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Biogeosciences Discussions

Interactive comment on "Rapid accretion of dissolved organic carbon in the Springs of Florida: the most organic-poor natural waters" *by* C. M. Duarte et al.

Anonymous Referee #1

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General comments

The manuscript presents data on DOC increase in the downstream waters of springs in Florida. Majority of the 700 springs in Florida are highly productive, upwelling groundwaters with very low DOC, the most organic-depleted natural waters.

This short manuscript is well written, describing the experimental design and main results properly. The manuscript would be even more useful for the general scientific community if the authors would give a more thorough review on DOC concentrations in groundwater/springs in other parts of the world. DOC concentrations in Florida spring are among the lowest in the world. What is the level of DOC in groundwater world-

wide? Numerous papers have reported surface water DOC concentrations. Although groundwater monitoring has been carried out in many countries, the knowledge on the level of DOC concentrations in groundwater is limited.

Why are DOC concentrations so low in Florida springs? Is the overall conclusion that most/all DOC is biologically available, if the retention time is long enough.

p. 5255 "DOC concentration in most natural waters is a rather stable property – exhibiting only modest temporal variability". Why is DOC variability so low — is it linked mainly to the source, transport, reactivity?

Although DOC shows very modest variability compared to many other elements, seasonal DOC variability e.g. in boreal streams is significant (e.g. Lepistö et al. 2008).

Lepistö. A., Kortelainen, P. Mattsson, T. 2008. Increased organic C and N leaching in a northern boreal river basin in Finland. Global Biogeochemical Cycles Vol 22, GB3029, doi:10.1029/2007GB003175.

Specific comments

1.The manuscript address relevant questions within the scope of BG.

2. The manuscript presents data on DOC increase in the downstream waters of springs in Florida. There are 700 springs in Florida, many of which are highly productive, upwelling groundwaters with very low DOC, the most organic-depleted natural waters in the world.

3. 5. and 7. The results support the interpretations and conclusions. However, I was missing more literature on groundwater DOC level worldwide.

4. and 6. The scientific methods and assumptions are valid and clearly outlined. The description of experiments and calculations is sufficiently complete and precise to allow their reproduction by fellow scientists.

8., 9., 10., 11. and 12. The title reflects the content of the paper, abstract is concise,

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presentation is well and clear, language is fluent and mathematical formulae correctly defined.

13. The manuscript dos not need any condensation.

14. I was missing references to DOC level in groundwater systems worldwide.

Interactive comment on Biogeosciences Discuss., 7, 5253, 2010.