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Discussions

Interactive comment on "Modelling extreme flood hazard events on the middle Yellow River using DFLOW-flexible mesh approach" *by* M. Castro Gama et al.

Anonymous Referee #2

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Major comments In the paper the authors intend to present a new modelling approach for flood propagation in natural rivers. The new proposal, essentially, focus on the use of "flexible" mesh for geometric description of the flow domain. As matter of fact, the paper addresses an interesting topic but in my opinion, the approach used by the authors to analyze the problem is, in many aspects, not correct. First, I found confusing the use of the term "flexible mesh" (in the title and in some parts of the manuscript) when a model which using an unstructured grid is presented. Actually, flexible mesh is used for those models which implements dynamic meshing (i.e., a mesh which varies its geometric characteristics during the simulation. I certainly agree unstructured grids

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are definitively more capable to describe the geometric peculiarities of natural flood-prone areas then old-fashioned structured grids. But this is not a novelty in the scientific and technical literature as many research and commercial models are available (it is quite strange the absence in the list of references of many authors involved in this topic, Bates P.D for instance) . So, if the author's intention was to compare the performances in using these two different modelling approaches I haven't found anything in the paper related to this. Again, if the intention was to present a new mathematical development of the problem, it is quite bizarre how any equations is reported in the manuscript.

Regarding the proposed application I found many significant weak points: 1) A calibration of the model is completely missing. The authors say they use a single roughness value (page 9, line 240) both for river as for lowland areas. But for a such large area (1936 km2) this is, in my opinion, unacceptable. 2) How it was possible to test and check the reliability and robustness of the model is any comparison of model outputs with a real event has been carried out 3) It is quite obscure how the hydrographs used for the simulations has been derived (page 10, line 271). What do the authors intend with "inference model"?

Last but not least, the quality of the language is not satisfactory at all, thus a in-depth review of the grammar and writing style should be done.

Given those comments, I can conclude the paper is not suited for the publication on NHESS and I suggest to reject it.

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