

Towards a more robust integration of uncertain seasonal hydrological forecasts into operational decisions in the UK water industry

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Improved skill of seasonal predictions for the North Atlantic circulation and Northern Europe are motivating an increasing effort towards developing seasonal hydrological forecasting systems, such as the Copernicus Climate Change Service (C3S) or the Hydrological Outlook UK (HOUK). Such forecasting systems are expected to support the development of better-informed decision-making processes in water resource management. However, from a recent survey of UK water companies and the analysis of their water management and drought plans, it appears that decision-making frameworks heavily rely on the use of past observations and experiences of drought events more than hydrological and/or meteorological forecasts. The integration of seasonal hydrological forecast into operational decision-making is yet limited by the large uncertainties associated with this type of predictions and the lack of generalizable methods for relating seasonal hydrological forecast with management decision variables. In this study, we investigate the potential for developing a formal and robust method to improve the forecast value of seasonal hydrological forecast and its integration into model-based operational decisions, using a pumped-storage reservoir system in the South-West of England as a pilot application.