

## ***Interactive comment on “Assessing the potential hydrological impact of the Gibe III Dam on Lake Turkana water level using multi-source satellite data” by N. M. Velpuri and G. B. Senay***

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The paper presents three approaches to assessing the effect of a proposed dam on Lake Turkana: a historical approach; a knowledge-based approach and parameter sampling approach. The analysis is sound and interesting conclusions are drawn. I feel that further discussion and conclusions would enhance the paper. I suggest the authors address the following comments:

- various comments marked in the attached PDF. - page 2992, line 9: the statement "any other lake of natural origin" seems very absolute. How can the authors be so sure? - choose whether to use "modeling" or "modelling" consistently throughout the

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paper. - at the end of section 2 I would expect more discussion on the uncertainty in each data source. - explain what these sensors are. Are they physical instruments? - page 2999, paragraph 1: this seems to be a large assumption and it should be discussed further here and in the conclusions. - section 3.7: why was NBR chosen. Why not Monte Carlo or Latin Hypercube? - section 3.7: I would appreciate a broad-brush initial description before the full technical details. This would help those not already familiar with NBR. - section 3.7.1, last sentence: where is this presented? - where is the comparison of the three approaches presented? - page 3005: underestimation of 49% seems high to me and warrants more discussion. - page 3006, line 5: this sentence needs clarifying. Is the figure of 400-500 m<sup>3</sup>/s referring to "dam moderated inflows" or "peak flows and...base flows"? - the acronymns "BN", "AN" etc. are clearly familiar to the authors, but the paper would be more readable for others if these were replaced by the full description. - Section 4.5: the value of 0.76 seems low? Why is there the variation between R<sup>2</sup> greater than 0.5 and those less than 0.5: more discussion of this would be interesting. - section 4.7.3 does not appear to add anything new to the results. Why is this section here? - page 3011, line 24: where are these identified?

Please also note the supplement to this comment:

<http://www.hydrol-earth-syst-sci-discuss.net/9/C759/2012/hessd-9-C759-2012-supplement.pdf>

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