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Hydrology and Earth System Sciences Discussions

Interactive comment on "Uncertainty in water resources availability in the Okavango River Basin as a result of climate change" *by* D. A. Hughes et al.

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The referee suggests that the main problem is the over-parameterisation of the Pitman model and that the authors have favoured the model over the rainfall data. The previous paper by Hughes et al. 2006 clearly indicates that the model can perform successfully with local rainfall data. The problem with the updated simulations is that there are no local rainfall data after approximately the mid 1970s. The poor performance after this date relative to the good performance prior to this date clearly suggests that one of the main problems lies in the rainfall inputs.

The second major criticism is directed at the focus on the basin rather than the delta. We would not deny the importance of many other issues when it comes to assessing impacts on the delta, but that was not the focus of the study - other groups are looking at these issues. One of the possible developments in the basin is the construction of hydro-power dams and the impacts of climate change on their opertaion could be very large if some of the scenarios presented in the paper are realistic. Taken together, climate and development impacts could substantially alter the flooding regime of the delta. While this paper has not directly addressed these impacts, the outputs from this study could be used for this purpose.

The comment about the use of meteosat to verify rainfall data is rather difficult to understand. There are many studies that have demonstrated the need to 'calibrate' satellite derived rainfall data against ground observations before use.

We agree that colour would be better for Figure 8 and this will be considered in the final paper. The critique of Fig. 3 is incorrect - these images are identical scales. The suggestion to add more detail to Fig 1 is noted, however, this information has been previously published and the authors do not consider that it would enhance the paper. The final comment is very hard to understand and the referee is referred again to the previous paper (Hughes et al., 2006) that dealt with the initial calibrations in a great amount of detail. However, an explicit statement that the parameters for individual catchments were separately calibrated can be added to the text.

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 7, 5737, 2010.