Hydrol. Earth Syst. Sci. Discuss., 12, C5735–C5736, 2015
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Hydrology and Earth System Sciences
Discussions

Interactive comment on "Reliability of lumped hydrological modeling in a semi-arid mountainous catchment facing water-use changes" *by* P. Hublart et al.

Anonymous Referee #1

Received and published: 22 December 2015

This paper presents an extensive analysis of the uncertainties associated to lumped models, exemplified in a semi-arid catchment in northern Chile. Aspects investigated include the effect of sublimation on snow modeling and explicit inclusion of irrigation withdrawals. Three alternative modeling approaches are explored in order to assess the influence of these modeling options. A Bayesian scheme is employed in order to evaluate the predictive uncertainty affecting the model output. Overall, I find the work worthy of publication once the authors assess some aspects I believe to be weaknesses. The manuscript is very long, offering all kind of details both on the modeling framework but also on more conceptual aspects that justify the use of simple, "parsimonious" models for hydrological prediction. Although the stated objectives include only

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studying the effect of sublimation and irrigation withdrawals, the discussion (correctly, in my opinion) covers many aspects of the modeling approach. However, the conclusion section is barely two paragraphs long! Hydrological modeling is difficult, and surface/subsurface interactions are almost always important. So, what which is new can we conclude from this study? I don't mean to say that there is nothing new here. I believe there is, but the authors need to do a better job highlighting it, and attempting to offer some general conclusions that will be of interest not only at the local level.

Please see annotated pdf file for specific comments.

Please also note the supplement to this comment:
http://www.hydrol-earth-syst-sci-discuss.net/12/C5735/2015/hessd-12-C5735-2015-supplement.pdf

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 12, 11485, 2015.