Response to Reviewer's Comments on

Sedimentation monitoring including uncertainty analysis in complex floodplains: a case study in the Mekong Delta.

By Nguyen Van Manh

General comments

This paper is daunting in its scope and the large of amounts of data presented. I believe that while the statistical analysis could be questioned by those with deeper understanding of statics than myself, I believe the paper makes a valuable contribution to the scientific community with raw data presented and the uncertainty methodologies developed. While it could be argued that the paper does not entirely meet its objectives in that it fails to mathematically describe the distribution of sediment deposition, it is clearly stated in the paper that this is a very complex problem which cannot easily be solved. The data presented is however a large step forward which should help future researchers to better understand the distribution of sediment on flood plains.

The paper is somewhat marred by the inconsistent use of language and requires professional editing. Since the paper is very long and I did not have a Word document I have not attempted this editing.

AUTHOR REPLY: The uncertainty analysis is discussed and defended in detail in the replies to reviewer 1 and 3. We acknowledge that the paper is quite long not well organized. The paper will be shortened by removal of some unnecessary figures and tables and restructured into 5 sections instead of 7 sections, as elaborated in the replies to reviewer 3. The language also will be polished with professional editing.

The paper will be re-structured as follows:

Abstract

1. Introduction
2. Study site and site selection
3. Methodology
   - 3.1. Sediment trap design and sampling scheme
     - 3.1.1. Sediment trap design
     - 3.1.2. Sampling scheme
   - 3.2. Uncertainty analysis
     - 3.2.1. Uncertainty associated to trap collection in ponding water
     - 3.2.2. Deposition uncertainty
     - 3.2.3. Monte Carlo analysis
       - a. Sediment mass uncertainty analysis
       - b. Nutrient fraction
       - c. Grain size fraction and pH
4. Results and discussion
   - 4.1. Monitoring results
   - 4.2. Varying uncertainty in datasets
   - 4.3. Sedimentation rates and nutrient sediment rates
   - 4.4. Spatial variability of sedimentation
5. Conclusions

Specific comments

Page 327, line 7: This sentence should add that land use or anthropogenic influences also affect the sediment supply. This is perhaps the most important factor in many catchment. Perhaps a sentence could be included to what extent is land use in the Mekong catchment thought to affect sediment supply to the delta.

Page 327, Line 7: due to natural variability..add of the factors influencing sedimentation

AUTHOR REPLY: Yes, thank you, it is rewritten to:

"Floodplain sedimentation in deltas can be very complex, as the spatial variability of floodplain sedimentation is typically very high, due to the variability of the factors influencing supplied sediment and the actual sedimentation in the Delta. In addition to the natural variability both sediment supply from the upstream catchment as well as the deposition in the Delta show a high degree of anthropogenic influence in many regions of the world (e.g. Ericson et al. 2006; Syvitsky et al. 2007, 2009, 2012)."

Line 328, Line 20. The papers stated '91.061 km length of channel networks. Surely this cannot be correct? Perhaps this should be 91 061 km. Even then it seems unlikely that the channel lengths are know this accurately. Perhaps replace with approximately 91 000km.

AUTHOR REPLY: Yes, this is correct. We will also give an approximate figure of 91,000 km.

Page 338, line 1. 5.3.2 Nutrient fraction The laboratory results of nutrient analysis provide proportions of sediment mass (%). Should this not read. The laboratory results of nutrient analysis are expressed as a proportion of sediment mass (%).

AUTHOR REPLY: Yes, thank you.

References:

Ericson, J. P., Vorosmarty, C. J., Dingman, S. L., Ward, L. G., and Meybeck, M.: Effective sea-level rise and deltas: Causes of change and human dimension implications, Global and Planetary Change, 50, 63-82, DOI 10.1016/j.gloplacha.2005.07.004, 2006.

Syvitski, J. P. M., and Saito, Y.: Morphodynamics of deltas under the influence of humans, Global and Planetary Change, 57, 261-282, DOI 10.1016/j.gloplacha.2006.12.001, 2007.

Syvitski, J. P. M., Kettner, A. J., Overeem, I., Hutton, E. W. H., Hannon, M. T., Brakenridge, G. R., Day, J., Vorosmarty, C., Saito, Y., Giosan, L., and Nicholls, R. J.: Sinking deltas due to human activities, Nature Geosci, 2, 681-686,

http://www.nature.com/ngeo/journal/v2/n10/suppinfo/ngeo629_S1.html, 2009.

Syvitski, J., and Higgins, S.: Going under: The world's sinking deltas, New Scientist, 216, 40-43, http://dx.doi.org/10.1016/S0262-4079(12)63083-8, 2012.