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Thunderstorm Forecast System over Spain using Optimized Analogs

L.M. Oviedo-Bocanegra, R. Ancell, and M.R. Pons
Agencia Estatal de Meteorología (AEMET), Santander, Spain

Statistical downscaling methods adapt the predictions provided by NWP models to local scales, considering the climatology given by the historical records observed in the location of interest. This adaptation is done by a statistical model establishing the probabilistic relationship between NWP model outputs and the local observed climate using a historical common period (usually a reanalysis period). In this line, a Storm Forecasting system using an analog-based methodology has been developed providing a probability value for storm occurrence. Moreover, an optimization process has been implemented in order to obtain the most relevant variables for storm forecasting purposes

As an example, we have implemented this system in Spain, providing a 6-hourly prediction until D+7 over a 0.5 resolution grid, obtaining promising results for up to 3 days in advance forecasts.