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Hydrology and Earth System Sciences
Discussions

Interactive comment on "More frequent flooding? Changes in flood frequency in Pearl River basin, China since 1951 and over the past 1000 years" *by* Qiang Zhang et al.

Anonymous Referee #1

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The manuscript presents a descriptive study of the extreme flows of a set of basin stations in the Pearl River basin, China. The database of the various stations is very interesting either at the flow rates or for the precipitation stations. As we all know, inconsistent results about how changes in flooding under global warming have been reported due to the limited sample of flood series. The highlight of this study obtaining flood data from historical documents can effectively break through this limitation. Thus, I recommend this paper is accepted after a minor revision. The following is my specific comments.

(1) L93-97, this paper incorporates the floods records of 1000 years from Guangdong

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and Guangxi provinces. Whether the same historical dataset has been used in previous studies and what were their results? A review on the historical dataset should be added.

(2) L113-114, why 10-year flood was selected?

(3) L152, Is "The largest 1 day streamflow" the monthly or annual maximum?

(4) L156, some of stations seem not covering the period of 1951-2014. A detail information such a table about the data should be provided.

(5) The missing data of precipitation and streamflow should be introduced and told to us how to deal it.

(6) L161-188. I suggest the authors put historical flood information as supplementary information.

(7) Session 3., make it clear that the change point and trend detection are only applied for the observations of 1955-2014, instead of the past 1000 years. And, make it clear that the kernel density estimation is only applied for the historical floods.

(8) L272-284, this part superficially discusses that climate change and human activities have kind of impacts on flood peak, which are very straightforward, but does not explain how these factors contribute to the changes. Furthermore, it does not mention that how the peak changes after the change points. Does the peak increase of decrease after the change point?

(9) Section 4.3. The authors argued that the increased numbers of reports have limited impacts on the significant increased trends of the documented floods. They claimed that "in recent 200 years, the no reported extreme floods did not have so much differences that number of floods is still significant increasing". I wonder if this increase has an association with global warming?

(10) How does floods in Pearl River Basin changes in future? Model simulations should

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be provided.

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