

A comparison of daily evaporation downscaled using WRFDA model and GLEAM dataset over the Iberian Peninsula.

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GLEAM dataset was presented a few years ago and since that moment, it has just been used for validation of evaporation in a few places of the world (Australia and Africa). The Iberian Peninsula is composed of different soil types and it is affected by different weather regimes, with different climate regions. It is this feature which makes it a very interesting zone for the study of the meteorological cycle, including evaporation.

For that purpose, a numerical downscaling exercise over the Iberian Peninsula was run nesting the WRF model inside ERA Interim. Two model configurations were tested in two experiments spanning the period 2010-2014 after a one-year spin-up (2009). In the first experiment (N), boundary conditions drive the model. The second experiment (D) is configured the same way as the N case, but 3DVAR data assimilation is run every six hours (00Z, 06Z, 12Z and 18Z) using observations obtained from the PREPBUFR dataset.

For both N and D runs and ERA Interim, the evaporation of the model runs was compared to GLEAM v3.0b and v3.0c datasets over the Iberian Peninsula, both at the daily and monthly time scales. GLEAM v3.0a was not used for validation as it uses for forcing radiation and air temperature data from ERA Interim.

Results show that the experiment with data assimilation (D) improve the results obtained for N experiment. Moreover, correlations values are comparable to the ones obtained with ERA Interim. However, some negative correlation values are observed at Portuguese and Mediterranean coasts for both WRF runs. All of these problematic points are considered as urban sites by the NOAH land surface model. Because of that, the model is not able to simulate a correct evaporation value. Even with these discrepancies, better results than for ERA Interim are observed for seasonal Biases and daily RMSEs over Iberian Peninsula, obtaining the best values inland. Minimal differences are observed for the two GLEAM datasets selected.