

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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Received and published: 20 September 2010

I enjoyed very much reading through the article. I fully agree with the authors that the article's main issue, the balance of uncertainties in climate modelling and in hydrological modelling is very important for the Okavango region. Also, the approach of the paper to use ensemble simulations seems promising. I have however concerns on how the ensemble runs are generated.

On line 19, page 5745 the 5 parameters that are treated as uncertain and therefore varied in-between likely minimum and maximum values are given. The approach is

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fine but given the results presented in Figure 7 I get the feeling that either the wrong parameters were selected or the likely minimum and maximum values were chosen too close. The envelope of the ensemble presented in Figure 7 is extremely narrow and does not include the observations. With the shown envelope one must conclude that:

- The simulated flow is almost insensitive to the value of the selected parameters.
- The model is unable to simulate the observed flow since no parameter combination allows e.g. equalling or exceeding the observed high flows (March-May). If the shown envelope represents true model uncertainty, then the model must be seen as conceptually wrong.

The width of the envelope is a major aspect when comparing climate modelling and hydrological modelling uncertainties. The choice of the uncertain parameters and their likely minimums and maximums should therefore be re-evaluated and maybe discussed more in detail.

Just a detail for the introduction (p. 5739, l. 5): The Okavango Delta wetland is not the largest Ramsar site. The Ramsar list (<http://www.ramsar.org/pdf/sitelist.pdf>) presently contains 4 larger ones:

- * Okavango Delta System 09/12/96 Ngamiland 5,537,400 ha 19°17'S 022°54'E
- * Queen Maud Gulf 24/05/82 Northwest Territories 6,278,200 ha 67°00'N 102°00'W
- * Grands affluents 13/12/07 Plateaux, Cuvette, Sangha, Likouala 5,908,074 ha 00°15'S 016°42'E
- * Ngiri-Tumba-Maindombe 24/07/08 Equateur, Bandundu 6,569,624 ha 01°30'S 017°30'E
- * Sudd 05/06/06 Southern Sudan 5,700,000 ha 07°34'N 030°39'E

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

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