Manuscript number: hess-2013-221
Title of the manuscript: Distributed hydrologic modeling of a sparsely-monitored basin in Sardinia, Italy, through hydrometeorological downscaling.
Authors: G. Mascaro, M. Piras, R. Deidda and E. V. Vivoni.

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Reply to Reviewer 2

First of all, we thank Reviewer 2 for the comments on our work. In the following, the comments raised by Reviewer 2 are split into parts and copied in bold fonts to facilitate understanding of our answers.

After describing the paper summary and its main contribution, Reviewer 2 provides the following specific comments.

Comment 1 (page: 7693; line: 23): Change: of which 94% are concentrated; To: with 94% concentrated

We modified the text.

Comment 2 (Section 4.2, page: 7697, lines: 1-25): Multifractal theory has extensively been used to model rainfall statistics. That said, I believe a brief discussion on multifractal rainfall models is needed.

We thank Reviewer 2 for this suggestion. We added a few references on multifractal models (page 12, lines 8-12 in the new manuscript version).

Comment 3 (Section 4.2, Equation 1): Several studies have indicated dependence of multifractal model parameters on the large-scale rainfall intensity. The authors are encouraged to, at least, mention a few of these studies.

As for the previous comment, we thank Reviewer 2 for this suggestion and we added some references to support our statement (page 13, lines 7-10 in the new manuscript version).

Comment 4 (Section 4.2.2, page: 7699, lines: 1-15): I do not have a clear understanding on what the velocity parameter U stands for. Please explain.

The parameter $U = L/T$ should be intended as the value of the ratio between the spatial (L) and temporal (T) scales, such that the statistical properties of the rainfall fields (discretized at scale L in space and T in time) can be assumed as homogeneous. The calculation of U has been conducted in previous papers by analyzing the correlation functions of the rainfall fields in the spatial (x, y) and temporal (t) directions for different values of U. A detailed description of the meaning and the calculation of U has been provided by Deidda et al., (2004). In the revised manuscript, we added this reference on page 14, line 20; we believe that a further discussion on this aspect is out of scope of the work.

Comment 5 (page: 7699; line: 19): Change: in the following; To: below

We modified the text.

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Comment 6 (page: 7700; lines: 19-20): Change: at the fine scale; To: at fine scales

We modified the text.

References

Deidda, R., Badas, M. G., and Piga, E.: Space-time scaling in high-intensity Tropical Ocean Global Atmosphere Coupled Ocean-Atmosphere Response Experiment TOGA-COARE storms, Water Resour. Res., 40, W02506, doi:10.1029/2003WR002574, 2004.