Post-processing of seasonal predictions: case studies using the EUROSIP hindcast data base.

Emmanuel Roulin and Stéphane Vannitsem
Royal Meteorological Institute of Belgium, Brussels, Belgium

Seasonal predictions from climate models are increasingly invoked in various sectors like water management, energy and transport to cite a few. However there seems to subsist an hiatus between on one side the successes put forward by model developers: skilfull forecasts of large scale climate patterns like the North Atlantic Oscillation, and on the other side the temporal and spatial scale needed for applications. Follows a series of studies to assess the skill of seasonal predictions in a much finer space and time resolution ranging from the verification of the weather parameters to the added value in a given application. More than often, the Pearson correlation coefficient is the only skill measure left that satisfy some hypothesis testing. A common step to all these studies is the need to post-process the raw seasonal predictions through the use of forecasts of retrospective situations also called "hindcasts".

This study investigate the post-processing of the seasonal predictions of the EUROSIP multi-model system. The hindcasts comprise samples of 23 to 36 years and ensembles of 10 to 28 members depending on the 5 models included. An array of skill scores and other diagnostic measures both deterministic and probabilistic are calculated in order to compare the impact of the post-processing and help selecting – if any - the (multi-)model and the post-processing method best suited for a specific location, a target season and lead-time. The presence of trends and the cross-validation setting add some complexity to the already heterogeneous database. This study focuses on six cases of 5° longitude by 2.5° latitude in Western Europe and the Mediterranean Region. The forecasts of three monthly averages of surface temperature and mean sea level pressure are compared with the corresponding ERA Interim reanalysis data whereas the forecasts of precipitation are evaluated with the rain-gauge data from the Global Precipitation Climatology Centre.