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Seasonal forecasts of electricity demand in France : a first evaluation using the DEMETER system.

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As electricity can not be stocked, a balance between offer (production) and demand (consumption) has to be ensured permanently. The management of the power generation system at the scale of a country is a very complex problem as it involves many different constraints, rules and external variables. In particular, air temperature is a crucial parameter as it explains an important part of the demand variability. Accurate temperature forecasts are therefore an important factor to allow the best possible management of the power generation system, at 1 day to several months/years lead times. In this study, we examine the potential of seasonal forecasts of temperature to forecast energy demand over France up to 6 months, with respect to a climatological forecast. We compare two approaches: the first one uses direct T2m forecasts from the DEMETER System 2 models averaged over France to predict the monthly demand anomalies; in the second approach, we first use the UC/INM web portal for statistical downscaling to predict T2m over $\sim$25 stations from large scale T850 hindcasts, and then use these T2m forecasts to predict energy demand anomalies. In each case, the energy demand is modeled using the DECIDE software