

## ***Interactive comment on “Water management in the Senegal River Delta: a continuing uncertainty” by M. Mietton et al.***

### **Anonymous Referee #1**

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#### GENERAL COMMENTS

This paper addresses the question of water management in the Senegal River delta, focusing on the constraints and uncertainties at different levels and scales. Carried out by an international scientific team who has got a deep knowledge of that Sahelian region, the paper is deliberately written in a transverse way and has the advantage of transgressing the traditional disciplinary boundaries, which ultimately is not very often. But also and as a result, this paper is not based on a really precise scientific tool or methodology. Rather, it appears as a synthesis.

The authors investigated two major sectors to illustrate the uncertain control of wa-

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ter resources : the interactive impacts generated by dams on one side (essentially the Diama anti-salt dam), and the still poorly understood effects of the artificial breaching of the Barbarie coastal spit which was opened in October 2003 to preserve Saint-Louis of potentially catastrophic floods. On this point, the authors developed interesting insights into the consequences of this new man-made mouth of the Senegal River which will require a comprehensive and serious control. This work provides also a well-argued look at a fragile socio-environmental system which can be here considered as a learning experience. The developments are well structured and clear. As a non-native speaker, I do not comment the appropriate use of English language, but on the whole it seems precise and correct. The paper does not fall exactly into the scope of this journal, in the sense that it does not rely on any one methodology, but its transdisciplinary approach must be seen as an asset in the reviewer's opinion and the paper is recommended to be published after minor revisions.

#### SPECIFIC COMMENTS

With the exception of Figure 1, the illustration is only concerned with the breaching of Barbarie spit and its effects : may be one or two additional figures for the part 2 “ Dams : new ressources, new constraints ” could enrich the developments.

On several occasions it is referred to the functioning of the Diama dam or to the need for an hydraulic modelling (p. 4306, p. 4310) mainly downstream the dam ; but there is no point refers to the work of the Consulting Agency Coyne et Bellier which achieved (at the request of the OMVS) a modelling of the hydraulic impacts of the spit breaching (OMVS, 2004-05). This paper should take into account the results of this work.

P. 4311, line 20 : it is stated that “ the surface salinity measured in December 2004 and May 2005 did not seem excessive ” ; it would be useful to clarify.

#### TECHNICAL CORRECTIONS

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P. 4308 : "hydraulic head"; instead of "hydraulic load".

Fig 7 : the water level curves (daily minimum and maximum) are not sufficiently differentiated : this can be misleading.

#### Reference

OMVS 2004-05 : Etude d'évaluation des impacts de l'ouverture d'une embouchure artificielle à l'aval de Saint-Louis sur le barrage de Diama. Bureau d'Ingénieurs Conseils Coyne et Bellier, 5 vol.

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 4, 4297, 2007.

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