Hydrology and
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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.

Qiang Zhang et al.

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Received and published: 30 January 2018

Anonymous Referee #2 Received and published: 25 January 2018 This study addressed flood risk in the river basin of southern China based on observed flood flow data and historical flood data. Therefore, the time span this study concerns is of recent 1000 years. In this sense, I think it is an impressive work analyzing flood risks from a long term perspective. In addition, this study also evaluated flood frequency and flood risks using GEV and kernel estimation method. Some interesting results and findings were achieved such as no abrupt changes or significant trends can be detected in peak flood flow at most of the stations. This finding is interesting which

provides an exceptional case about flooding risk in humid regions to global climate changes. Because many researches indicated amplification of flooding risks over the globe. Besides, different changes in floods were observed in different parts of this river basin, i.e. the Pearl River basin: the occurrence rate of floods was increasing in middle Pearl River basin but decreasing in the lower Pearl River basin. I did find this study pretty interesting. I prefer to take it as an exceptional case study for regional flooding responses to global climate changes, which sheds new light on human understanding of responses regional hydrological cycle to global warming. In general, this paper was well written with good logic and syntax. Besides, this paper also reads well and was well organized. In this case, I prefer to suggest acceptance after pretty minor revisions as suggested below: Reply: Thank you so much for your kindness and for your generous encouragement by your kindly allowing us such an opportunity to improve our manuscript.

(1) In the Data section, more details of the dataset should be provided such as are there any missing data in the streamflow dataset? How to process these missing data if any? Thank you for your kind comment. The annual largest 1 day streamflow data from 78 hydrological stations are directly collected from the Water Conservancy Bureau of the Pearl River Water Conservancy Commission. Because the annual largest 1 day streamflow data have been compiled before released, only several values in several stations are missed. The missing values of annual largest 1 day streamflow data were filled by the average value of the neighboring years. The detail information of hydrological stations in this study has been added in the Table 1.

(2) Are there any missing data in the precipitation dataset? How to process these missing data if any? Thank you for your kind comment. There is less than 1% missing values in daily precipitation data (Zhang et al., 2018). The missing values of precipitation for 1–2 days were filled by the average precipitation of the neighboring days. Consecutive days with missing data were interpolated by the long-term average of the same days of other years. For the objectives of this study, the gap-fill method did not

significantly affect the final results. A similar method had been used by Zhang et al. (2011) to fill daily missing precipitation values.

(3) casualty rates should be changed to mortality in line 174. Thank you for your kind comment. It has been modified. "casualty rates" has been modified as "mortality".

(4) flood-damaged and flood-affected farmland areas should be changed to flood-damaged and -affected cropland areas. Thank you for your kind comment. It has been modified. "flood-damaged and flood-affected farmland areas" have been modified as "flood-damaged and -affected cropland areas".

(5) In line 182, had missing information should be changed to contained missing information. Thank you for your kind comment. It has been modified. "had missing information" has been modified as "contained missing information".

(6) In line 192, ...has been using widely. . .. . .should be changed to . . .. . .has been used widely. . .. . .. Thank you for your kind comment. It has been modified. "has been using widely" has been modified as "has been used widely".

(7) In lines 192, 193, . . .and also used in this study. . .should be changed to . . .and was also used in this study. . . Thank you for your kind comment. It has been modified. "and also used in this study" has been modified as "was also used in this study".

(8) Topic of 3.3 section, i.e. "Kernel density estimation " should be changed to "kernel density estimation" Thank you for your kind comment. It has been modified. "Kernel density estimation" has been modified as "kernel density estimation".

(9) Kernel density estimation in other parts of the main text should be changed to kernel density estimation. Thank you for your kind comment. Kernel density estimation in other parts of the main text has been modified as "kernel density estimation".