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Hydrology and Earth System Sciences Discussions

Interactive comment on "Discharge estimation in a backwater affected meandering river" *by* H. Hidayat et al.

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Final response to open discussion of the manuscript "Discharge estimation in a backwater affected meandering river" by Hidayat et al.

First of all, we would like to thank all reviewers for their useful suggestions and constructive criticisms. All comments are highly appreciated as a means of improving the overall scientific content and readability of the manuscript. We also thank Dr. Di Baldassarre for his willingness to be the editor and to handle the review process. Hereby we highlight some main discussion issues that arose during the review process.

Characterisation of the semi-Deterministic semi-Stochastic Model (DSM)

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Discussion Paper

Reviewer#2 posed a question about the stochastic part of our methodology and Reviewer #3 misinterpreted Fig. 7. We realize the description of the methodology has been too concise. We will offer a more elaborate explanation of the method in the appropriate section, based on the work by Hoitink (2009) and Sassi (2011). Regarding the evaluation of data quality, we have provided additional figures to ascertain we did not experience a mismatch between the H-ADCP velocity an boat-mounted ADCP velocity, such as reported by Moore (2010).

Index Velocity method (IVM)

Reviewer#3 indicated we should treat the IVM and DSM similarly, which indeed will improve the internal consistency of the paper. In the revised manuscript, we will present the IVM result by excluding 'val' datasets in the calibration process, as we did in calibrating the DSM. In the original manuscript, we compared to our method only with the most basic method to convert streamwise velocity from the H-ADCP to discharge, which is a direct regression between the two variables. In response to reviewer 3, we included a slightly more elaborate method, regressing index velocity to cross-section average velocity, which is multiplied with cross-section area to obtain discharge.

The Jones formula

We have recomputed the discharge using the Jones formula after correcting the celerity c as suggested by reviewers #2 and #3. The estimated discharge, however is rather insensitive to wave celerity. Related to this, we realized from a comment by reviewer #1 that Eq. 10 requires a uniform channel geometry. Part of the scatter in Fig. 10 may relate to nonuniformity of the channel geometry, which is now mentioned.

Technical corrections

All technical corrections helped improving the presentation of the manuscript and we were pleased to include them in the revised manuscript.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 2667, 2011.