

## ***Interactive comment on “Towards a reliable assessment of climate change impact on droughts in Southern Italy: Evaluation of EURO-CORDEX historical simulations by high-quality observational datasets” by David J. Peres et al.***

**Anonymous Referee #2**

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The paper is well written, the state-of-art well described in the introduction, and the methodology used in this study are clear and can be easily understood from the paper. Overall, the quality of this paper is good, but to be honest I do not think this should be a paper. I mean, I see it more as a technical report or, even better, as the preliminary part of a wider study, maybe from the selection of the best models to dedicated projections of hazard and impacts. I am aware that other studies dealing on the evaluations of newest GCM-RCM simulations do exist, focusing on small regions, e.g. the one cited by authors about Sardinia, but I feel that this is not a research paper, but a (very well per-

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formed) study on the performance of models on a test region. Thus, I am questioning myself: once the authors have decided that one combination of GCMs-RCMs performs better than the others, for each quantity analyzed (precipitation, temperature, drought), time scale (annual, seasonal), sub-region (3 for Sicily, 3 for Calabria).. what shall the reader do with this information inserted in a scientific paper? The region is very small, so - as the authors say (see lines 452-453) - the choice of the best model depends on many factors, making this piece of work not conclusive. What shall be really of interest is what the authors plan for further analyses (Lines 454-456). I also have another major point about the possible publication: the paper is not about droughts. Drought is just slightly touched and with very basic metrics, far from the current standard in drought-related analyses, so my final verdict is to reject this submission.

However, I see that authors made great efforts, so they might consider to rethink about the paper and try to resubmit, but I would definitely remove the word droughts from title.

Specific comments: - Why not using also Med-Cordex? - Are the Euro-CORDEX bias-adjusted? Why not using the bias-adjusted runs? - I'd like to see more details on the station data, which could be potentially one of the most interesting parts of the study; - Don't include equations in the core manuscript, move them all to supplementary materials; - Drought part is very poor. Why not using, at least, the SPI and the SPEI? Also the choice of quantities related to drought are not enough to justify the publication, I'd expect a lot more (frequency of events, intensity, severity, return periods, spatial aggregation, etc.) especially on monthly basis (not annual); - Some conclusions are exactly what one might expect: precipitation is modelled worse than temperature, drought (as computed in this study) is similar to precipitation, RCMs deeply affect the results more than GCMs.

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