



Operational hydrological projections to aid decision making

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The Environment Agency of England has wide ranging responsibility for environmental regulation that includes both water resources management and flood management. In order to best fulfil its role decisions need to be taken using the best available evidence in the time available. The manipulation of large amounts of hydrological data in a way that best meets the needs of decision makers is a complex challenge. Not only should any analysis be technically robust but it should also be presented in a way that communicates key messages clearly and quickly. The Environment Agency and its predecessor organisations has a long history of working with hydrological data but in recent years there has been a need to better incorporate risk and uncertainty into hydrological analysis so that subsequent decisions can take this into account.

In the face of recent extreme weather events, there has been an increasing demand for forward look projections from water resource and flood risk practitioners, decision makers and contingency planners. These assessments are required to give appropriate lead in time to allow risk mitigation measures to be implemented to minimise impact upon people, the environment and infrastructure.

This presentation will outline the methodologies developed by the Environment Agency to produce and publish monthly routine forward look projections using both a scenario and climate ensemble approach. It will cover how information is disseminated, providing a good example of communicating science to decision makers and to the public.

Examples of practical applications of these methodologies include:

- Risk based planning and forecasting of water availability for inter basin water transfers into water stressed catchments.
- Assessment of water resources prospects during droughts for people and the environment
- The likelihood and medium term risk of high groundwater levels impacting upon people and infrastructure.

There are also a number of future challenges which include how to best capture extremes within the ensemble members, the application of conditional forecasts based upon large scale circulation indices and the integration of short term meteorological forecasts with medium term climate ensembles.