

Interactive comment on “Spatial stochastic and analytical approaches to describe the complex hydraulic variability inherent channel geometry” **by N. Hadadin**

N. Hadadin

nhadadin@hu.edu.jo

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Dear Reviewer Referee #1

I would like to thank you for reviewing the article. I have understood and considered all comments you have made. Please find below your comment versus the correction made (Corrections are shown in a red-colored text).

Regards,

1)comment: I am not too sure about the innovation of this paper other than an applica-

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tion of known hydraulic geometry functions to a river for which a lot of field data were collected.

reply: The relationships presented in this study are very useful to hydraulic and water resources engineers, hydrologists, and geomorphologists, involved in stream restoration and protection. These relations can be used to assist in field identification of bank-full stage and stream dimension in un-gauged watersheds as well as estimation of the comparative stability of a stream channel. Also the relations are valuable in preliminary stage design to estimates the peak flow which is the important parameter in designing the hydraulic structures. (Please see p 6968 line 9-14)

2)comment: The introduction, although very well presented, takes up more than half of the paper, followed by a very short method section and without a result or data analysis section, the author goes straight to the discussion and conclusions in which most is focused again on the purpose of the paper and known facts, rather than discussing and contrasting findings...

reply: the introduction didn't take more than half of the paper, it takes only 4 pages (page 6969 to page 6972) while the manuscript takes over 25 pages (From page 6967 to page 6992). Section of results and data analysis are added please see the revised paper

3)comment: I'd expected more in-depth analysis and discussion of the many data sets that have been collected and the implications of these on the findings and in relation to known concepts in hydraulic geometry. What was quite confusing is that the author seems to indicate towards the end of the paper that the fact that drainage area was chosen as the independent variable rather than discharge may be the new thing in this paper (p. 6976, line 5), however, the next few lines seem to state that this turned out to be a rather debatable choice ('... discharge is a more reliable independent variable for hydraulic geometry relations than drainage area.', p. 6976, line 6). So, I'm wondering whether this means the entire approach of putting drainage area as the independent

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variable becomes very questionable, and this isn't really discussed/examined?

reply: : it is important to used drainage area as an independent variable in an ungauged station, although, if there are data for flow discharge, it is preferable to use. Discharge is a more reliable independent variable for hydraulic geometry relations than drainage area. for gauging station, nevertheless, in most sites the availability of flow discharge is rare.

5)comment: Also, I believe it is important that the author states and explains more clearly what makes this contribution different to already existing literature with very well founded.

ideas on this topic; otherwise it makes it seem rather like an application of hydraulic geometry relationship to just another stream in which case it is quite difficult to see the scientific innovation and significant new findings; particularly because in some places it seems the author is questioning himself the validity of using drainage area as an independent variable and also because the paper is very short on the results and analysis.

reply: please see previous answer.

Results and analysis is presented in more depth (please see the revised paper the corrections are seen in the red colored text) My contribution different to already existing literature by that I focal point on the hydraulic geometry for incised channel. You can see that in many places in manuscript.

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/8/C4341/2011/hessd-8-C4341-2011-supplement.pdf>

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 8, 6967, 2011.