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A risk-based decision-making game relevant to water management. Try it yourself!

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Monthly or seasonal streamflow forecasts are essential to improve water planning (eg., water allocation) and anticipate severe events like droughts. Additionally, multipurpose water reservoirs 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. Given the need to take into account uncertainties at long lead times to allow for optimal risk-based decisions, the use of probabilistic forecasts in this context is inevitable.

In this presentation, we will engage a risk-based decision-making game, where each participant will act as a water manager. A sequence of probabilistic inflow forecasts will be presented to be used to make a reservoir release decision at a monthly time-step, subject to a few constraints – e.g., an end of year target pool elevation, a maximum release and a minimum downstream flow. After each decision, the actual inflow will be presented and the consequences of the decisions made will be discussed together with the participants of the session. This experience will allow participants to experience firsthand the challenges of probabilistic, quantitative decision-making.