

Interactive comment on “Uncertainty in climate change projections of discharge for the Mekong River Basin” by D. G. Kingston et al.

R. Taylor (Referee)

r.taylor@geog.ucl.ac.uk

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The paper by Kingston et al. quantifies, for the first time, uncertainty in hydrological projections for the River Mekong Basin that arise primarily from GCM structure. Careful analysis of the validity of hydrological projections using SLURP is conducted and its limitations are explained. The paper fits well into the special issue as it reflects a number of important insights regarding uncertainty in the quantification of climate change impacts on basin water resources observed elsewhere in this issue. These include changing snowmelt regimes noted in the Liard Basin (Thorne, this issue); problems associated with spatial (gridded) representations of past and future precipitation (Hughes et al. this issue); and the impact of projected changes in temperature alone

are far more consistent than for precipitation (Kingston and Taylor, this issue). Overall, the analyses are sound and limitations in outcomes stated by the authors. Conclusions are carefully stated and defensible. Overall, the paper marks an important contribution to the body of work on the quantification of uncertainty at the basin scale.

The paper is acceptable for publication in this special issue of Hydrology and Earth System Sciences though a number of minor queries and edits need to be addressed prior to publication. These include:

1) p. 5993, line 5: Update all references to "Todd et al. (2010)" in the text and reference section. 2) p. 5993, line 15: "This food source?" 3) p. 5993, line 18: Replace "Tonle Sap lake" with "Tonlé Sap" as lake is already implied from the word "Sap". 4) p. 5995, lines 9-14: Please provide a short explanation (one sentence) as to why these 7 GCMs were selected. See lines 19-22 on page 5997. 5) p. 5996, line 17: Replace "relatively arid" with "comparatively drier". 6) p. 5997, line 9: Delete reference to Todd et al. (2010) since these authors did not generate the climate scenarios in ClimGen. 7) p. 5999, line 23: Update reference to Xu et al. (2010) in reference section. 8) p. 6001, line 10: Update reference to Hughes et al. (2010) in text and reference section. 9) p. 6004, lines 25-27: The projected increase in river discharge earlier in the year as a result of an enhanced snow melt is also observed in the Liard Basin (Thorne, this issue). Reference to this paper is recommended here. 10) p. 6006, lines 4-6: Awkward text. Rewrite?: "Trends in either increasing or decreasing annual precipitation are consistent across all sub-basins for the CCCMA, MPI and NCAR (increasing) and CSIRO (decreasing) GCMs." 11) p. 6007, line 8: Typo? "snow:rain" or "snow-to-rain" 12) p. 6007, line 27: "imparts little additional uncertainty" 13) p. 6009, line 6: "..evapotranspiration) that is complicated by.." 14) p. 6010, line 12: Invert opening sentence. 15) p. 6010, line 15: Rewrite: "upon the direction of projected changes in precipitation." 16) p. 6011, line 6: Insert sentence: ClimGen climate scenarios were generated by Tim Osborn at the Climate Research Unit of the University of East Anglia."

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