CVSOM
Hydrology and Surface Water-Groundwater Interaction Formulation

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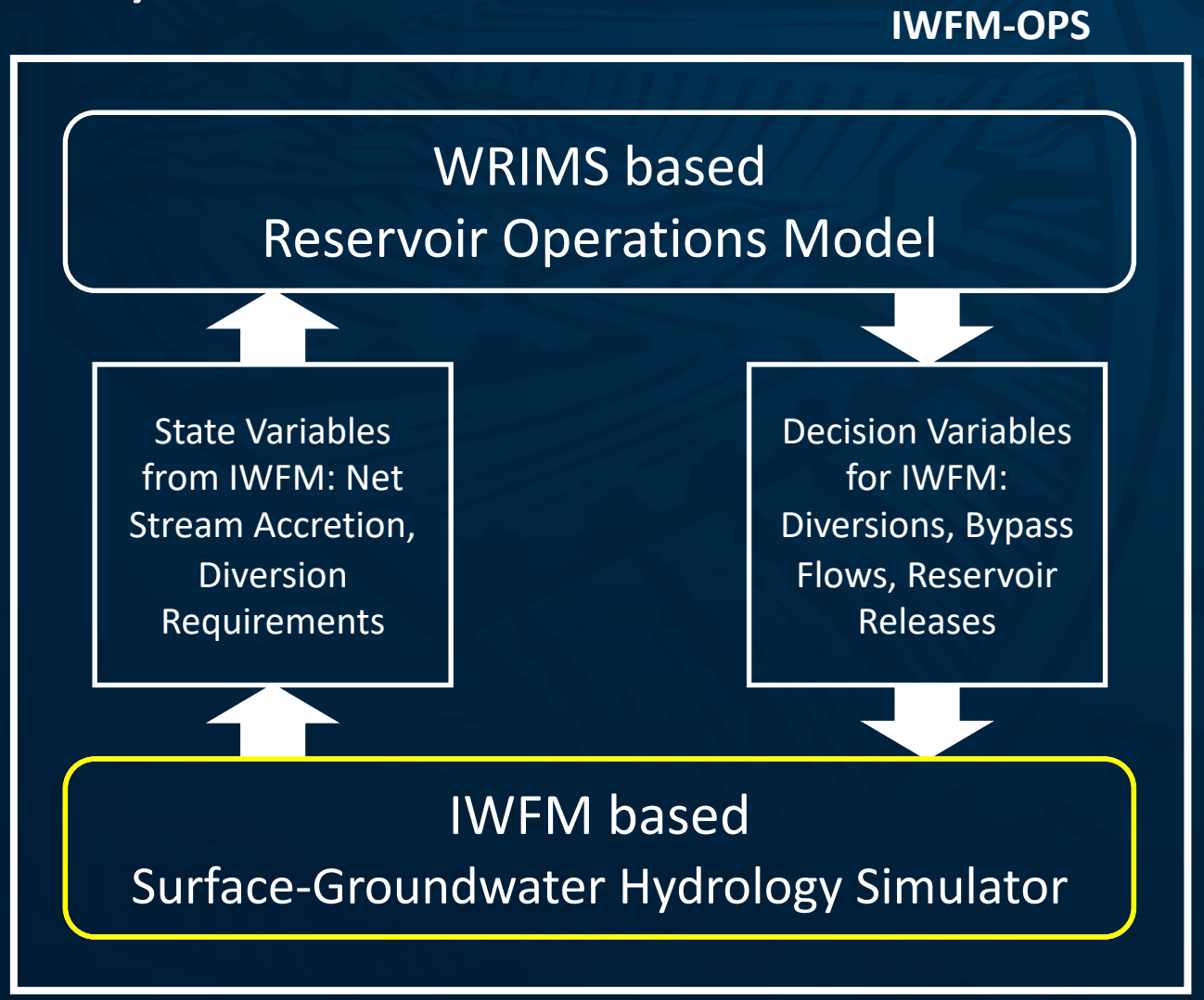
Outline

- CVSOM Hydrology
- Surface Water-Groundwater Interaction

CVSOM is the IWFM-OPS application for the Central Valley



CVSOM and C2VSimCG – Simple Comparisons

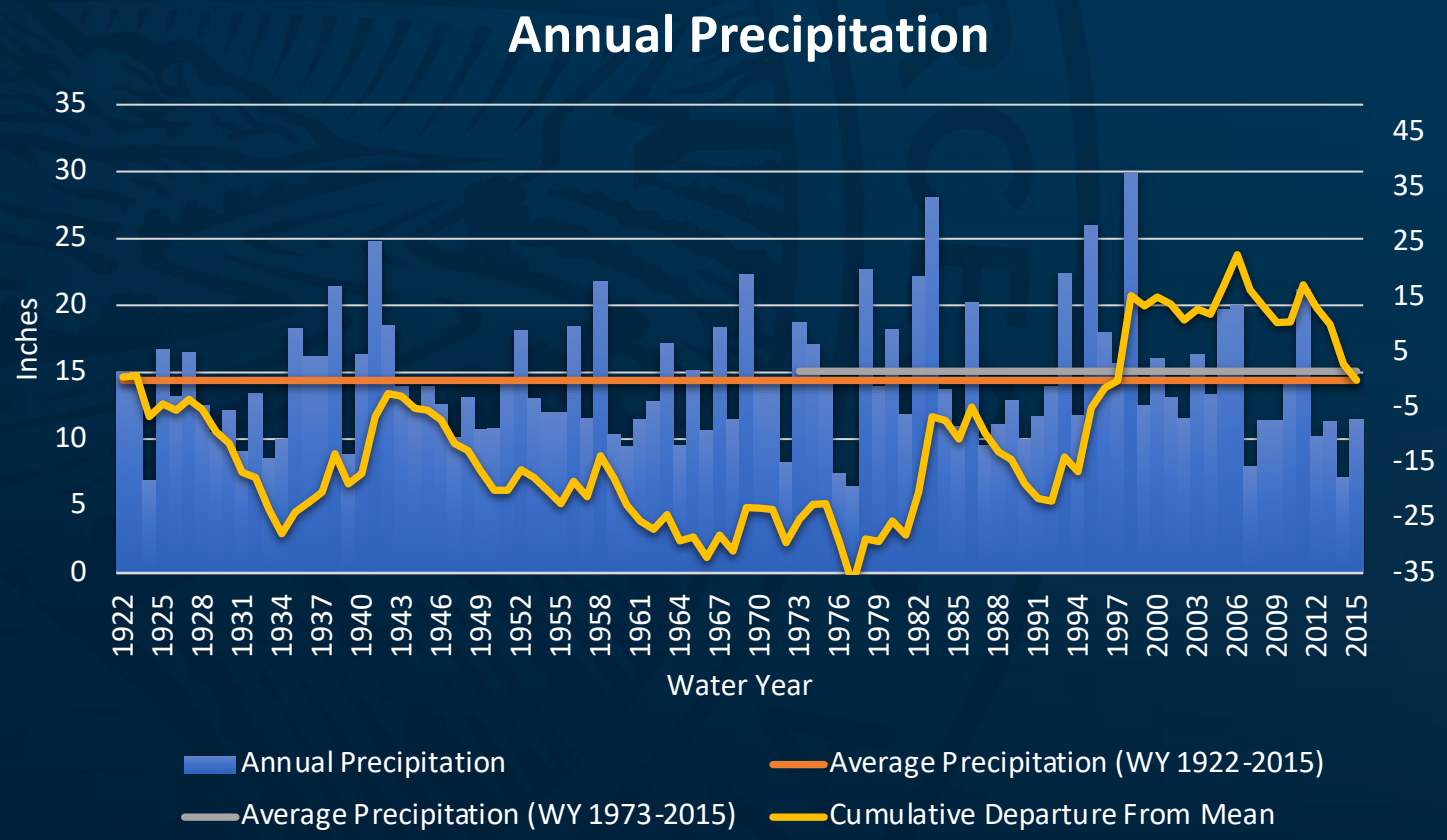
- IWFM application integrated into CVSOM is a customized interim development version of the C2VSimCG with minor differences

Similarities and Differences to C2VSimCG

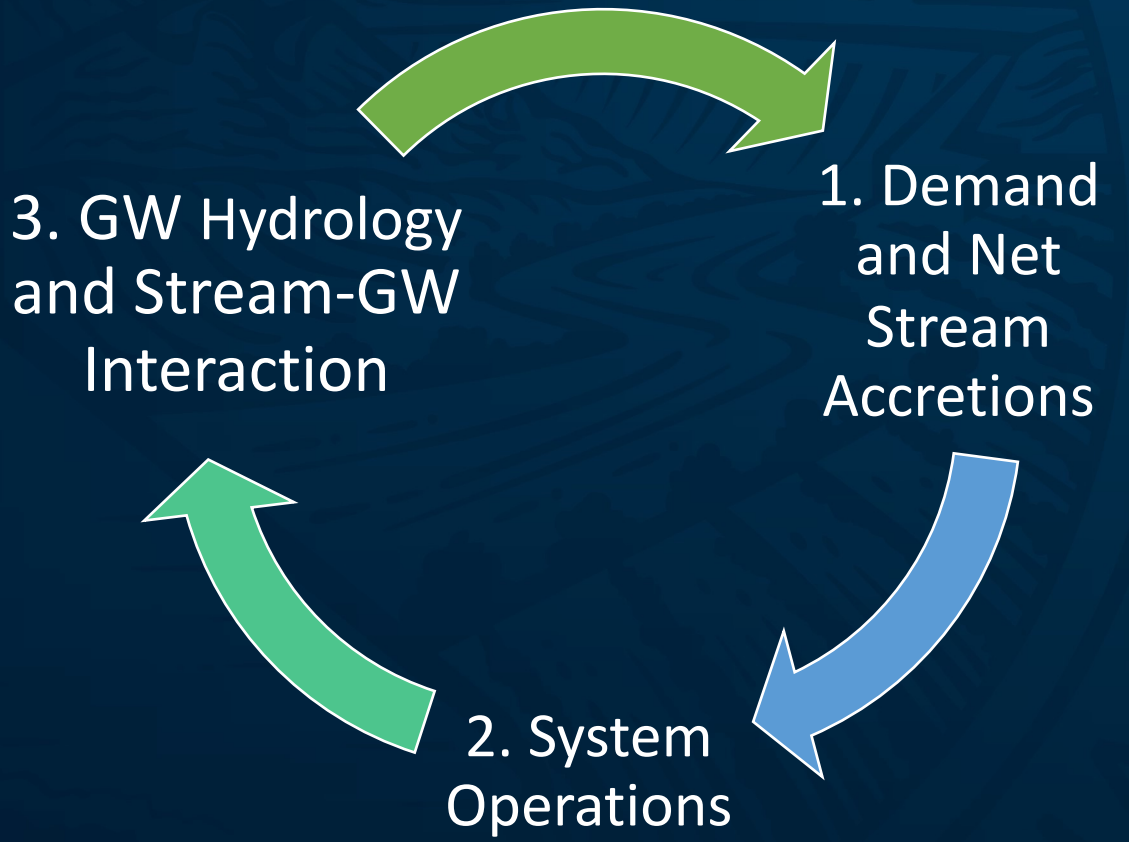
- Land Use is fixed at 2015 for the simulation period.
- Urban Demands are fixed at 2015 levels
- Minor modifications to stream network, diversion specs
- Stream inflows, surface water deliveries and bypasses are calculated by WRIMS
- Other inputs such as precipitation, ET, aquifer properties are the same as C2VSimCG

CVSOM Hydrology

- WY 1922-2015 Hydrology from C2VSimCG is used:
  - Precipitation
  - Evapotranspiration
  - Inflows to unregulated streams



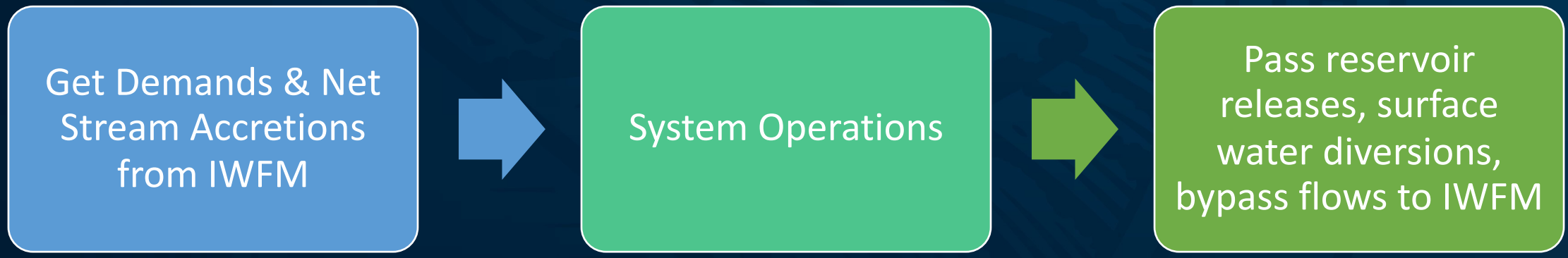
Land Surface-Groundwater Interaction



1. Agricultural and Urban demands are calculated by the IWFM portion and passed to WRIMS with net stream accretions

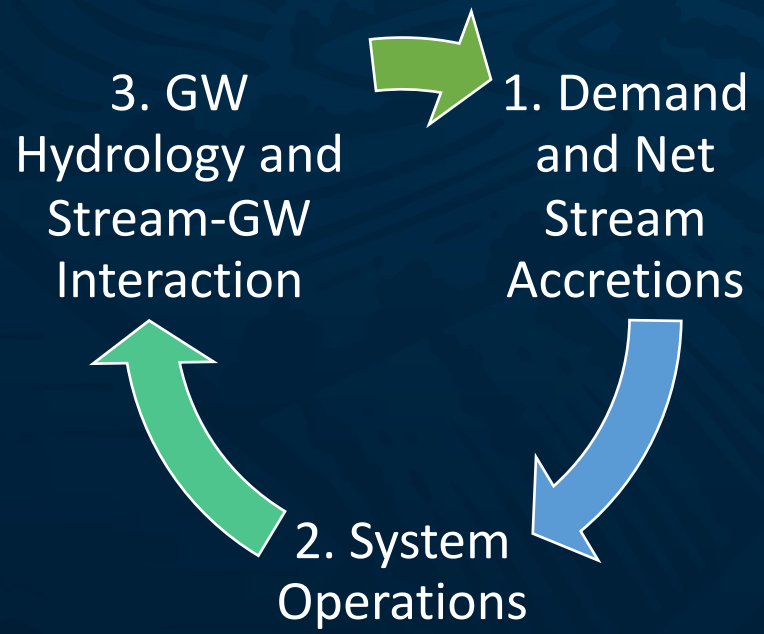
- Agricultural Demand:
  - Evapotranspiration
  - Land Use
  - Irrigation practices
  - Dynamically calculated soil moisture conditions
- Urban Demand:
  - Population
  - Per-capita water use

2. WRIMS operate to meet the agricultural and urban demands as well as other requirements and deliver water to IWFM module



3. IWFM simulates the GW hydrology and stream-groundwater interaction using the flow and delivery information from WRIMS

Go to step 1 and recalculate demands with updated soil moisture conditions, irrigation water availability, net stream accretions until convergence is achieved



Historical vs. Baseline

- Hydrology is known
- Demands are based on the historical hydrology and land use
- Reservoir releases and diversions are known
- Groundwater pumping is based on historical demands and surface water availability
- GW levels are calibrated

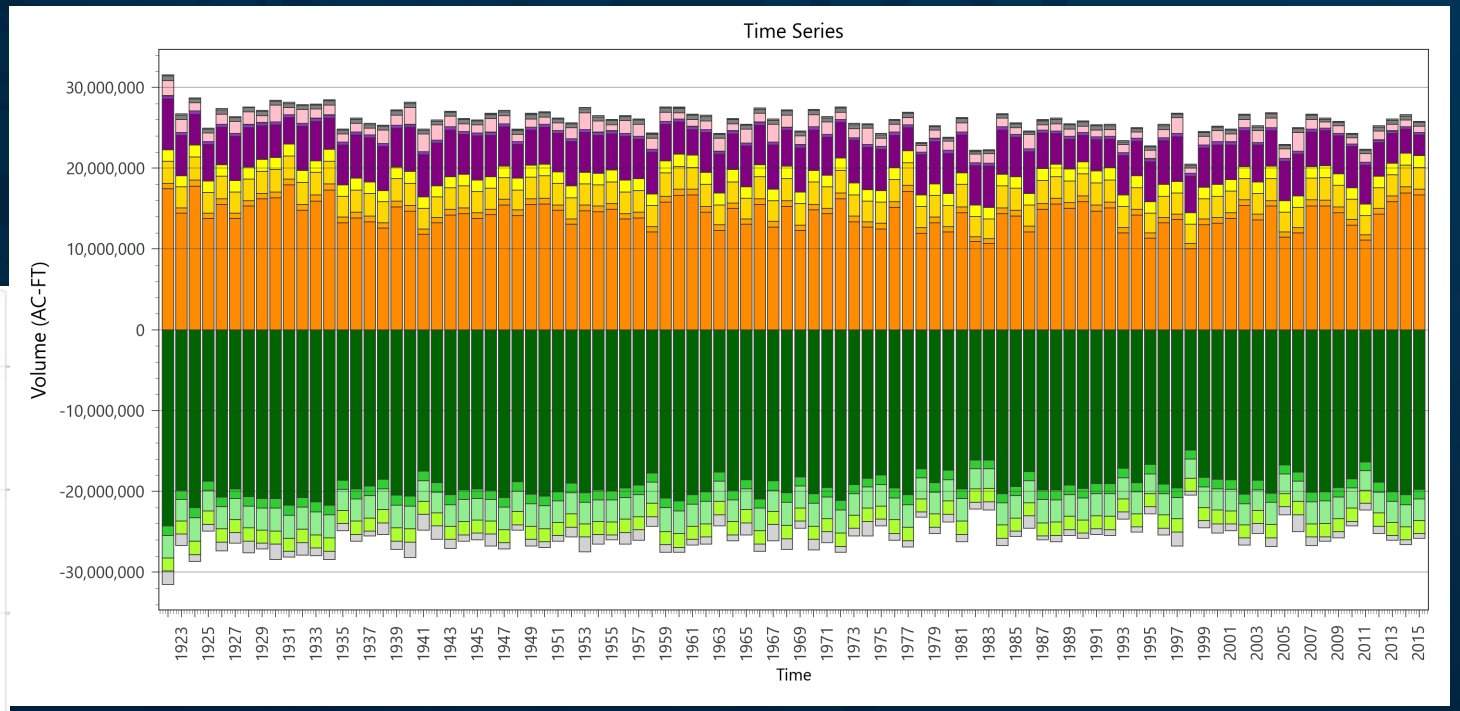
- Hydrology is based on the scenario.
- Demands are based on the scenario hydrology and land use
- Reservoir releases and diversions are calculated by system operations
- Groundwater pumping is based on scenario demands and surface water availability
- GW levels are calculated based on scenario pumping and applied surface water

Because of how surface water-groundwater interaction is formulated in IWFM-OPS, CVSOM can dynamically simulate water management scenarios under the intended operational goals

RESULTS ARE PRELIMINARY
NEED ADDITIONAL VERIFICATION

Central Valley

CVSOM Land & Water Use Budgets



CVSOM Groundwater Budgets

RESULTS ARE PRELIMINARY
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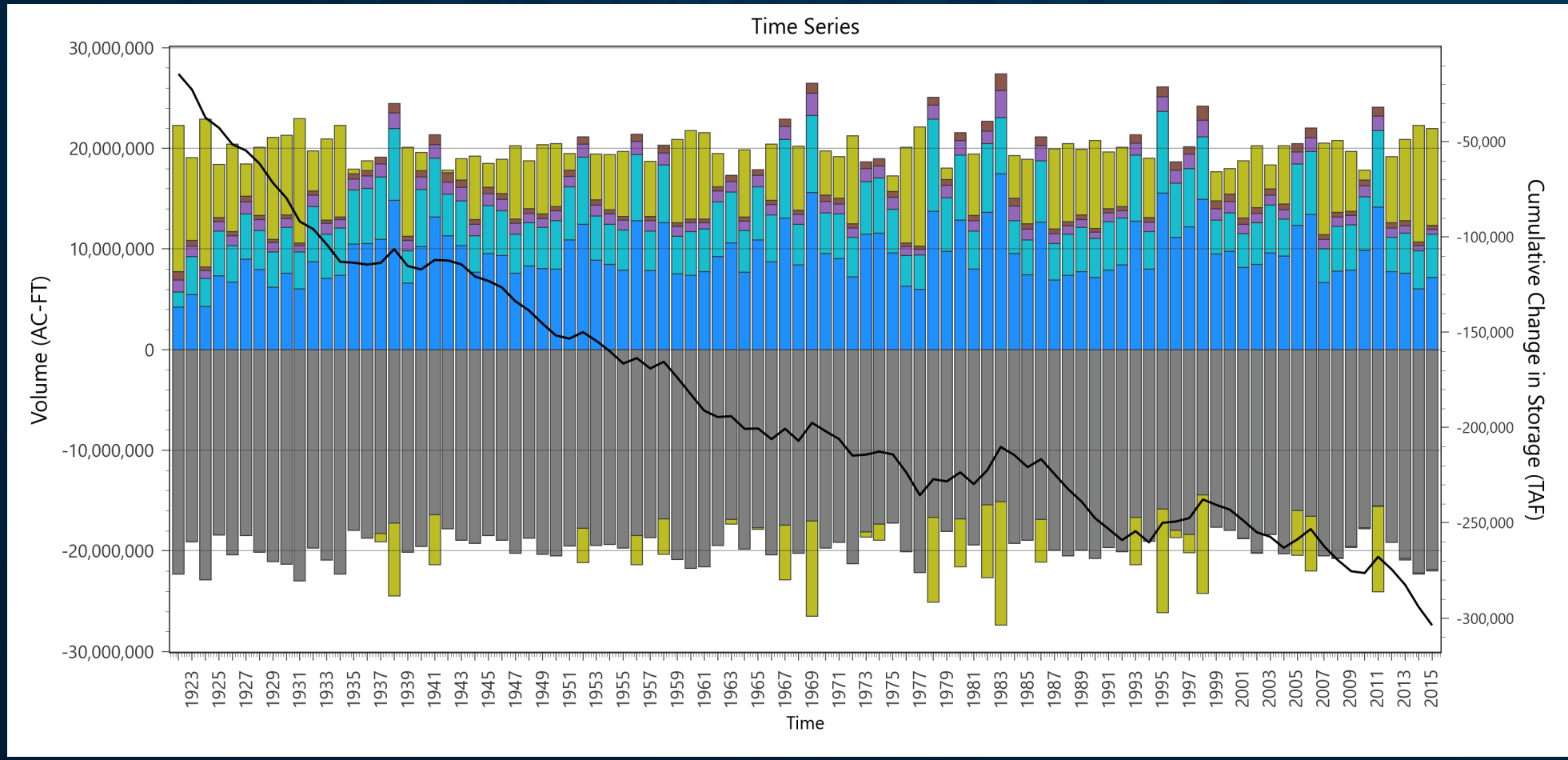
Central Valley



Conclusions

- CVSOM's surface water-groundwater formulation enables the users to dynamically simulate water management scenarios
- CVSOM is a robust proof of concept
- CVSOM is intended to provide an approximate simulation of the federal, state, and water agency reservoir and conveyance facilities throughout the Central Valley and the resulting surface water and groundwater hydrology

Next Steps

- Finalize the integration of the latest C2VSimCG baseline into CVSOM
  - Stream network
  - Diversion specifications and delivery areas
  - Other Delta improvements

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