

Interactive comment on “Flood forecasting in large karst river basin by coupling PERSIANN CCS QPEs with a physically based distributed hydrological model” by Ji Li et al.

Anonymous Referee #2

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This paper presents some simulations of flood in a karst catchment in China, based on the weather satellite rainfall data. However, (at present) I cannot recommend publication, but after the following concerns are addressed.

Main comments: 1 From reading this paper, it is unclear what the real novel contribution is. The rainfall variety does not seem to have a direct relationship with the karst landform or geology. But I think the distributed model should be the main scientific contribution in this article. However, the authors paid more attention to the rainfall accuracy rather than the karst model.

2 The authors inform the reader that in Yangbo Chen et al. (2009), the distributed

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model was developed in previous work, by integrating the karst flow progresses. However, some key issues have not been clearly explained in the model description. For example, the exchange between the ‘rapid fissure’ and ‘slow fissure’ in the epikarst zone, the hydrological function of the sinkholes. Obviously, the authors are aware of these important influence on the flow in karst aquifer, but I cannot find the corresponding explain in the model.

3 For such a complex model, with a lot of parameters, only several flood events are used for parameter calibration and model variation. So I don’t think it can give a confident results or reasonable conclusions. The uncertainty should be analyzed in this work.

4 There is no detailed geological information of study basin in the paper. I do not think the authors can get good results without these information in karst area.

Detailed comments

1 Line 251-254: I do not understand this description. ‘After all the pores are full-filled, means the macro crack is saturated.’ But the authors also say ‘ignore the regulation and storage hydrological process of the macro crack’. What does it mean? And how to deal with the unsaturated flow in macro crack?

2 Line 255: Is there a flow exchange between rapid and slow fissure?

3 Line 263-267: These confuse me. Whether ‘the epikarst zone’ in these sentences indicate the slow fissure in epikarst? It is not clear.

4 Line 269: What is ‘the superficial karst fissure system’? epikarst?

5 Line 316 and 356: Hydrogeology is the most important influence on hydrological processes in karst. However, there is no geology information of this catchment in this paper. I do not know how the authors deal with the distribution of hydrological function of the study catchment in a distributed model.

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6 Line 450: In the model, '... rapid fissure flow will go directly into the underground river...' Where is the distribution of underground river? Is there a connection between surface and underground river?

7 Line 493: Only one flood event was used to calibrate so many parameters. What is the uncertainty?

8 Line 574: Why only evaluate the parameters related to rainfall? The catchment properties may be more effective.

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