

## ***Interactive comment on “Climate change and its impacts on river discharge in two climate regions in China” by H. Xu and Y. Luo***

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In my review report, I have as much as possible tried to answer the following questions as honestly as I can. 1. Does the paper address relevant scientific questions within the scope of HESS? The paper has made a bold attempt to address scientific questions within the scope of HESS. It has addressed the important question of the impacts of climate change on water resources. Bearing in mind that water is a critical component in economic as well as social development, I consider this paper relevant. 2. Does the paper present novel concepts, ideas, tools, or data? The paper has comprehensively described the input data to the hydrological model together with their sources. The concept of model calibration is well stated in section 2.2.1. The concept of climate

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scenarios, projections and uncertainties is fairly well brought out in section 2.2.2. 3. Are substantial conclusions reached? The paper has reached substantial conclusions well backed by the results. It has concluded that climate change has obvious impacts on river discharge in terms of both mean and extreme flows. 4. Are the scientific methods and assumptions valid and clearly outlined? The paper has fairly well outlined the calibration method of the hydrological model and the need to use multiple climate models when predicting future climate for use in impacts studies. 5. Are the results sufficient to support the interpretations and conclusions? The results, as presented, are fairly sufficient to support the interpretation and conclusions made in the paper. The paper should however make it clear that the streamflow discussed in the results is coming from the hydrological model and not from the GCMs as the paper seems to imply. GCMs are only providing input data to the hydrological model (SWAT). This needs to come out clearly.

6. Is the description of experiments and calculations sufficiently complete and precise to allow their reproduction by fellow scientists (traceability of results)? In my view, the description of the experiment is sufficiently complete but not precise. There is need to describe the method used to calibrate SWAT model and the criterion used to assess the performance of the calibrated model. 7. Do the authors give proper credit to related work and clearly indicate their own new/original contribution? In my view, the authors have given proper credit to related work. They need however, to come out more clearly on their own contribution. 8. Does the title clearly reflect the contents of the paper? Yes. 9. Does the abstract provide a concise and complete summary? Yes. 10. Is the overall presentation well structured and clear? The overall presentation is well structured and clear. In my view however, section 2.2.1 has some contradiction. The authors state that they used an already calibrated SWAT model of both rivers Huangfuchuan and Xiangxi in the opening paragraph. But in line 10, they suddenly change and describe how the model was calibrated. It is my considered opinion that the results of the model calibration presented in this section should be presented in section 3. 11. Is the language fluent and precise? The English language has issues of

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grammar which interferes with the flow and readability. There is need to check on the grammar in order to improve the quality of the paper. 12. Are mathematical formulae, symbols, abbreviations, and units correctly defined and used? Most of the abbreviations, symbols and units used in this paper are well defined. There are a few cases however, that need improvement. Ensure that you state the names in full the first time they appear before using abbreviation e.g. United States (US) page 7103 line 18. 13. Should any parts of the paper (text, formulae, figures, tables) be clarified, reduced, combined, or eliminated? I suggest that section 2.2.1 on hydrological model calibration be modified. The authors should stick to the use of and already calibrated model or discuss the calibration methods but not both. Use of both is confusing to the reader. Section 3.1.3 on uncertainties in temperature and precipitation projections should be summarized to at most one page. Section 4 on discussion is too long and should also be summarized to at most one page.. The first paragraph of section 5-conclusions should be deleted. It is not part of the conclusion but fits very well in the summary. 14. Are the number and quality of references appropriate? The paper has some recent references, sufficient number of references, and a good number sufficiently authoritative references, I therefore, consider the number and quality of references appropriate. 15. Is the amount and quality of supplementary material appropriate? In my view, the amount and quality of supplementary material used in the paper is fairly appropriate.

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