonable to interpret these data in relation to peat sources without reference to isotope data.

8341: We are unsure as to how low DOC could possibly be interpreted to mean that there was destruction of inorganic C through our widely used preservation method. When measuring DIC using alkali-titration, no inorganics were recorded (see response to comment 8325(ii)). This point will be clarified in the final paper.

8324: These data were recorded but are not central to the information presented in this manuscript. There is a weak negative correlation between pH and DOC concentration in the dry season (mainly reserved to the estuary zone) and no such correlation in the wet season.

Reference: Haraguchi, A., 2007. Effect of sulphuric acid discharge on river water chemistry in peat swamp forests in central Kalimantan, Indonesia. Limnology 8:175-182.

Interactive comment on Biogeosciences Discuss., 7, 8319, 2010.