

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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General comments: The study has assessed the impacts of climate change on river discharge in two catchments representing different climate regions in China using downscaled multiple (7) Global Climate Models (GCMs) applied to semi-distributed hydrological models Soil Water Assessment Tools (SWAT). The study has stated the problem, methodology and results clearly to support its conclusion. The study gives valuable insights towards understanding the impacts of climate change on river discharge in different climate regions. To further improve the readability of the paper, the authors should consider breaking most of the sentences that are very long to into multiple sentences and also recheck grammatical errors resulting from slight omissions.

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Interactive Discussion

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Specific comments: The current paper has assessed the uncertainty in projected discharge for three time periods (2020s, 2050s and 2080s) using seven equally weighted GCMs for the SRES A1B scenario. However, understanding on climate change has increased especially with regards to emission scenarios such as the Representative Concentration Pathways (RCPs). Further, the study has used the CMIP3 datasets against the updated CMIP5 datasets which are currently available (released in 2013) and contains more models and advanced than CMIP3 datasets. Therefore, it would be critical for authors to clearly state the criteria used to select the climate scenario (i.e. the A1B SRES scenario) and datasets used in the study. However, the results presented and assessment of uncertainty based on SRES scenario and CMIP3 datasets would not be much different even if the RCP scenarios and CMIP5 datasets were used. Although the study has utilized ClimGen as a downscaling tool, dynamical downscaling would have been ideal for this study. The conclusion has been made based using output from the multi-ensemble models. However, it would have been great to know results based on an ensemble of the 7 models.

Technical corrections Line 7, (page 7100): "We assessed" should be changed to "The study assessed". The use of "we" should also be adjusted throughout the manuscript e.g. Line 14 (page 7100), Line 11 (page 7102), Line 18 (page 7103) etc. Line 14, (page 7100): " -29 to 139 " should be changed to "-29 to 139 %" Line 21 to Line 25, (page 7101): Provide references to the cited work. References should also provided to all cited literature in the manuscript e.g Line 4 to line 10, (page 7102 that starts with "In a previous study"), Line 6 (page 7103, which starts with "The River Xiangxi lies") etc. Line 25, (Page 7104): The sentence " ... used in this study seven GCMs were from ..." should be rewritten for clarity e.g. " ... used in this study utilized seven GCMs from ..." Line 1, (Section 5, conclusion): "assesse" should be changed to "assessed"

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