

## ***Interactive comment on “Model calibration for ice sheets and glaciers dynamics: a general theory of inverse problems in glaciology” by M. Giudici et al.***

**Anonymous Referee #1**

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The authors state that inverse methods are not ‘popular’ in glaciology. Although one can argue what the exact meaning of ‘popular’ is in this context, the fact is that inverse methods are now routinely used in glaciological modelling work. The use of inverse methods is now such a standard procedure that it appears puzzling how one can state that they are not ‘popular’. (By the way the reference to Gudmundsson 2014 which allegedly supports this claim is incorrect. That work was published in 2011 and not 2014, and I could not find any statements in that article to this effect.)

The discussion is rather general. Which raises the question of the nature of this paper. Is presenting new scientific work, is it an overview paper discussion existing work, or does it aim at being a tutorial on the use of inverse methods? I did not see any important new findings that could be of use to the glaciological community. The forward

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model used is trivial and can at best only be used as a toy model to illustrate some general concepts. The conclusions are weak. The authors claim to have unified different notations and facilitated formal definitions. This does not count as a hard new scientific result. I did not find anything that is not generally known to all well-informed practitioners in the field.

As an overview paper it misses too many key publications and quite frankly gives a much distorted view of the field.

And as a tutorial, one can find better introduction to the subject in designated textbooks on this subject.

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Interactive comment on The Cryosphere Discuss., 8, 5511, 2014.

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