

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

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Dear Reviewer 1

I would like to thank you for reviewing the article. All comments you have made enriched the article. Please find below your comment versus the correction made on the paper.

Regards,

1)comment: What is the application of this study?

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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: I cannot find "the analytical approach" in this study there is only statistical analysis, I suggest to delete the word "analytical approach" from the address.

reply: thanks for this comments, the word "analytical approach" is deleted from the title.

3)comment: Change "theses" to "these" line 4 p6969.

reply: corrected.

4)comment: What do you mean by incised channel, is it the same as stable channel? please clarify.

reply: A "stable" stream is in dynamic equilibrium when, over an engineering time scale, sedimentation processes are balanced so that the channel, while changing locally, maintains the same average morphological character. A stream's morphology is a consequence of its response to the two principal driving, or independent variables - runoff and sediment yield - acting in concert with the channel boundary conditions to determine the channel planform, cross section, and grade. Boundary conditions include the valley slope, geology, resistance, soil type and size, and vegetation character. They also include natural or man-made controls such as dams, bridges, and water levels of receiving water bodies. Incised stream: Changes in sediment load, flow regime, and boundary conditions can disrupt the balance, resulting in a stream that undergoes rapid morphologic changes until equilibrium is restored. When long-term

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erosion exceeds sedimentation, channel incision occurs. (please see "Reconnection of Floodplains with Incised Channels" by Craig Fischenich¹ and James V. Morrow, Jr May 2000).

5)comment: Please add a heading of "Results" before Discussion and conclusions.

reply: the heading "Results" is added, please see the corrected paper.

6)comment: Delete the word "Appendix A" in page 6993.

reply: it is deleted.

7)comment: Correct the Parenthesis bracket in the equation in page 6973.

reply: corrected.

8)comment: Minor overall comments: -The English needs some improvement but it is overall easy to read. -The paper is clear and flows well

reply: many statements and sentences in the paper are rephrased (corrections are presented with red color in the text).

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/8/C4338/2011/hessd-8-C4338-2011-supplement.pdf>

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