Geophysical Research Abstracts,
Vol. 11, EGU2009-3123-2, 2009
EGU General Assembly 2009

Needs for seamless predictions: the case of the electricity sector

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As electricity can not be stored, 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. Weather is of course a key element of this optimization problem. Air temperature, precipitations and some other parameters have indeed a more or less strong influence on several of the processes at stake. In particular, a consistency between data, forecasts and methods used at different time scales is important to ensure the best possible management of the system. Based on the french example, we present the different processes involved at different time scales, the current data and forecasts used to make demand forecasts and water incomes forecasts for hydro-power production. We also point some specific needs and suggest paths of progress that would be helpful for the sector.