Forecast-**C**oordinated **O**perations Program Update

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Today's Discussion

- San Joaquin F-CO Decision Support System
- F-CO Grant Program
- Beyond F-CO

What is F-CO?

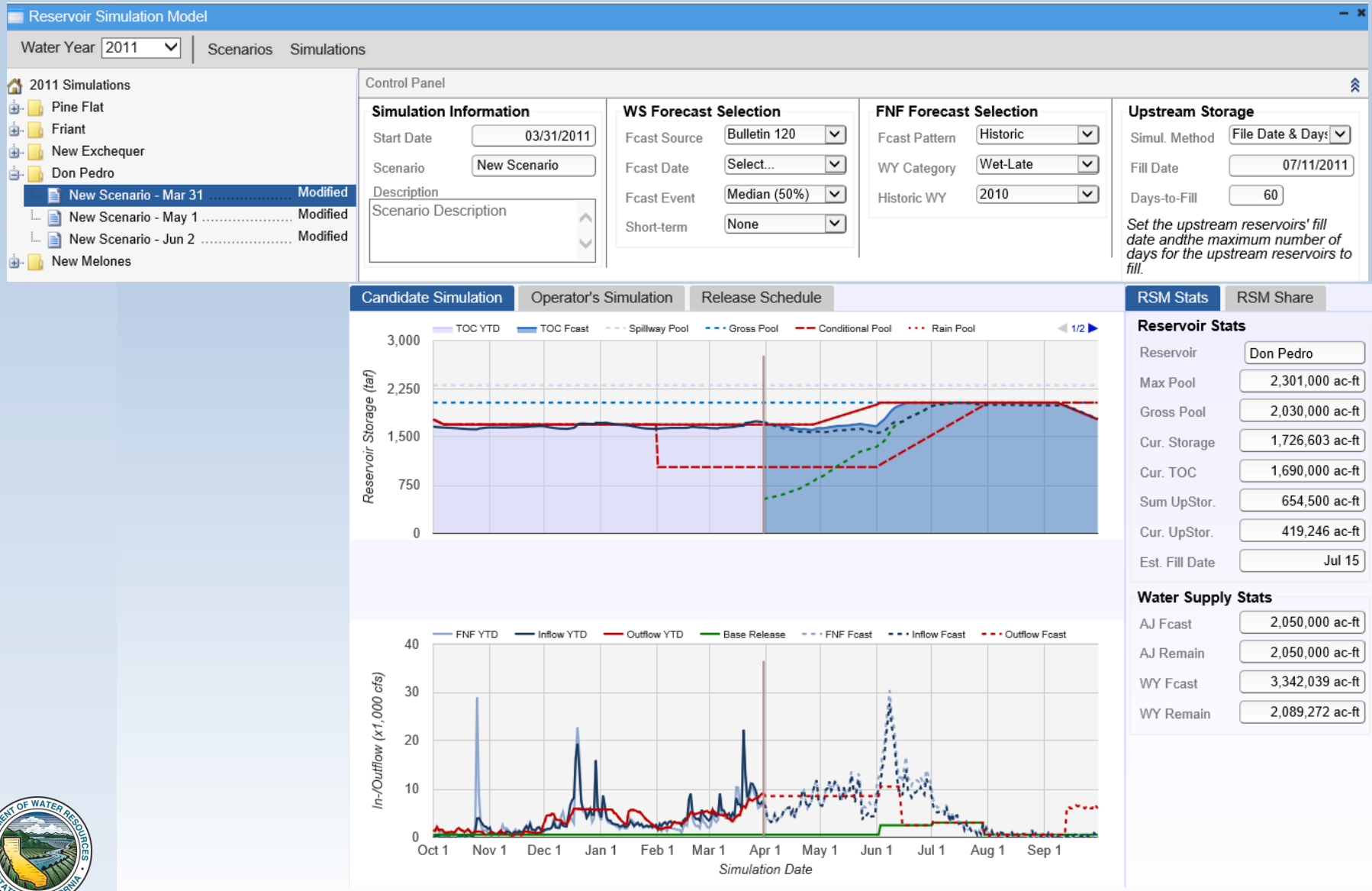
Goal: Improve flood protection without impacting water supply

Objective: Reduce downstream peak flood flows with improved

- Data, tools, and forecasts
- Communication and coordination of reservoir releases


North Coast
Klamath River
Trinity River
Eel River
Russian River
Pit River
North Lahontan
Sacramento River
Feather R.
American R.
Cosumnes R.
Mokelumne R.
Stanislaus R.
Tuolumne R.
Merced R.
San Joaquin River
San Joaquin
Kings River
San Francisco Bay
Salinas River
Tulare Lake
Kern River
Central Coast
South Lahontan
Mojave R.
Santa Ynez R.
Santa Clara
Santa Ana R.
Whitewater
Colorado River-Desert
South Coast
San Diego R.
New R.
-Yuba
-Feather
-Tuolumne
-Merced
-San Joaquin
-Kings

San Joaquin F-CO Tool



San Joaquin F-CO Tool Status

-Finalizing link to forecasts

-Developing sharing function

-Goal of operational before Feb 2017

-Plan to train operators to use tool this flood and snowmelt season

F-CO Grant

-Tuolumne
-Merced
-San Joaquin
-Kings

Beyond F-CO

Forecast-Informed Operations (F-IO) uses forecast like F-CO but prior to encroachment into the flood control pool.

Benefits:

- Can reduce flood risk downstream of reservoirs
- Can provide water supply enhancement

Risk:

- May not refill following pre-release

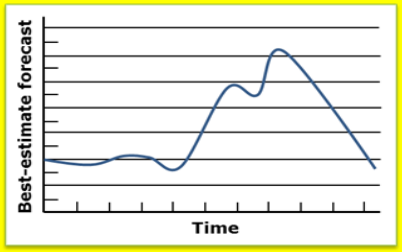
Beyond F-CO

Evaluating F-IO at New Bullards Bar and Oroville:

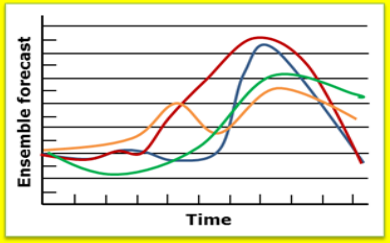
- Leverage Folsom Dam F-IO work
- Use of short-term and seasonal ensemble reservoir inflow forecasts
- Detailed analysis to understand F-IO
- Approval of USACE and Congress to change the Flood Control Diagram

Application of Ensemble Forecasting

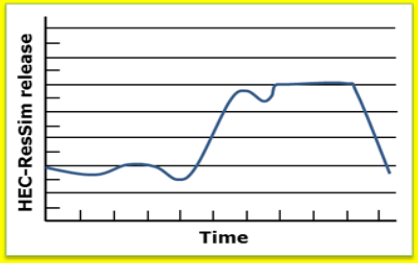
1. CNRFC provides *best estimate* forecast of reservoir inflows and uncontrolled local flows, using current state + QPF.



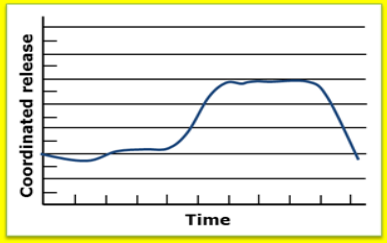
CNRFC also provides ensemble of forecasts of reservoir inflows and uncontrolled local flows. Some forecasts greater and some smaller than best estimate.



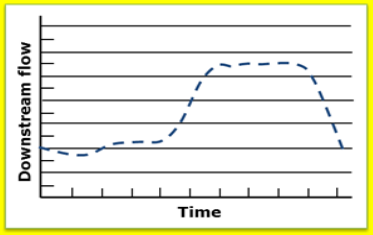
2. Operators run HEC-ResSim (throught F-CO DSS interface) with best estimate forecast to identify recommended release schedule with strict interpretation of rules.



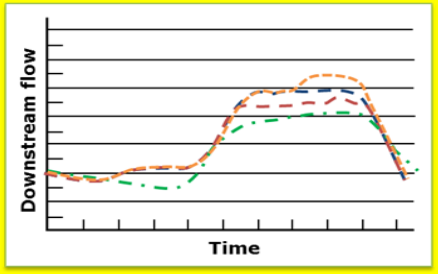
3. Operators review HEC-ResSim results, coordinate, collaborate to select *coordinated release schedule*.



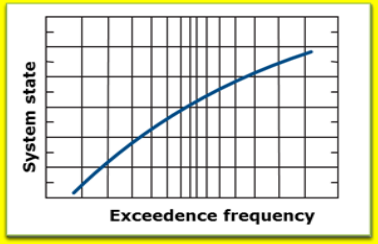
4. Downstream conditions computed with HEC-ResSim, using coordinated schedule.



5. For each ensemble member, HEC-ResSim computes system states with coordinated release schedule from Step 3



6. Frequency of exceedence of critical system states analyzed and reported. If hazard deemed unacceptable, process is repeated starting with Step 3.



(David Ford Consulting Engineers)

Current F-IO Projects

Folsom Dam

(USACE)

Russian River

(IWRSS)

State/Federal/Local Partnership

Courtesy of Bruce McGurk

Wai'ale'ale Rain Gauge

This rain gauge was used by the United States Geological Society Water Resources Division from 1920 until the mid 1960's on 5,000 foot Mt. Wai'ale'ale on the Island of Kaua'i. This area is considered to be the *wettest spot on earth*. The gauge was constructed to hold 900 inches of rain. The cross-sectional area of the tank is 18.6 times that of the receiver cap. The gauge site was so inaccessible that is usually was visited only once a year using an overland route from the Westside. The highest measured rainfall in one year was 682.94 inches in 1982. The average annual rainfall is 440.17 inches.

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QUESTIONS?