

## ***Interactive comment on “Possibilistic uncertainty analysis of a conceptual model of snowmelt runoff” by A. P. Jacquin***

**Anonymous Referee #2**

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The paper considers the problem of snowmelt runoff model parameter determination by using a possibility theory based statistical inference scheme

The application issue is interesting and its characteristics concerning incomplete and imprecise knowledge justify in a general sense the consideration of possibility theory. However the possibility statistical inference considered raises many questions. The presentation is quite good in general but a few important aspects are not completely clear.

Hereafter more specific comments:

A sub-section introducing shortly the basic notions of possibility theory (possibility and necessity measures, possibility distribution, alpha cuts, extension principle) has to be

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added at the beginning of section 2. Links with plausibility and credibility measure of the Dempster-Shafer theory have to be mentioned as well as likelihood semantics and confidence interval semantics of possibility distributions (D. Dubois, S. Moral, H. Prade, A semantics for possibility theory based on likelihoods. *J. of Mathematical Analysis and Applications*, 205, 1997, pp.359-380; D. Dubois, L. Foulloy, G. Mauris, H. Prade, Probability-possibility transformations, triangular fuzzy sets, and probabilistic inequalities, *Reliable Computing*, 10, 2004, pp. 273-297.

The equation 2 which is the heart of the knowledge integration process looks like a kind of generalized Bayes theorem. However the conditioning on some events or observations does not appear in the possibility distribution considered. In particular the parameter is not written in the right part of the equations 4, 5, 7. I am not sure the author intent is to really make a conditioning but merely to fuse the different possibility distributions associated with performance measures. This crucial point has to be clarified in order to justify the origin of equation 2.

Concerning the result evaluation of uncertainty bounds, the choice of the alpha level (0%, 50%, 75%) is quite arbitrary. I think that building a possibility distribution of the observations and then compare (in terms of inclusion or intersection) this one with the prediction possibility distribution would be more founded.

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