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Hydrology and Earth System Sciences Discussions

Interactive comment on "Use of satellite data to assess the impacts of irrigation withdrawals on Upper Klamath Lake, Oregon" *by* Q. Tang et al.

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This paper presents a methodology for evaluating the seasonal variability of water levels in the Klamath lake based on a simple budget equation coupled with hydrological simulation models and remote sensing techniques. The papers is interesting because it shows the usefulness of remote sensing data in describing the behavior of a complex hydrological system and the resulting improvement in hydrological predictions. This latter aspect is somewhat left at a "potential" level. Two different remote sensing techniques are applied: i) estimation of land surface parameters (LAI) for constraining a semi-conceptual run-off model (VIC); ii) simplified surface energy balance for actual ET estimation. Both topics have been covered in a large number of scientific papers by means of different approaches; as such, the paper does not introduce any significant

advancement in the application of remote sensing techniques. But it is interesting the way the authors define for evaluating the water withdrawal for irrigation i.e. by combining a simulation model for ETnatural and a remote sensing-based method for ETactual. There are several questions that could be arised on the reliability of such estimation, but still the methodology is quite appealing on the application side. So, at the end, probably the lake budget equation becomes almost a secondary objective of the paper, which mantains its focus on the evaluation of the net irrigation consumption. Only toward the end of the paper (section 5) the reader finally understands that the original problem was to solve Eq.(1) and finding the unknown lake water depth (and I'm not yet fully convinced if I understood well or not!). As such, I would suggest to clearly declare the main objectives of the paper at the end of introduction, and to assess explicitly in a table the magnitute of each term of the lake water budget represented by Eq.(1) to highlight more clearly the role of the net irrigation consumption on the retrieval of the main output (the lake water depth D).

Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 6, 1261, 2009.