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Hydrology and Earth System Sciences Discussions

Interactive comment on "Global multi-scale segmentation of continental and coastal waters from the watersheds to the continental margins" *by* G. G. Laruelle et al.

Anonymous Referee #1

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The authors of this paper have collected a wealth of information on continental and coastal waters and combined several layers of data to compile the dataset presented. I have serious questions about this paper. The authors have not managed to explain what the purpose of the dataset is, for what kind of research it would be useful, and how it can be used.

To me it seems that the static approach to describing continental and coastal waters may not be useful to modellers who are interested in the dynamic nature of these systems. For example, people interested in fisheries, foodwebs or biogeochemistry

will not benefit from the data.

A further problem is the presentation of the fresh water residence times. For example, the authors themselves confess on page 11336 that “residence time is somewhat skewed by the very large contribution of Antarctic shelves to the total” and “the intensity of upwelling processes varies greatly in space and time and the water can locally be renewed in just weeks”. These are exactly the reasons why the freshwater residence time is not useful. Why have the authors not considered to describe all these currents and fluxes beween ocean boxes? Perhaps this would be material for another paper, but presenting these freshwater residence times, in my opinion, does not make much sense.

A minor issue is the fresh water input to the Gulf of Mexico (page 11335), which exceeds the global freshwater input to the ocean (page 11336).

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 11319, 2012.