

Editor Initial Decision: Publish subject to minor revisions (Editor review) (09 Sep 2014) by Dr. Paola Passalacqua

“Dear Dr. Ouillon,

thank you very much for submitting your revised manuscript and reply to the reviewers. I'm pleased to accept the manuscript for publication. I just have a couple of additional suggestions that I invite you to consider:

- In the conclusions you should report the paper results first. In the current form, the main results on water and sediment distribution are somewhat buried within the conclusions. I suggest reporting these results first.”

Reply: We really appreciated your support to improve our paper all along the review process. Thanks a lot! Concerning the above suggestion, we changed the conclusions accordingly. The revised conclusion is the following:

“Although the estimates of water and sediment discharge can be improved in the future (e.g. measuring C at the river mouths during flood periods; taking into account bedload transport and several classes of suspended particles as well in the model; connecting the river basin model to a 2D or 3D coastal hydro-sedimentary model; etc), this paper is the first to provide the distribution of water and sediments within the 9 distributaries of the Red River, one of the biggest rivers in the world (ranked 9th by Milliman and Meade in 1983, in terms of sediment input to the ocean). The fluxes were estimated before and after the Hoa Binh dam impoundment, and compared.

The estuaries of the Red River delta are presently silting up and this is partly due to the water flow regulation of the HBD which has led to a decrease in sediment transport capacity and an increase of river discharge in the northern delta during the dry season. All of which likely enhance deposition in the Cam-Bach Dang estuary. Moreover, the decrease of suspended sediment discharge of Red River induced a decrease of sedimentation rate along the delta shoreline. Coastal erosion intensifies when sedimentation and accumulation no longer balance sea level rise and tectonic subsidence, and this factor needs to be taken into account when considering dam regulation. The increase of the suspended sediment discharge ratio in the northern (Cam, Bach Dang, Lach Tray, Van Uc, Thai Binh) and southern estuaries (Day) and its decrease at the Ba Lat, Tra Ly and Ninh Co mouths influenced not only erosion and accretion zones along the RRD coasts, they also altered the geological, morphological, biogeochemical and ecological responses in the estuaries, delta, and coastal areas (e.g. Rochelle-Newall et al., 2011; Bui et al., 2012; Navarro et al., 2012).

River dams have been built in Viet Nam for many decades for energy supply, such as the Day dam in 1937 (on the Day River), the Thac Ba dam in 1970 (on the Chay River), and the HBD in 1989. Sediment trapping in the reservoirs was not considered during the first decades. However, recent studies have documented their impacts on sediment fluxes. Even if the Hoa Binh dam has played a considerable role in flood control, irrigation and electricity production in North Vietnam, this study shows that it also significantly affected water discharge and the suspended sediment input from the Red River basin to the delta and coastal areas. Finally, this work underlines the need for an integrated management plan that extends from the river basin to the coastal zone and that involves the close collaboration of hydrologists, coastal oceanographers, and decision makers.”

“ - in the abstract I suggest removing 'at the end of the paper' (line 29).”

Done

Additional corrections:

- the reference **Nguyen et al. (in press)** was corrected, to add its DOI : Nguyen, N. Minh, Marchesiello, P., Lyard, F., Ouillon, S., Cambon, G., Allain, D., and Dinh, V. Uu: Tidal characteristics of the Gulf of Tonkin, Cont. Shelf Res., in press, <http://dx.doi.org/10.1016/j.csr.2014.08.003>

- the alphabetical order of references was checked and three papers moved.

- **we added the following sentence in the Acknowledgements:**

“The editor, Paola Passalacqua, is gratefully acknowledged.”