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Solar and wind variability and complementarity in the Iberian Peninsula using clustering techniques

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Solar and wind energy resources are increasingly important in the energy supply. In areas like the Iberian Peninsula that already have a large share of renewable energies in the electricity generation mix, the analysis of their variability and complementarity is particularly important. The aim of the present work is to analyze the variability and complementarity of these two energy sources in the Iberian Peninsula, through the use, among others, of clustering methods. Unfortunately, observations and measurements of variables such as global radiation are obtained and stored in few places, which leads to find alternatives in the renewable energy resource assessment.

The present work makes use of a Regional Climate Model (RCM) as an alternative source of data due to the lack of well-spread and long-period observations databases. A high resolution simulation of PROMESRCM forced by the ERA-INTERIM reanalysis, is compared with available observations in order to analyze its features. This simulation was made in the EUROCORDEX Project framework.

In addition, the use of this simulation gives us a coherent database to work with in terms of future climate and solar and wind resource characteristics in this context, as climate change scenarios have been simulated with the same setup, which will lead our next steps and future work.