



Risk-based decision making in water management using probabilistic forecasts: results from a game experiment

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Probabilistic streamflow forecasts have been increasingly used or requested by practitioners in the operation of multipurpose water reservoirs. They usually integrate hydrologic inflow forecasts to their operational management rules to optimize water allocation or its economic value, to mitigate droughts, for flood and ecological control, among others. In this paper, we present an experiment conducted to investigate the use of probabilistic forecasts to make decisions on water reservoir outflows. The experiment was set up as a risk-based decision-making game. In the game, each participant acted as a water manager. A sequence of probabilistic inflow forecasts was presented to be used to make a reservoir release decision at a monthly time step, subject to a few constraints. After each decision, the actual inflow was presented and the consequences of the decisions made were discussed. Results from the application of the game to different groups of scientists and operational managers during conferences and meetings in 2013 (a total of about 150 participants) illustrate the different strategies adopted by the players. This game experiment allowed participants to experience first hand the challenges of probabilistic, quantitative decision-making.