Brett Whitin – California Nevada River Forecast Center
Randi Field – U.S. Bureau of Reclamation
FOLSOM LAKE

Storage Capacity: 976,000 acre feet
(1.204 x 10^9 m^3)

Watershed: 1,861 square miles (4,820 km^2)

Multi-Objective Reservoir

High Refill Potential

Upstream of Urban Area - Sacramento
American River Basin CNRFC Model
Hindcasting

**Hindcast:**
- Ensemble forecast performed for historical time period using current forecasting methodology (1985-2010)
- Meteorological Ensemble Forecast Preprocessor (MEFP) using GEFSv10 precip and temp
- Run the forcings through our hydrologic models

**Value of Hindcasts:**

*Provide a large and consistent sample for verification*

**Bottom Line: demonstrate forecast quality/reliability**
HINDCAST FINAL PRODUCTS

- Hourly ensemble inflow forecasts to Folsom
  - 61 traces per day
- Daily forecasts for 1985-2010
Correlation of Observations with Ensemble Average (large events)

- Blue line: 1-Day Volume
- Red line: 3-Day Volume
FOLSOM 3-DAY AVERAGE FLOW

(MEAN ENSEMBLE FORECAST VS. OBSERVED)
FOLSOM 3-DAY 25% EXCEEDENCE FLOW

(MEAN ENSEMBLE FORECAST VS. OBSERVED)
FOLSOM FEB18-20 (3-DAY) VOLUME FORECAST PROGRESSION
FLOOD MANAGEMENT PARADIGM SHIFT

- **Old – Upstream Storage Credit**
  - Conservative from a flood protection perspective
  - Precipitation measurements already “on the ground”
  - Leverage existing flood reserve space
FLOOD MANAGEMENT PARADIGM SHIFT

- New
  - Harness forecasting technology
  - Increase flood preparation “Advanced-release”
  - Increase water supply use efficiency
MANAGEMENT GOALS

1. Use advanced release to improve flood risk
2. Reduce Safety of Dams and high release risks
3. Increase water supply use efficiency
1. Advance Release “Blue Sky Action”
2. Evacuate storage prior to a storm event
3. Communication Opportunities
4. Forecast Dynamics
FORECAST INFORMED DECISION MAKING PROCESS

Model Runs

Ensemble
FORECAST INFORMED DECISION MAKING PROCESS

25% Exceedance Probability
Cumulative Volume for Day 1, 2, 3, and 5

Test if Cumulative Volume > 300,000 acre feet

Yes
Increase Release based on Confidence and Risk

No
Maintain current Release
FORECAST INFORMED DECISION MAKING
NEW WATER CONTROL MANUAL SIGNED
(JUNE 12TH 2019)