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## Sources of predictability over the Mediterranean at seasonal time-scale: building up an empirical forecasting model

**Esteban Rodríguez-Guisado** and Ernesto Rodríguez-Camino

AEMET, Área de Evaluación y Modelización del Clima, Spain (erodriguezg@aemet.es)

Although most operational seasonal forecasting systems are based on dynamical models, empirical forecasting systems, built on statistical relationships between present and future at seasonal time horizons conditions of the climate system, provide a feasible and realistic alternative and a source of supplementary information. Here, a new empirical model based on partial least squares regression is presented. Originally designed as a flexible tool, the model can be run with many configurations including different predictands, resolutions, leads and aggregation times. To be able of producing forecast for any selected configuration, the model automatically selects predictors from an initial pool, containing global climate indices and specific predictors for the Mediterranean region unveiled in the frame of the MEDSCOPE project. Additionally, the model explores spatial fields, generating time series based on spatial averages of areas well correlated with the predictand. These time series are added to the initial pool of candidate predictors. We present here results from a configuration producing probabilistic forecasts of seasonal (3 month averages) temperature and precipitation, their verification and comparison against a selection of state-of-the-art seasonal forecast systems based on dynamical models in a hindcast period (1994-2015). The model is able to produce spatially coherent anomaly patterns, and reach levels of skill comparable to those based on dynamical models. As predictors can be easily removed or incorporated, the model can provide information on the impact of a particular predictor on skill, so it can be used to help in the search and understanding of new sources of predictability. Evaluation of soil moisture impact on summer temperature predictability is shown as an example