

## ***Interactive comment on “Combining flow routing modelling and direct velocity measurement for optimal discharge estimation” by G. Corato et al.***

**G. Corato et al.**

g.corato@irpi.cnr.it

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**Editor:** *I thank all the reviewers and I invite the Authors to take into account all their comments, and to revise their paper accordingly. All reviewers complained about the complexity of the paper. Having read the paper myself I agree with this criticism, which arises, in addition to the points made by the reviewers, from the fact that the Authors do not always provide all the details that are necessary to follow the steps they have made.*

**Authors:** We made a serious effort in addressing the reviewers' concerns as well as your. Our detailed response to each of comments is given. We thank the reviewers and you for the time and the constructive comments. We hope that the revised version  
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is to the satisfaction of the reviewers as well as of you.

**Editor:** *Submitting a paper in the field of hydraulics to HESS implies that the Authors are willing to communicate their results to a more general audience. For this reason, it is particularly necessary to improve the paper clarity and ensure its generality.*

**Authors:** Accordingly, we have revised the manuscript attempting to provide more clarity and generality to the paper.

**Editor:** *The Authors have to better explain what they have done and why they have done it in a certain way. They could have a paragraph with some background, rather than starting with Equations 1, 2 and 3 without providing sufficient reference and without explaining the assumptions behind them. Also the explanation of the model is unclear. What are the reasons for solving the equation in that precise way? What is the background? What did other Authors do?*

**Authors:** Based on the Editor's point and the reviewers' comments we have better explained the theoretical background of the hydraulic model. For more clarity, we have moved the part of the numerical scheme in Appendix A as also required from reviewer #3.

**Editor:** *The entropic model is another addition that add complexity to the paper, but is it really necessary to convey the message of the paper? If not, the Authors should remove it, and concentrate on the main arguments.*

**Authors:** We think that the Editor's doubt is due to lack of clarity in the manuscript about this particular topic. In the revised manuscript the velocity distribution model is described in a more clear way, and the theoretical background are better specified also with the assistance of Appendix B. The concept of maximum entropy is specified show-

ing the reasons of its use in hydrology. Finally, the revised manuscript shows as the velocity distribution model be essential for the application of the proposed methodology.

**Editor:** *There are several tables in the paper. Can these be translated and summarized with some figures?*

**Authors:** Based on the contents of Tables we think that it's really tough to summarize them in figures. For that we kept them in the revised manuscript.

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