

URGWOM Executive Committee Meeting

October 1, 2015



U.S. ARMY



US Army Corps of Engineers
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Outline

- Merged Model Update
- Summary



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Merging

Colorado Portion

Middle Valley Portion
(Original URGWOM)

Lower Rio Grande
Portion



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Merging Lower Rio Grande and Colorado portions with URGWOM

- Purposes and Advantages of Merging
 - ▶ To have an all encompassing model that looks at the entire system
 - Article VII Restrictions affects all post compact reservoirs including Platoro in CO
 - Lower RG operations better defined
 - ▶ Easier to maintain one model and:
 - not require processes for exporting and importing data from one model to the next
 - Eliminates iterating between model(s)



Merging Lower Rio Grande and Colorado Portions with URGWOM

- Time Range of Model
 - ▶ Real-time to Long-term Planning
- Time Interval of Model
 - ▶ Daily to Monthly



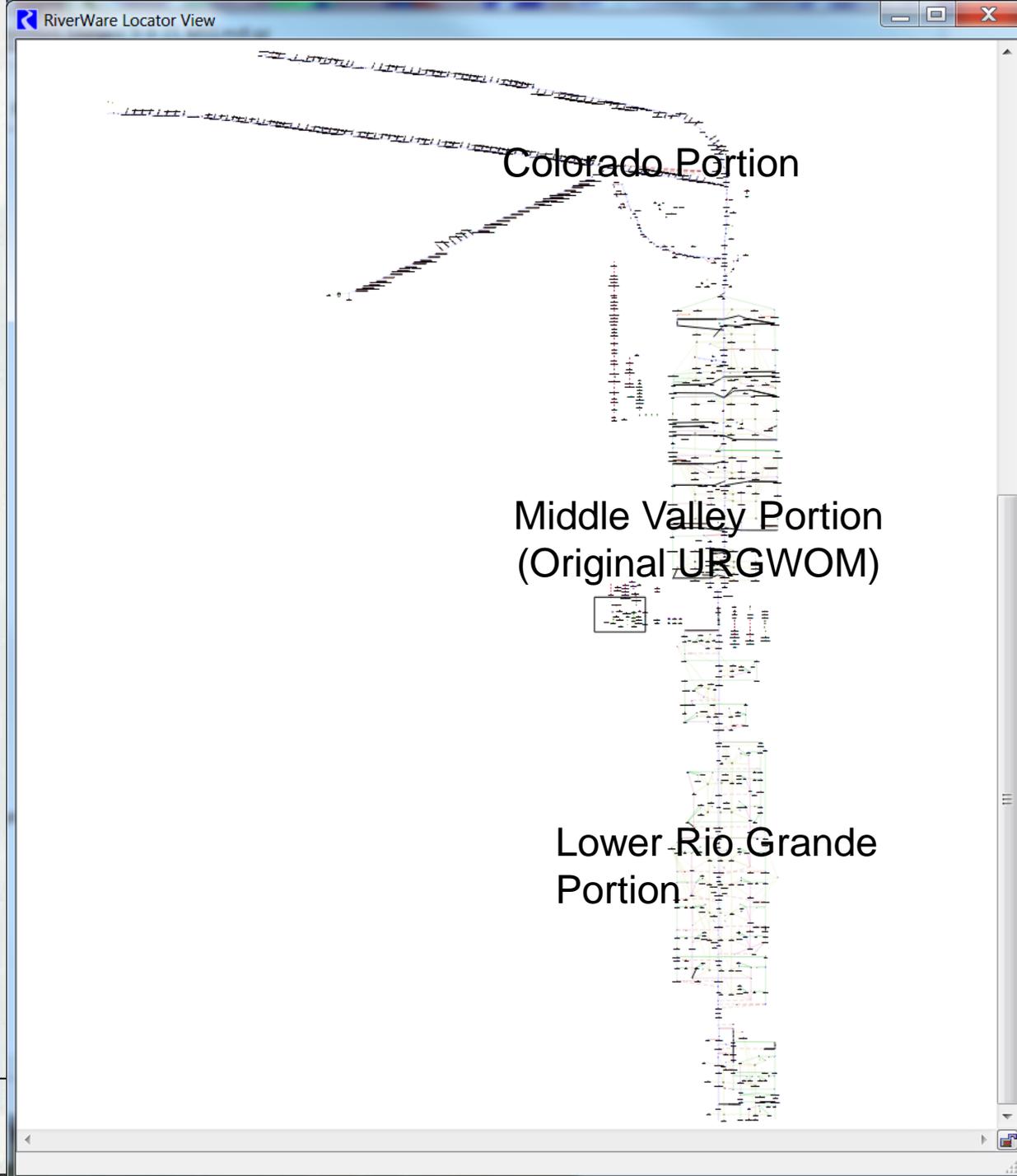
Merging Lower Rio Grande and Colorado portions with URGWOM

- Concerns of Merging
 - ▶ Size of all encompassing model
 - ▶ Run-time of all encompassing model
 - ▶ Extra overhead to run Accounting Application



Merging

- Successful merge of all three portions!



Current Status of Merge

- Based on One Year Run Time Models (includes output):

Model	# of Objects	File Size	Time to Run
Colorado	≈ 450	≈ 2 mb	60-90 sec
URGWOM - Accounting	≈ 650	≈ 15 mb	45-60 sec
URGWOM - AOP	≈ 650	≈ 17 mb	90-120 sec
LRG Existing Separate model(s)	≈ 550	≈ 8 mb	30-45 sec
URGWOM & LRG - Accounting Completed	≈1200	≈ 18 mb	60-90 sec
URGWOM & LRG - AOP	≈1200	≈ 21 mb	150-180 sec
URGWOM, LRG & CO - Accounting Completed	≈1650	≈ 18 mb	60-90 sec
URGWOM, LRG & CO - AOP	≈1650	≈ 23 mb	210-240 sec

Status of Merging Models for use in 2016

- Account Application
- AOP Application
- Real-Time Application
- Historical Simulation for Calibration
- Planning Application



Account Application

- Tested with Account Model through September 7, 2015
 - ▶ Disable Colorado and LRG portions
 - ▶ >2 Mb larger file (15.0 vs 17.2)
 - ▶ 17 seconds longer to run (34 vs 51 seconds)
 - ▶ Duplicates results
 - ▶ Would like to add some data that is input with DMI (Platoro Elevation and Outflow, Colorado streamgages) – For AOP runs



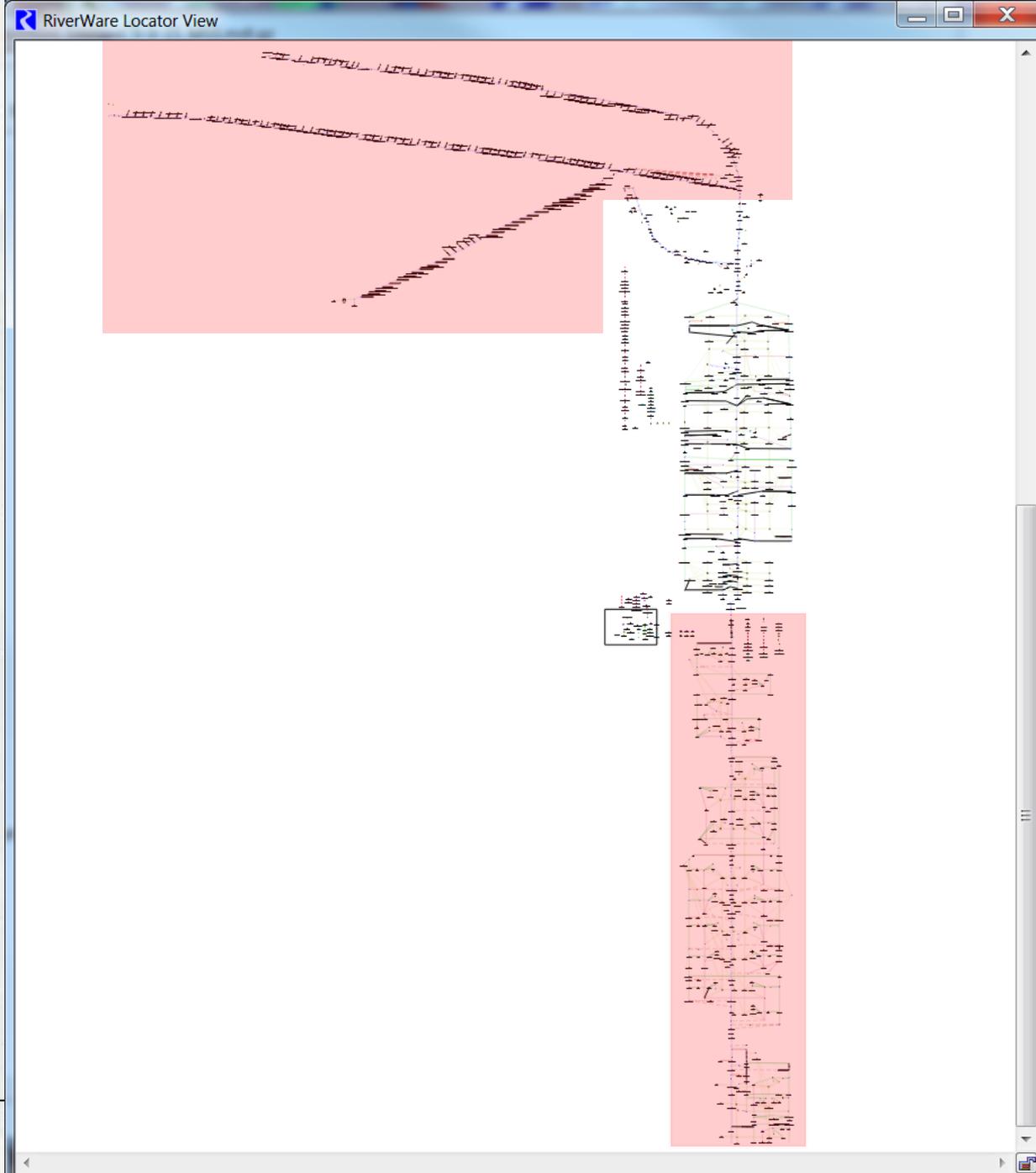
Enabled/ Disabled Objects

Model Run Analysis - Simulation

Sort: Custom Scroll: January 1, 2015

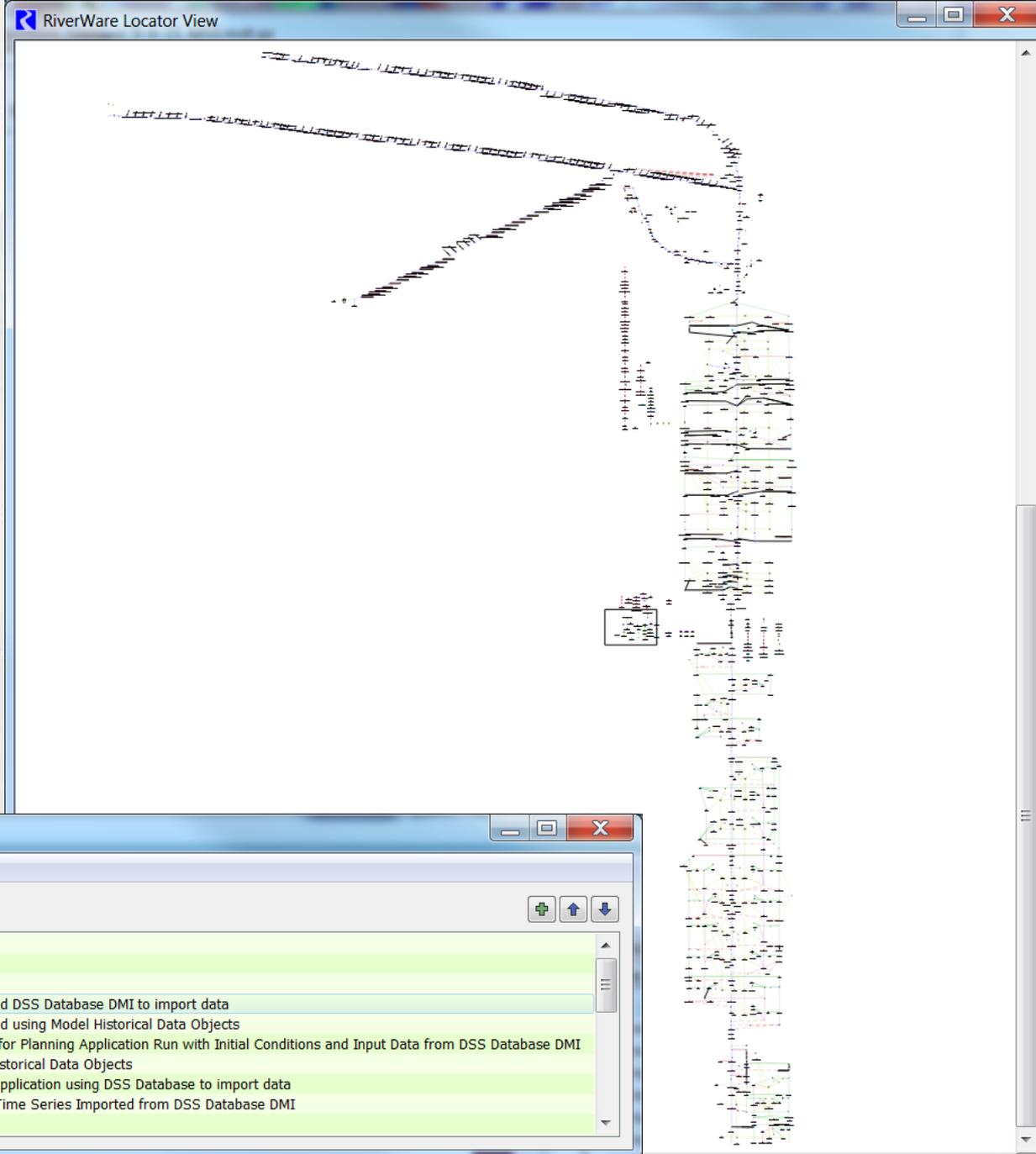
	12-30-2014	12-31-2014	01-01-2015	01-05-2015	01-09-2015	01-06-2015	01-07-2015
SanAcaciaToSanMarcialWestSideCanalSeepage							
SanAcaciaToSanMarcialWestSideCanalSeepage:Area1	(P)	(D)	(G)	(G)	(G)	(G)	(G)
SanAcaciaToSanMarcialWestSideCanalSeepage:Area2	(P)	(P)	(G)	(G)	(G)	(G)	(G)
SanAcaciaToSanMarcialWestSideCanalSeepage:Area3	(D)	(D)	(G)	(G)	(G)	(G)	(G)
SanAcaciaToSanMarcialWestSideCanalSeepage:Area4	(P)	(D)	(G)	(G)	(G)	(G)	(G)
SanAcaciaToSanMarcialWestSideCanalSeepage:Area5	(P)	(D)	(G)	(G)	(G)	(G)	(G)
DrainUnit7ReturnFlow	(P)	(P)	(G)	(G)	(G)	(G)	(G)
SillReturnFlow	(D)	(D)	(G)	(G)	(G)	(G)	(G)
IsletaToBernardoArea3WasteWayReturnFlow	(D)	(D)	(G)	(G)	(G)	(G)	(G)
Caballo	(P)	(D)	(G)	(G)	(G)	(G)	(G)
BivCaballo							
Eastside S16 Canal							
Eastside S16 Canal:S16WaterUsers							
Eastside S16 Canal:S16SoilMoistureDemand							
Eastside S17 Canal							
Eastside S17 Canal:S17WaterUsers							
Eastside S17 Canal:S17SoilMoistureDemand							
Westside S20 Canal							
Westside S20 Canal:S20WaterUsers							
Westside S20 Canal:S20SoilMoistureDemand							
Westside S14 Canal							
Westside S14 Canal:S14CanalUsers							
Westside S14 Canal:S14SoilMoistureDemand							
Westside S19 Canal							
Westside S19 Canal:S19WaterUsers							
Westside S19 Canal:S19SoilMoistureDemand							

RioBlanco 01-01-2015
Method 'solveNRInflow' Dispatched



Scripts

- Use Scripts for setting up and running other Applications



Scripts

- Example Script for setting up and running AOP Application



Script Dashboard: Prepare for Annual Operating Plan (AOP) Run

File Edit

Prepare for Annual Operating Plan (AOP) Run

This script starts with an accounting model and prepares it for an annual operating plan run.

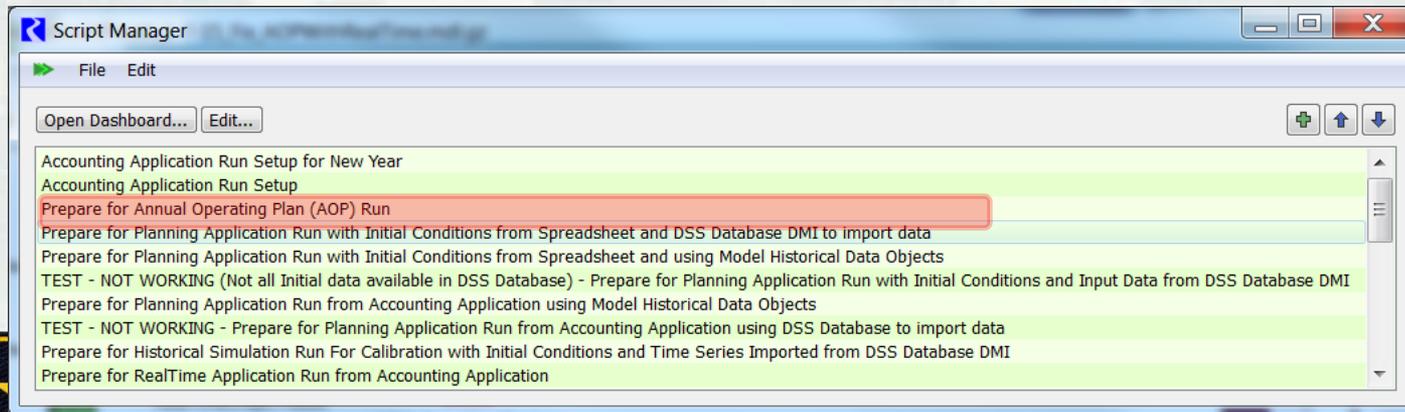
- Set the run range to: 24:00 JAN 01, Current Year -- 24:00 DEC 31, Current Year
- Set ModelRunTypeTriggers.RulebasedSimulationStartDay's value to 24:00 January 8, 2015
Use: Override default va...
Current: 24:00 January 8, 2015
- Load the ruleset K:/model/Official/URGWOM_6.7_09-22-15_Merge.rls.gz
Use: Override default file setting
- Set the controller to Inline Rulebased Simulation and Accounting
- Set Run Type to AOP
- Set the method in Heron's Reservoir Account Slot Inflow category to Zero Slot Inflows
- Set the method in Heron's hydrologicInflowCalculationCategory category to Hydrologic Inflow and Loss
- Set AbvHeron.Gage Inflow's flags to Output in the range: Start Timestep -- Finish Timestep
- Set the Initialization Rules execution flag to Yes
- Set accounting period to: Start Timestep - 1 -- Finish Timestep + 5 Timesteps
- Open SCT: K:/model/WaterOps/sct/ForecastTables.sct
Use: Override default file setting
- Input NRCS Forecast Data into the appropriate forecast month table slot, e.g., input March forecast data into the ForecastsMarch table slot on the InputForecastData data object
- Enable Dispatching for all objects (Model Run Analysis)
The current action has paused script execution.
- Execute run
- Generate output device: Gage
- Generate output device: CaballoOps
- Generate output device: ElephantButteOps
- Generate output device: JemezOps
- Generate output device: CochitiOps
- Generate output device: AbiquiuOps
- Generate output device: ElVadoOps
- Generate output device: HeronOps
- Execute the AOPRunOutputForTemplateSpreadsheet_Excel DMI

Execution

Status: Ended Successfully Current Action: this script is not executing

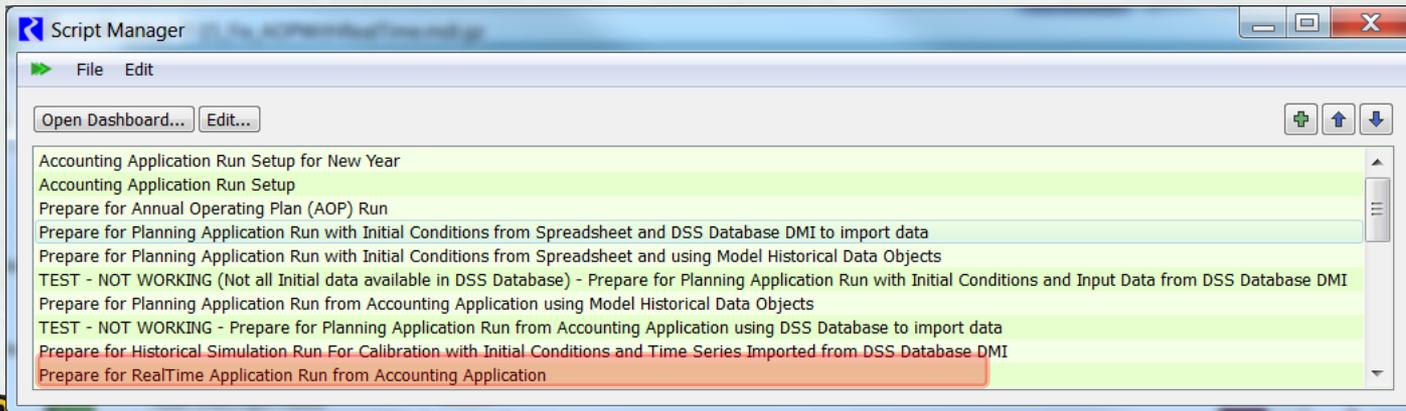
AOP Application

- AOP script (January Forecast)
- Model runs (need more testing, checking results, especially for Colorado and LRG)



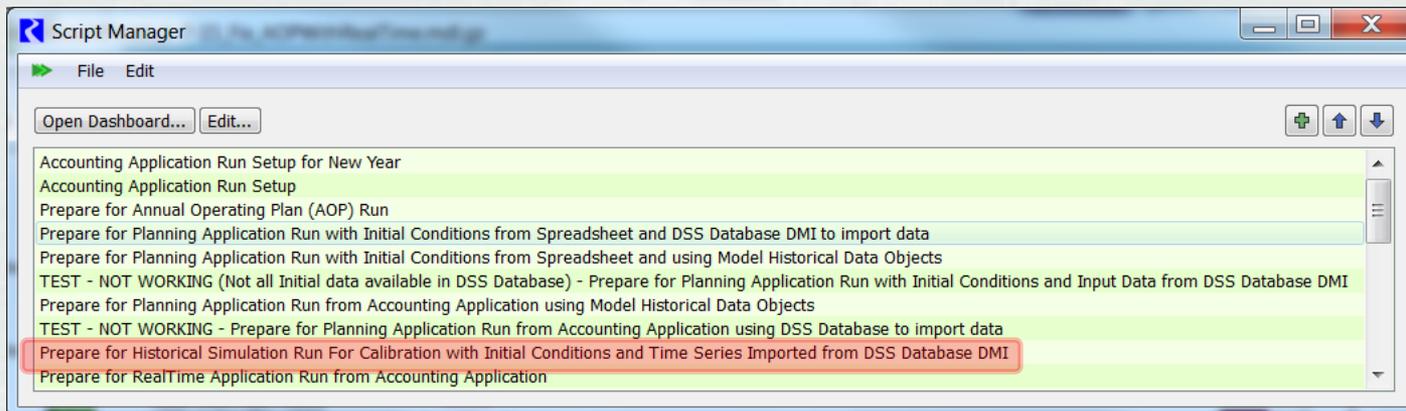
Real-Time Application

- Real-Time Script
 - ▶ No actual data from NWS yet,
 - ▶ but runs with manually input data, and with rules projecting data



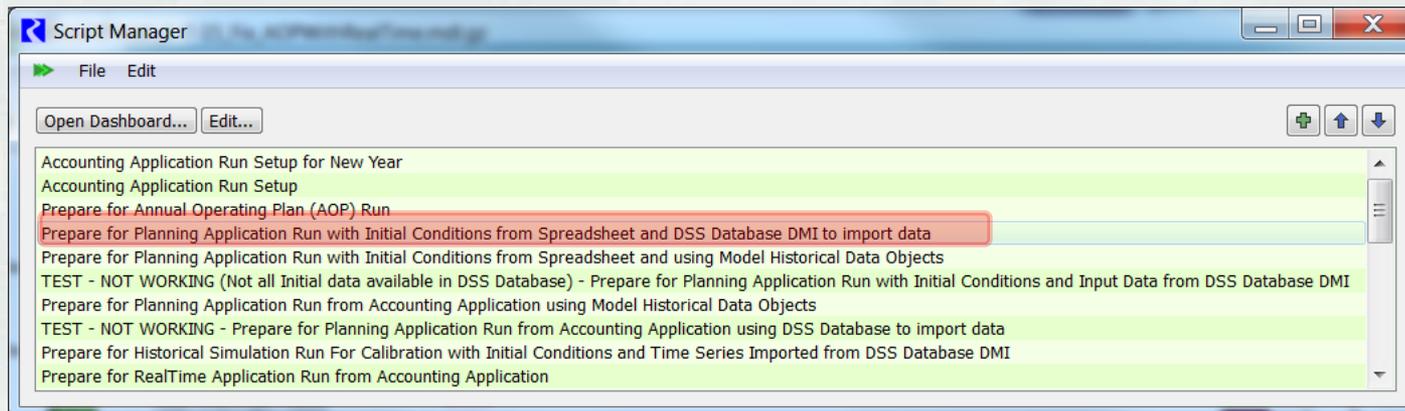
Historical Simulation for Calibration

- Historical Simulation for Calibration Script
 - ▶ Model runs for Middle Valley portion only
 - Colorado and LRG objects disabled



Planning Application

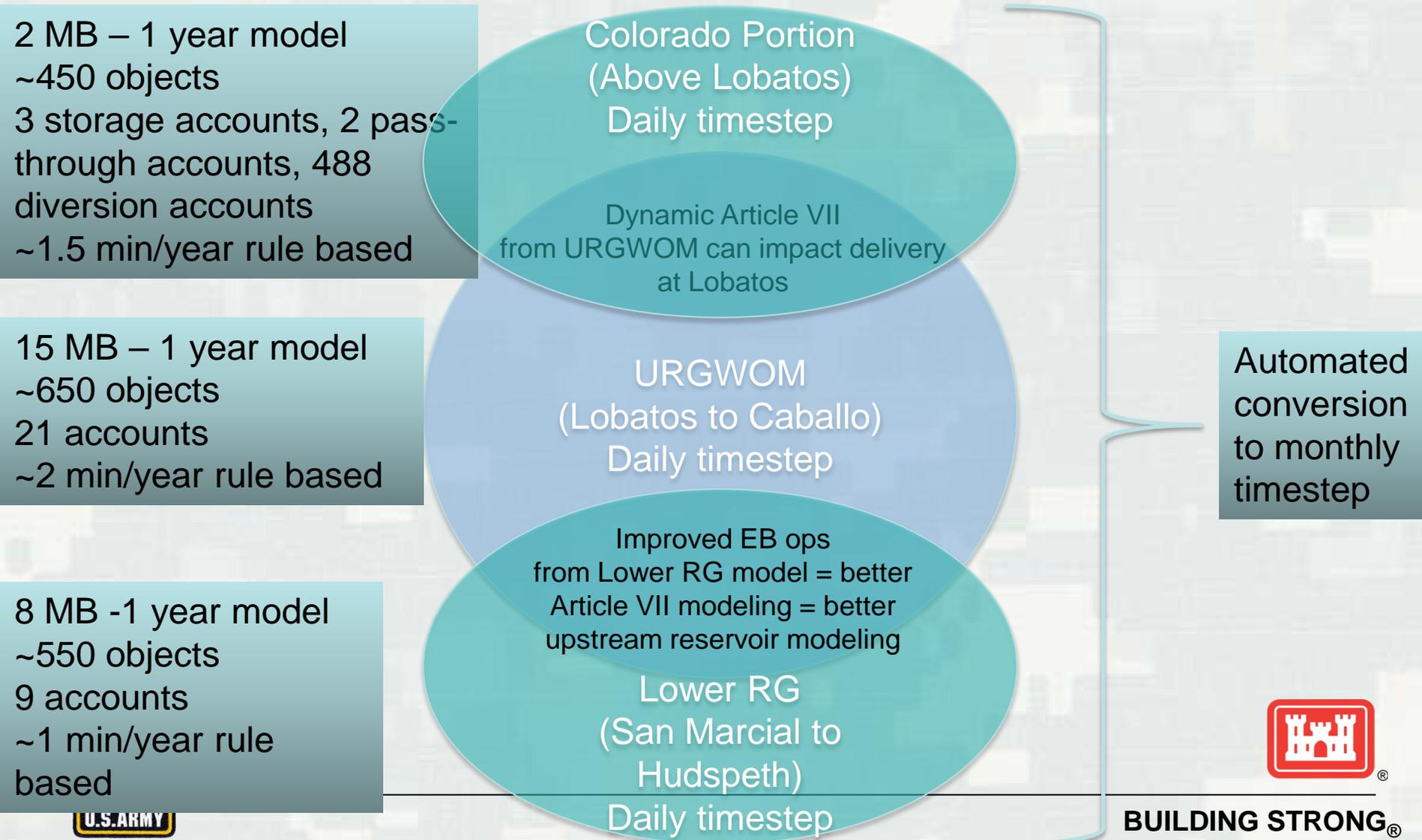
- Prepare for Planning Application with Initial Conditions from Spreadsheet and DSS Database DMI to import data Script
 - ▶ Tested 1975-2009 (corresponding historical years)
 - ▶ Tested 2016-2020 (assorted historical years)
 - ▶ Model(s) run



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The URGWOM Grail?

Headwaters to Hudspeth Daily or Monthly



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Summary

- Corps' opinion
 - ▶ Merging Lower Rio Grande and Colorado portions with URGWOM was successful
 - ▶ Slightly larger file size and extra runtime should not be an issue or hindrance
 - ▶ Testing and getting ready for use in 2016



Questions



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