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Validation of the monthly precipitation climatology over the Iberian Peninsula simulated by the regional climate model REMO by a new high quality dataset

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Hydric resources constitute a critical socio-economic and ecological factor in the Iberian Peninsula (IP), and future climate projections suggest an aggravation of water-availability-related problems in the area. Large uncertainties exist, however, regarding climate projections on the regional scale, and high quality simulations of fine resolution, of both present day climate and scenario projections, are needed to address them.
We present a validation of the monthly precipitation climatology over the IP simulated by the regional climate atmospheric model REMO, as a previous step to further present climate studies and scenario simulations in the region. Hindcast simulations have been performed with three different spatial resolutions, of 0.5°, 0.22° and 0.088°, respectively. The experiments cover the decade between 1989-1999, the ERA-interim reanalysis being applied as lateral condition in all of them.
The results of the simulations have been validated against an observational monthly precipitation dataset, recently created. This new dataset covers the period from 1945 to 2005 and currently offers the highest spatial density of stations on the IP (1 station/150-200 km2). The validation has been done resorting to different univariate and multivariate statistical tools. In particular, a technique conjoining principal component and cluster analysis has been employed in order to identify and compare the spatio-temporal precipitation patterns appearing in the observed and simulated climatologies.