



Dynamical proxies as a tool for Seasonal forecast.

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Seasonal forecasts are essential to offer early-warning decision support systems that can help to reduce the socio-economics related risk associated to some anomalous events. Advances in statistical prediction are often associated with the enhance of understanding that usually leads to improve dynamical prediction. Thereby, both approaches are frequently combined in order to increase the robustness of the forecast.

Here we show a novel statistical-dynamical approach for probabilistic seasonal forecasting General Circulation Model (GCM) forecasts. We measure the instantaneous metrics defined in Faranda et al. (Scientific Reports, 2017), namely the number of degrees of freedom and the persistence of daily averaged sea-level pressure and precipitation fields in the North Atlantic sector. As a case study we study the main hydrological basins in Spain and Italy. Combining this information with statistical downscaling techniques we present forecasts computed from 1 to 8 months ahead. We use the monthly precipitation forecasts from the North American Multi-Model Ensemble (NMME) and ENSEMBLES daily gridded observational dataset (EOBS) for validation with observations.