

Interactive comment on “Comparing dynamical, stochastic and combined downscaling approaches – lessons from a case study in the Mediterranean region” by N. Guyennon et al.

Anonymous Referee #1

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This manuscript illustrates the mutual advantages of statistical and dynamical approaches to simulate the regional climate in southern Italy. The purpose is not completely original, but the aim is clearly presented, the text is well written, and the illustration is convincing. In particular, the evaluation of non-stationary features is rather original. The paper is worth publishing in HESSD after minor modification. My main comment is the fact that quantile mapping is presented as a downscaling technique whereas it is a correction technique. Of course, on average, the mean precipitation field exhibits, after mapping, smaller patterns than the original GCM pattern. But if one consider a day with a 1000km x 500km rainy event in GCM precipitation, the cor-

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rected field will keep almost the same size:the scale of the event has not be reduced, as it should be in reality. Downscaling means for me apparition of small scales even on daily fields, not just multi-year averages. I do not mean that the paper should be rewritten with another technique, like weather analogues, which produce indeed small scales, but have other detrimental aspects with respect to the quantile-quantile correction. I just ask the authors to use an accurate terminology or to define clearly what they mean by "downscaling"

page 5, line 8: to better inform the reader, please give the maximum elevation of the Alps and of the Apennines in ECHAM

page 6, line 5: same question for PROTHEUS

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