

Summary of Meeting Proceedings

Prepared by the *INFORM* Core Office, HRC-GWRI

FOURTH OVERSIGHT AND IMPLEMENTATION COMMITTEE MEETING OF THE INFORM PROJECT

21 SEPTEMBER 2005, Sacramento, California

PARTICIPANTS

Agency Representatives

M. Anderson,	California Department of Water Resources
Gary Bardini,	California Department of Water Resources
Pete Fickenscher,	California Nevada River Forecast Center, National Weather Service, NOAA
Josh Foster,	NOAA Office of Global Programs (<i>through a conference call</i>)
Paul Fujitani,	Central Valley Operations, U.S. Bureau of Reclamation
Robert Hartman,	California Nevada River Forecast Center, National Weather Service, NOAA
Arthur Hinojosa,	California Department of Water Resources
Aaron Miller,	California Department of Water Resources
Claudia Nierenberg,	NOAA Office of Global Programs (<i>through a conference call</i>)
Maury Roos,	California Department of Water Resources
Eric Strem,	California Nevada River Forecast Center, National Weather Service, NOAA

INFORM Co-PIs and INFORM Project Scientists

Aris Georgakakos,	Georgia Water Resources Institute
Kosta Georgakakos,	Hydrologic Research Center
Nick Graham,	Hydrologic Research Center
Martin Kistenmacher,	Georgia Water Resources Institute
Huaming Yao,	Georgia Water Resources Institute

LOCATION AND TIME

The meeting was held at the National Weather Service (NWS) California Nevada River Forecast Center (CNRFC) Conference Room in the Joint Operations Center (3310 El Camino Ave.) on the 21st of September 2005. It started at 1:00PM and ended at 3:00PM.

PURPOSE AND INFORMATIONAL MATERIAL

The meeting served as a second critical review meeting for INFORM (Integrated Forecast and Reservoir Management), mandated by the California Energy Commission and CALFED funding agencies. Documents with the presentations were submitted to the participants prior to the

meeting by the INFORM Core Office Staff. The meeting consisted of the presentation of the INFORM project status by the Co-PIs, followed by an open discussion of the strategy for the INFORM “dry-run” demonstration design for winter 2005-2006. The PDF forms of the meeting presentations are available at the HRC web site: <http://www.hrc-web.org/INFORM>.

INFORM STATUS PRESENTATION

The Co-PIs summarized the status of system development and testing. Real time capability is being added to the forecast component to ingest ensemble forecasts from the Global Forecast System (GFS) of the National Centers of Environmental Predictions (NCEP). The Co-PIs discussed the design of the real time GFS data ingest, dynamic downscaling components to produce gridded and subsequently watershed areal-average surface precipitation and temperature, bias adjustment of the watershed precipitation and temperature and snow, soil and channel modeling with bias adjusted forcing to produce ensemble flow forecasts at various watershed locations including reservoir inflow for the four largest reservoirs in Northern California.

Progress on the decision component has been achieved along two parallel paths: First, the long range management model has been developed and is currently being tested. The model incorporates all major storage facilities along the Trinity, Sacramento, Feather, American, and San Joaquin Rivers, including the Bay Delta. In all, the model includes 10 reservoirs, 11 power plants, 14 river nodes, 15 inflow nodes, and 30 demand nodes. Second, the model is being compared for consistency with CALSIM. In this regard, CALSIM is currently operational at the GWRI facilities and is being used to (1) extend the INFORM hydrologic and demand data series, and (2) compare its consistency with the INFORM DSS. This effort was undertaken to test and ensure the compatibility of all existing simulation and management tools.

The Co-PIs presented their initial plan for the “dry run” of the winter 2005-2006, which will serve to finalize system components, establish links with operational agencies and define the objectives of the demonstration program of INFORM with real time and near real time runs. It is expected that during the following two years (2006-2008) INFORM will be funded (as originally proposed) to actually perform the demonstration on the basis of the protocols defined during the “dry run” experiment of winter 2005-2006.

DISCUSSION

After the INFORM status presentations, group discussion followed. Important issues discussed were (a) the links anticipated between the operational forecast and management agencies of California and the INFORM system input and output components; and (b) the design of the “dry run” demonstration experiments of winter 2005-2006 with particular emphasis on the type of events to concentrate and the type of objective criteria to evaluate the INFORM forecast-decision system relative to the existing operational system.

1. Rob Hartman suggested and the Co-PIs concurred that it would be desirable for the California Nevada River Forecast Center (CNRFC) of the US National Weather Service (NWS) to receive bias adjusted mean areal precipitation and temperature ensemble forecasts and ensemble flow forecasts for various watershed flow points in real time, and

to have the INFORM hydrology component use the state variables of the operational hydrologic model runs as initial conditions for the development of the GFS-driven ensemble flow forecasts.

2. Rob Hartman mentioned the existence of historical GFS output for use by INFORM to estimate the bias adjustment component for the mean areal precipitation and temperature on watershed scales.
3. Gary Bardini suggested that the demonstration plan of the winter 2005-2006 “dry run” should be designed to bring to fore the unique features of INFORM: (a) integration of uncertainty information in decisions, and (b) integration of decisions over different time scales seamlessly.
4. Paul Fujitani suggested questions that may be useful to examine with the demonstration: *How much can we deviate from the flood control diagram? What should the best release policy be in December and in May for Folsom and Shasta in order to maintain summer flows? After a significant inflow event how do we operate to evacuate storage? What is the required period of encroachment for Shasta to meet downstream objectives?*
5. Arthur Hinojosa suggested that INFORM Co-PIs participate in the weekly forum which starts in October pertaining to reservoir operations.
6. Gary Bardini stressed the value of retrospective studies in examining questions of the type: *What is the system impact of aggressive versus conservative reservoir management policies? What should the carry over reservoir storages be and how do these decisions affect water supply reliability and flood risk in the following season?*
7. Paul Fujitani mentioned that it is desirable to have ensemble flow forecasts of unregulated inflow points on the Sacramento River.
8. The Group agreed that a seasonal planning application of the integrated forecast-decision system could be scheduled for January 2006 to support planning decisions for the Spring 2006.
9. The Co-PIs informed the participants that the current submission date of draft final report for the first three funded years of INFORM is in February 2005 and if it remained thus it would not allow the “dry run” experiments to go into the last part of winter and the spring season (important for reservoir management decisions). The Co-PIs proposed and the participants agreed to the submission (to the funding agencies) of a no-cost extension to May for the delivery of the draft final report to allow inclusion of the late winter and spring forecast and management activities in Northern California.