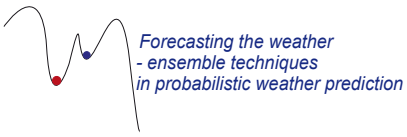
EMS Annual Meeting Abstracts
Vol. 8, EMS2011-81-1, 2011
11th EMS / 10th ECAM



Use of probabilistic temperature forecasts in power demand prediction: questions, needs and gaps

L. Dubus (1), T.T.H. Hoang (2), and J. Najac (1)

(1) EDF R&D, CHATOU, France (laurent.dubus@edf.fr, +33-1-30-87-71-08), (2) EDF R&D, CLAMART, France

As human activities become more sophisticated and power-dependent, weather and climate increasingly pose both opportunity and risk for the energy industry and people in general. But risk is certainly rising faster than opportunities, and therefore margins are decreasing; hence, effective decision-making requires accurate and reliable information on weather and climate, at all time-scales, from the real-time to the seasonal range,and even beyond. Air temperature in particular is one of the key parameters for the power sector, as it drives the demand and availability of many production means. We here focus on the medium-range forecasting of this parameter.

Two complementary problems have to be dealt with : the first one consists in ensuring that the risk of physical disruption in the system will stay smaller than a given threshold; the second concerns the minimization of the financial risk associated with failure in case it happens.

We will present some important issues when one wants to use probabilistic temperature forecasts to assess both physical and financial risks. Among these problems, we will talk about the importance of the methods used to estimate high level probabilities, showing that the results are very method-dependent. Another essential question concerns the relevance between different approaches: deterministic in the short-term, probabilistic in the medium-term and climatological in the long term. Current gaps between available weather forecasts and users needs will be pointed out and ways of investigation will be proposed.