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Discussions

Interactive comment on "Notes on the estimation of resistance to flow during flood wave propagation" *by* M. M. Mrokowska et al.

Anonymous Referee #1

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General comments: This manuscript raises the important and relevant discussion of the use of friction coefficients during unsteady flow. The research has been carried out and reported thoroughly and interesting for the HESS audience. However, the structure of the manuscript can be improved and the novelty can be emphasized. The introduction and title suggest that the manuscript is about the difference between friction velocity and roughness coefficients. This is only a very small part of the manuscript, the majority deals with determining the friction velocity itself. This shows exactly the issue in dealing with friction velocity which is not stated in the conclusions: friction velocity is highly uncertain and difficult to determine. However, the authors still suggest to use friction velocity. This requires at least a thorough discussion after section 3 or in the concluding remarks. Secondly, the structure of the manuscript can be improved.

Now it is difficult to distinguish new findings by the author from existing knowledge from literature. These should be in different sections (like separate data, method and results sections).

I like this nice piece of work and would like to see it published. With a little effort in increasing the logic and structure, this paper will be very interesting and worth publishing.

Specific comments: In my view one of the important findings of this manuscript is the description of how to determine the friction velocity for unsteady discharge. This part of the research is not introduced properly in the introduction and should be one of the objectives, so explicitly state that in the introduction.

P13315 L6: "Then, the relations ..." state explicitly that you use flow equations to determine friction velocity and explain why you choose this method. P13315 L16-19: "paper discusses following aspects" can you structure this list that now seems a random list of aspects. Clarify the methodology (maybe in a separate methods section) P13322 L19: You suddenly present a new method. Why did you do this? It provides the same results as the Jones equation. (it might be easier to use, so show that in the results and state that in the conclusion that you recommend to use this approach). P13325 L4: Please clarify what you mean by "maximum uncertainty". P13326 section 3.1: Present the roughness characteristics of this section. Is there vegetation in this river stretch? are there bends? what is the bed composition? do you expect bed forms? P13327 L15-16: repetition, same statement and list of references as on P13323 L5-8. P13330 L5-8: How did you determine these uncertainties? please explain in couple of sentences. P13332 L14-17: "reverse trend observed by Julien" explain why they observed a reverse trend. Might by due to bed forms? If your data did not contain bed forms then it is logical that there is another trend. The difference in trends that you see in your data is the main result of your study. This warrents some more discussion. can you explain the reason for the difference in trends. P13333 L16-19. "These aspects ... under consideration". The sentence should be in the introduction to introduce your approach.

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Furthermore, also a matter of scale plays a role. The roughness coefficient deals with larger scale resistance and shear velocity deals with local resistance (bed and walls only). Therefore, it might not always better to use friction velocity. Also depends on scale. These kind of aspects require a more thorough discussion.

Technical comments: Fig 2: used dh/dx in figure and theta in caption. Please, be consistent Fig 4: used symbols to indicate h_max and U_max. In other figures you used vertical lines. Throughout the manuscript you use lin, kin, T&G, wt. This is a bit confusing. Suggestion to compare once and then only compare lin and wt (or only wt). This will increase the readability of the figures.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 11, 13311, 2014.