

## ***Interactive comment on “GLOFRIM v1.0 – A globally applicable computational framework for integrated hydrological-hydrodynamic modelling” by Jannis M. Hoch et al.***

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Dear Daniele P. Viero, Thank you for your constructive remark which surely touches upon some aspects of global flood modelling worth mentioning.

I have read your literature recommendations with interest and will try to mention them where adequate in an updated version of the manuscript. There are indeed some hydraulic models that can simulate a limited number of hydrologic processes, such as groundwater infiltration, precipitation or evaporation, to a varying complexity. The focus in our statement was thus more on “advanced” as none of the current (large-scale) hydrodynamic models represent the complexity of hydrologic processes similarly well

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as hydrologic models themselves.

With respect to your remark on limitations of global models, I want to draw your attention to the interesting paper of Ward et al. (2015), not only discussing these limitations, but also showing their usefulness with several examples. As much as I agree that for local flood risk management practices global models may not be the ideal choice as they cannot account for levee properties, for example, there is no reason to be in fear as they can contribute to other aspects of flood risk. For instance, global flood risk models can prove useful for hot-spot detection or operational forecasting. Obviously, clear communication of uncertainties in model results is key, but that is even so for local models.

From my point of view, global and local flood risk models should therefore not (and probably never will) be mutually exclusive, but quite the opposite. Depending on the goal of the modelling study, but also on data availability, the user should choose from either of them. It may even be possible to design a modelling chain from a first coarse-scale assessment by global models to a detailed local model that allows the involvement of local stakeholder.

### References

Ward, P. J., Jongman, B., Salamon, P., Simpson, A., Bates, P. D., de Groeve, T., Muis, S., de Perez, E. C., Rudari, R., Trigg, M. A. and Winsemius, H. C.: Usefulness and limitations of global flood risk models, *Nat. Clim. Chang.*, 5(8), 712–715, doi:10.1038/nclimate2742, 2015.

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