**Hydrology and
Earth System
Sciences
Discussions**

Interactive
Comment

Interactive comment on "Spatial disaggregation of bias-corrected GCM precipitation for improved hydrologic simulation: Ping River Basin, Thailand" *by* D. Sharma et al.

D. Sharma et al.

Received and published: 10 April 2007

We are thankful to the **Anonymous Referee 1** for his valuable comments and thorough discussion of the materials presented in the paper. Below we provide the answers to the comments and questions raised. Accordingly, modifications and improvements are incorporated in the final version of the paper.

Specific comments

Comment 1: *Page 41, equation (1). The authors apply a type of plotting position that is unusual and generally not recommended, especially when probabilities of events larger than the maximum in the sample data-set are to be taken into account. Cunnane, Hazen, Gringorten or Weibull plotting positions are generally applied.*

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Response 1: We agree with referee's comment that this type of plotting position is not recommended when probabilities of events larger than the maximum in the sample data-set (arranged from lowest to largest) are to be taken into account. In present paper, the applied probability method is used to truncate the empirical distribution of raw daily GCM rainfall at particular threshold value to correct the frequency biases from GCM rainfall. This value of truncated probability is considered same as the probability of historical daily rainfall at minimum value. As such, the type of probability plotting methods will not affect the result.

Comment 2: *A discussion on the sources of uncertainties which could affect the conclusion of the paper is missing. The results of the hydrologic model applied (HEC-HMS) are affected by uncertainty, due to input data uncertainty, parameter uncertainty and model structural errors. How significant are the differences between the hydrographs simulated with the 4 type of scenarios (see Figure 14 and Table 5) compared to the uncertainty of the simulated hydrographs?*
Response 1: This comment is useful to show the effect of existing uncertainties in the model results and this will definitely improve the quality of paper. A brief discussion on the biases in the simulated hydrographs (different precipitation scenarios) compare with observed hydrograph is provided in final version of the paper.

Technical corrections
All technical corrections are useful and they are incorporated in the final version of the paper.

Comment 1: *The quality of figures 9-13 should be improved.*
Response 1: Figures are improved in the revised version of manuscript

Comment 2: *Page 37, line 14. Check the expression "GCMs simultaneously E711; ..".*
Response 2: The word 'simultaneously' is deleted and the expression is corrected as "GCMs contain..".

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Comment 3: *Page 38, line 18. Check the reference "Gunter et al., 2001".*
Response 3: Required change "Güntner et al., 2001" is done.

Comment 4: *Figure 14. In the legend, specify that "Simulated" means simulated with observed rainfall.*
Response 4: Legend is changed in the revised version of manuscript.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 35, 2007.

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