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Discussions

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.

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

This paper has two research elements. The first stage of the study involves in adopting the existing 'Precipitation Estimation from Remotely Sensed Information using Artificial Neural Networks (PERSIANN) Cloud Classification System (CCS)' (Hsu et al., 1999; Hoang et al., 2004) approach to estimate hourly precipitation at Liujiang river basin. The authors then compared the estimated precipitation with rain gauges and found that the distribution of precipitation generated from PERSIANN-CCS approach is similar, but quantity values are smaller. To make predicted rainfall from PERSIANN-CCS

approach comparable with rain gauge measurement, they have introduced a post-processed method. The second part of the study involves in feeding the estimated rainfall from PERSIANN-CCS into the existing Liuxihe hydrological model (Chen, 2009) for flood simulation in Liujiang Karst River Basin.

Integrated Quantitative Precipitation Estimation (QPE) with distributed hydrological modelling could be useful to understand the behaviour of Karst catchment for a range of rainfall events and possibley use as a flood forecasting tool. However, I find difficult to see what the main contributions from this study to existing knowledge. There is a potential risk, this study seems to be nice applications of existing methods without having enough novelty and appear as a journal paper in HESS.

1) Lack of details on how authors have modified Liuxihe model to suit Karst landscape. Muskingum model parameters K and x varies with flow conditions. Please refer Ahilan et al (2012) study. The karst catchment behaves like flashy catchment for the large flood event. It is relatively difficult to generalise K and x parameters in the hydrological model.

2) Lack of details on field survey to obtain hydraulic conductivity and aquifer transmissivity properties of the study catchment.

3) Authors dealt the large catchment (58,270 km2) as a whole. It should be more appropriate to break the Liuijiang catchment into several sub-catchments and explore mass balance relationship between rainfall and flow.

4) Uncertainty analysis in QPE and Liuxihe models are largely left unexplored. This is essential to uncertain confidence of the model prediction.

5) Some of the references which were used in this study are outdated. For instance, L335 Davis (1912) L453: Strahler method (Strahler, 1957) L485: Saxton (Saxton et al., 1986)

6) There is a number of syntax errors throughout the paper. The paper should be

carefully proofread and edited by a native English speaker.

7) Figures (1 – 4) seem to be borrowed from other previous papers. The resolution is relatively low.

8) Figures (5 – 9) need to be modified. X-Axis should be rain gauge precipitation and Y – Axis should be PERSIANN-CCS QPE. The 45-degree line should be used to compare them.

9) Figures (5-9) rainfall should be converted into mm/hr.

10) L618: Error in time to peak is considerably high. Hydrological model structure need to be re-examined.

References: Ahilan et al. (2012) Influences on flood frequency distributions in Irish river catchments. Hydrology and Earth System Sciences.

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