

DEMONSTRATING IMPROVED WATER USE EFFICIENCY THROUGH THE APPLICATION OF METEOROLOGICAL/CLIMATE, HYDROLOGIC AND DECISION SCIENCE: THE INFORM PROJECT

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Abstract

Considerable investments have been made toward improving the quality and applicability of climate, synoptic, and hydrologic forecast information, and earlier retrospective studies have demonstrated clearly that the management of water resource systems with large reservoirs can potentially benefit from such information. However, prior to this project no focused program has aimed to quantify and demonstrate these benefits in an operational environment. This is for three main reasons:

- (a) Synoptic and climate forecasts include substantial uncertainty, and their effective use in management requires procedures that explicitly account for that uncertainty both in flow forecast and decision models/processes,
- (b) Existing reservoir management procedures depend on presently available information and operate under set institutional constraints, so that nontrivial technical and institutional changes are required to use information of a different type (ie, improved hydrologic, synoptic, or climate timescale forecasts),
- (c) The development and application of such systems requires that the technical teams maintain a close relationship with the operational users, and have a clear understanding of their operational environment.

The purpose of the INtegrated FOrecast and Reservoir Management (INFORM) Project is to demonstrate increased water-use efficiency in Northern California water resources operations through the innovative application of meteorological/climate, hydrologic, and decision science. The particular objectives of the project are to implement a prototype integrated forecast-management system for the primary Northern California reservoirs, to demonstrate the utility of meteorological/climate and hydrologic forecasts through near real-time tests of the integrated system, and to evaluate the economic and other benefits when compared with current practices.

The presentation will cover the technical work done to date, which includes the development, implementation and validation of INFORM components and the integration of these components to perform initial operational tests producing real-time ensemble forecasts out to lead times of 16 days, four times daily, for the wet season 2005-06. Several technical and specific conclusions have been drawn from this work so far and these will be discussed at the presentation.