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RECLAMATION

Future Climate Inflow Forecasts for CalSim

Presenter: Kunxuan Wang (USBR)

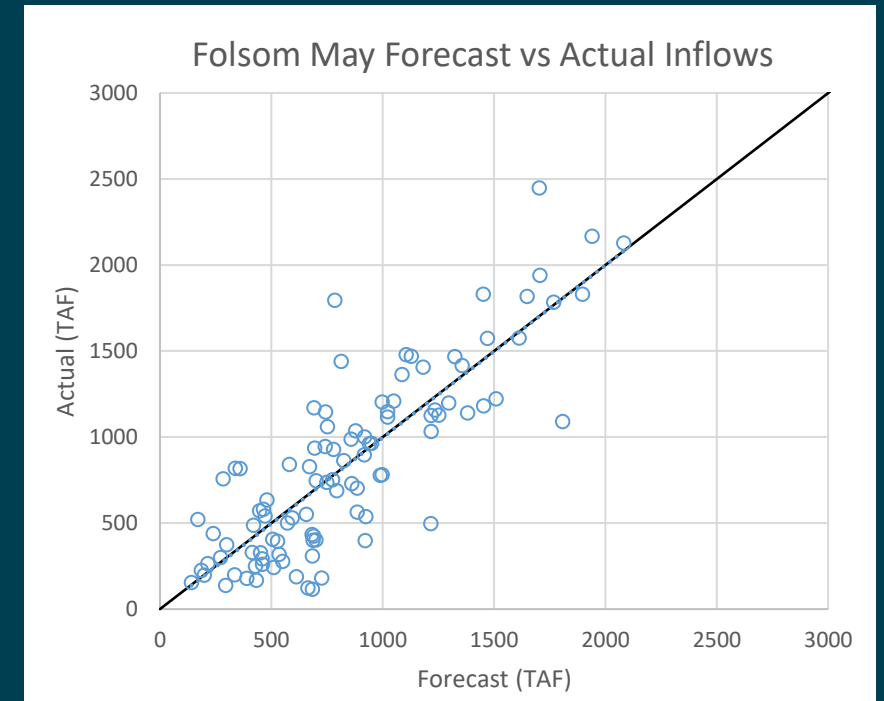
Collaborators: Steve Micko (Jacobs), Nancy Parker (USBR)

CWEMF 2023 Annual Meeting

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Inflow forecast in CalSim

- Forecast uses in CalSim3
 - Current year forecast at runtime from Jan-May, at various exceedances.
 - Informs water supply and thus affects allocations and deliveries.
 - Calculates water year type and affects operations to meet criteria.
- CAM-CalSim Hydrologic Forecast DLL (CAMDLL)
 - Monthly forecast for CalSim Allocation Model (CAM)
 - Collection of regressions at various locations based on prior PPT and inflow

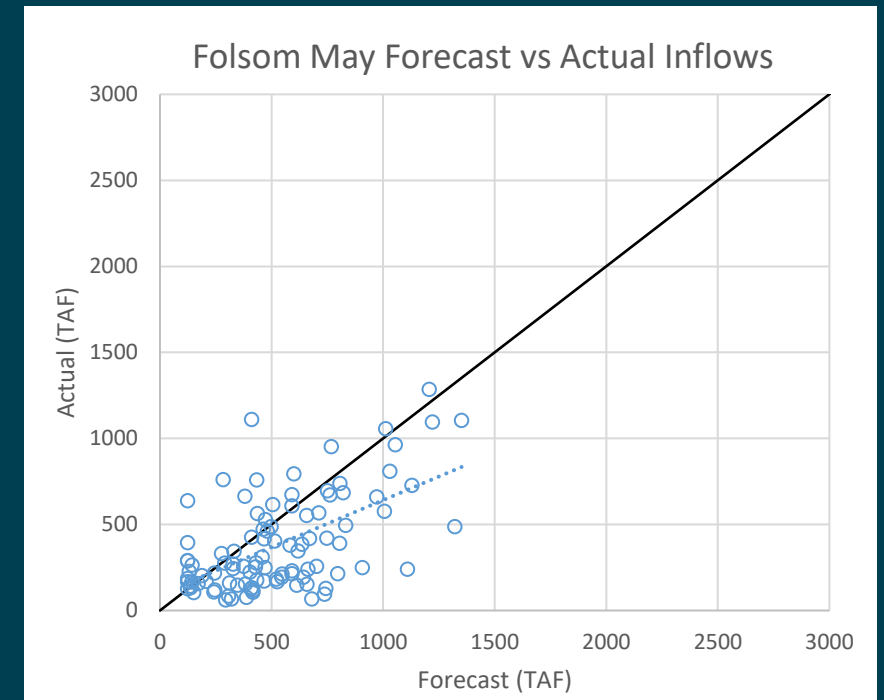


Historical May Forecast, 50% nominal exceedance



Future Climate Forecast Issues

- For LTO 2040 Median climate scenario
 - More Reclamation presentations to come!
- Issues with forecasts for future climates
 - Significant spatial/temporal changes in hydrology. Shift in inflow patterns.
- Potential solutions
 - Re-develop regressions based on simulated 2040 hydrology
 - Re-develop forecast tool to accommodate changes in climate

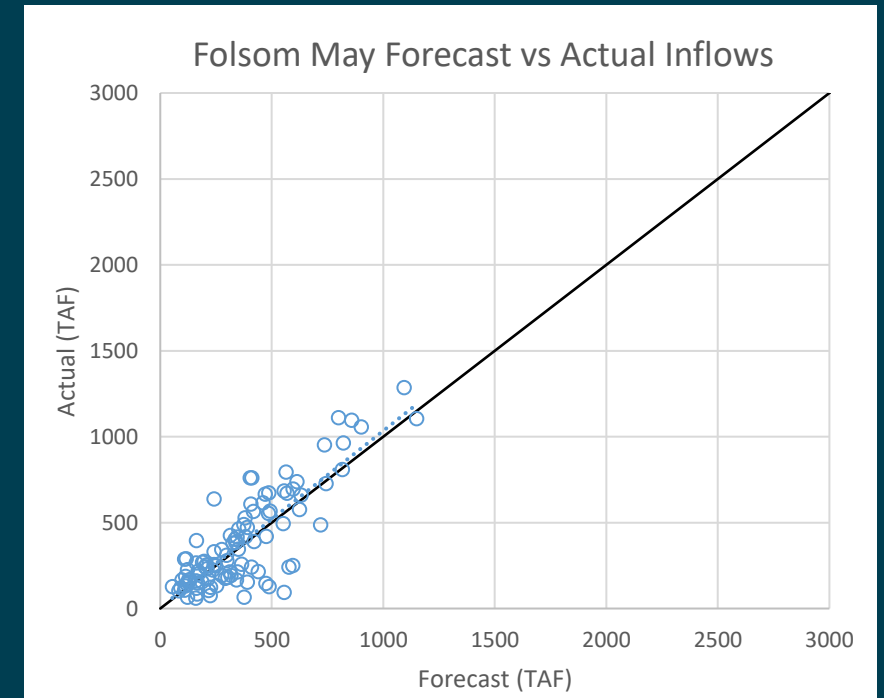


2040MED May Forecast, 50% nominal exceedance



Perturb Historical Forecasts

- Perturbation methods
 - Run VIC model for historical and 2040MED conditions
 - Calculate monthly change factor from VIC simulated inflow at 10 key locations (2040MED/Hist)
 - Adjust historical forecast by factor
- Replace CAMDLL in 2040MED CalSim3
 - 24 total forecasts for 10 locations and various exceedances
 - Pass into CalSim3 as lookup tables



Perturbed May Forecast for 2040MED,
50% nominal exceedance



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