

Interactive comment on “Hydroclimatology of the Nile: results from a regional climate model” by Y. A. Mohamed et al.

Anonymous Referee #2

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An interesting paper that sets the context for the examination of the climatic impacts of plans to modify the flow of the Nile in the Sudd by altering the river channel to reduce overtopping. The authors choose to set this context by examining the precipitation recycling budget of this part of the river and compare this to other major river precipitation recycling budgets. The rationale for the modification to the Nile stem from the high evaporation losses from the Sudd and neighbouring swamps. To this end the authors link hydrological and climate models to estimate contributions to precipitation that arise from the evaporation of the swamp land.

Overall I found the paper well researched and written. My one conceptual question arises over whether the climate impact of the proposed modifications can be assessed solely with the calculation of precipitation recycling budgets. The flooding of the swamps not only determines the available water for evaporation but also the partition-

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ing of the sensible and latent heat fluxes. Would it not be expected that the reduction in latent heat flux with the removal of water from the surface would increase the sensible heat flux which would in turn have implications on the mesoscale atmospheric circulation and precipitation of the region. While I recognise that the paper does not intend to fully answer the question of the climate impact of the river rerouting it does set the context (ground rules) for such an examination and personally I would like some consideration of the atmospheric circulation implications of the flooding of the swamp.

In terms of methodological observations I would like more statistics in comparisons of parameter fields. For instance the comparison of the rainfall 'validation' datasets only considers the bias. No mention is made of the RMSE or correlation or comment on the different spatial patterns of rainfall displayed - something which would be important for distributed hydrological modelling. On the subject of rainfall I was a little confused to why the comparisons of the validation datasets occurred at monthly time scales when the datasets were at higher temporal resolutions. The omissions of validation statistics is particularly evident when the results of the models are compared with the 'validation' data and I would urge the authors to include a more comprehensive validation.

Despite these criticisms I found this to be a highly relevant paper and displaying some intriguing results.

Interactive comment on Hydrology and Earth System Sciences Discussions, 2, 319, 2005.

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