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Hydrology and Earth System Sciences Discussions

Interactive comment on "Parameterization of atmospheric long-wave emissivity in a mountainous site for all sky conditions" *by* J. Herrero and M. J. Polo

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We acknowledge the work done by all reviewers. By reading Reviewer 1's comments we became aware that we had indeed shortened what should have been a longer explanation and discussion. This may have led to a misunderstanding of some points, and has not made the focus and novelty of the results clear. Thus, we have expanded the original work, also taking into account all the comments made by every reviewer. We have included another parameterization, as suggested, and two new validation sites for all the expressions analyzed, with a more abundant documentation in the

Results and Discussion. Please, see the new paragraphs in the revised text, together with the individual responses to comments made by the other two reviewers. We hope to have explored in depth the subject, and clarified the questions addressed.

In this article we explore the performance of two parametrical expressions: (1) a set of new parametric expressions, locally derived, and (2) a modified version of Brutsaert's equation, as we relate his cloud index N to screen-level measurements of solar radiation and humidity through a parametrical expression. So, the performance of Brutsaert's expression is satisfactory and similar to the local expressions (1) not when used under its original form, but when this local parameterization of the N index is included. We apologize for not having made clear this aspect of the use we made of Brutsaert's expression in the original version of the paper, and we hope to have expressed it more clearly in the revised version (see lines 19-20 and 213-231 in the revised version). This is, in fact, one of the most interesting results of this study and, as we state in the conclusions, each one could be of interest in certain situations. Specifically, (1) has the greatest accuracy locally and (2) has the broadest scope for applicability with a good performance (please, see the new results in the revised version).

Specific comments are individually answered in the supplement attached. The revised version of the article is included in an Author Comment (AC C1481: 'Revised version of the manuscript', Javier Herrero, 15 May 2012).

Please also note the supplement to this comment:
http://www.hydrol-earth-syst-sci-discuss.net/9/C1482/2012/hessd-9-C1482-2012-supplement.pdf

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Interactive comment on Hydrol. Earth Syst. Sci. Discuss., 9, 3789, 2012.