Center for Advanced Decision Support for Water and Environmental Systems (CADSWES)

UNIVERSITY OF COLORADO **BOULDER**

RiverSMART Updates

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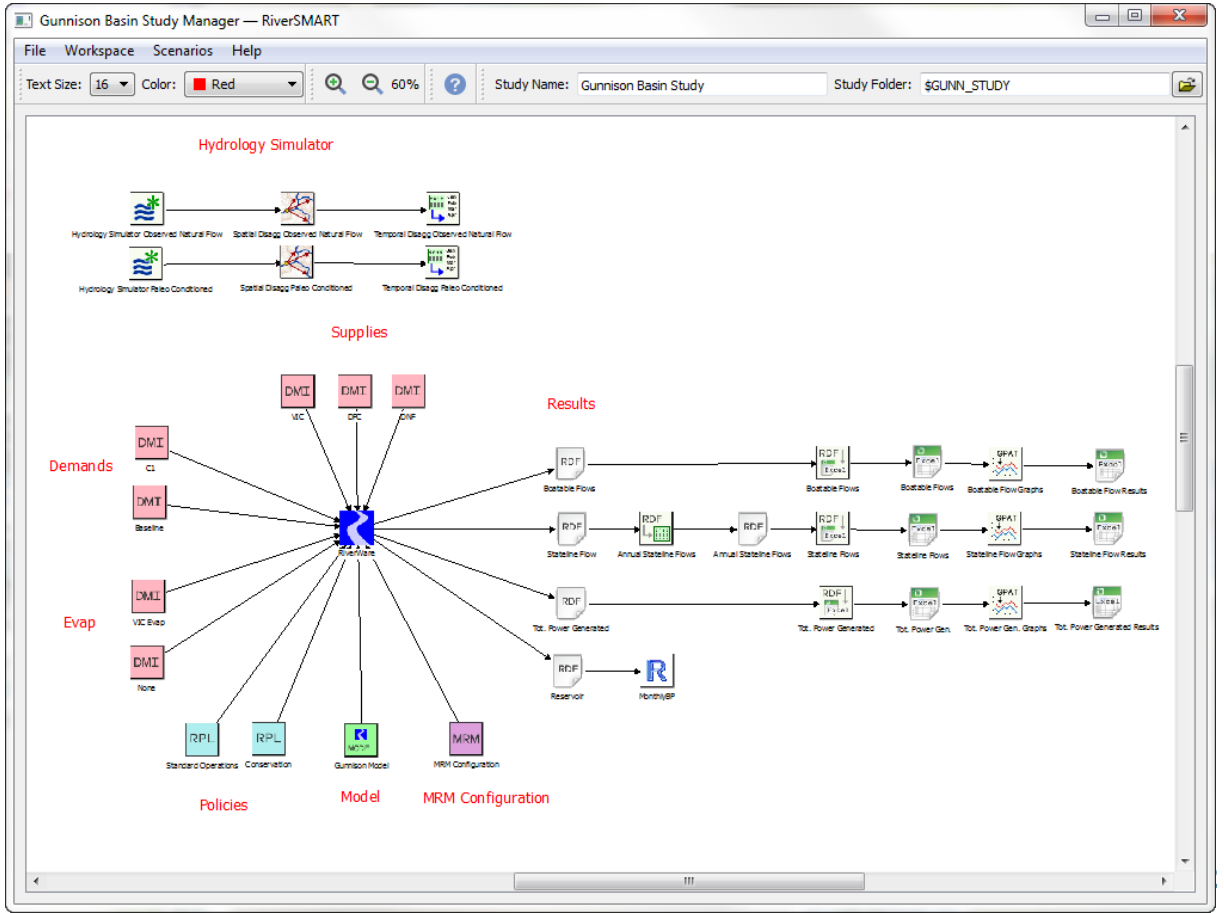
RiverWare Study Manager and Research Tools (RiverSMART)

Facilitates large studies with many combinations of inputs by organizing and executing scenarios

- Develop Scenarios that consist of combinations of alternative
  - Ensembles of Hydrologies
  - Demands
  - Operating Policies
  - Infrastructure
- Provide Graphical Representation
- Manage Execution
- Organize Outputs
- Archive the study



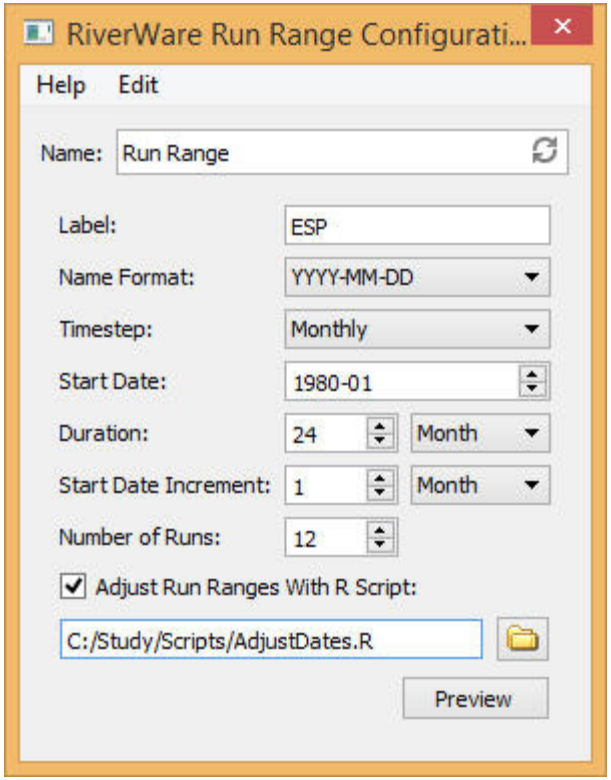
Released Enhancements

- Release 1.5.1
  - Run Range Event
- Release 1.6.0
  - Cloud Computing
- Release 1.7.0
  - Improved Scenario Set Management
  - Improved Validation
- Release 1.7.2
  - Improved Scenario List Performance
  - Improved Simulate Scenarios Confirmation Dialog

Run Range Event

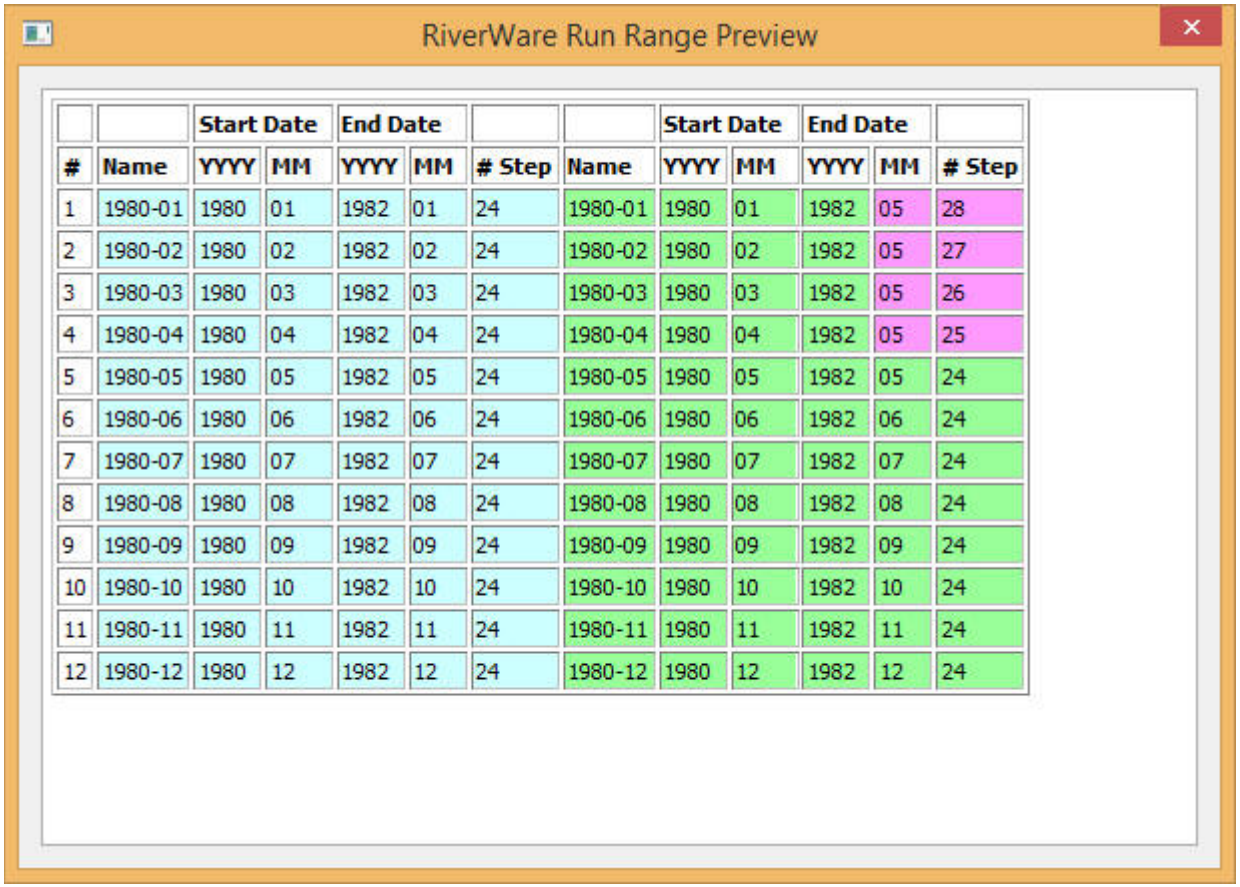
- Configure a study in which scenarios have different run ranges
- Configure a “regular” series of run ranges and then execute R Script code to adjust the series to match policy

  - Twelve run ranges with a monthly timestep
  - Beginning with each month from 1980-01 through 1980-12
  - Run duration of 24 months, with the exception that run ranges extend through at least May of the end year



Run Range Event

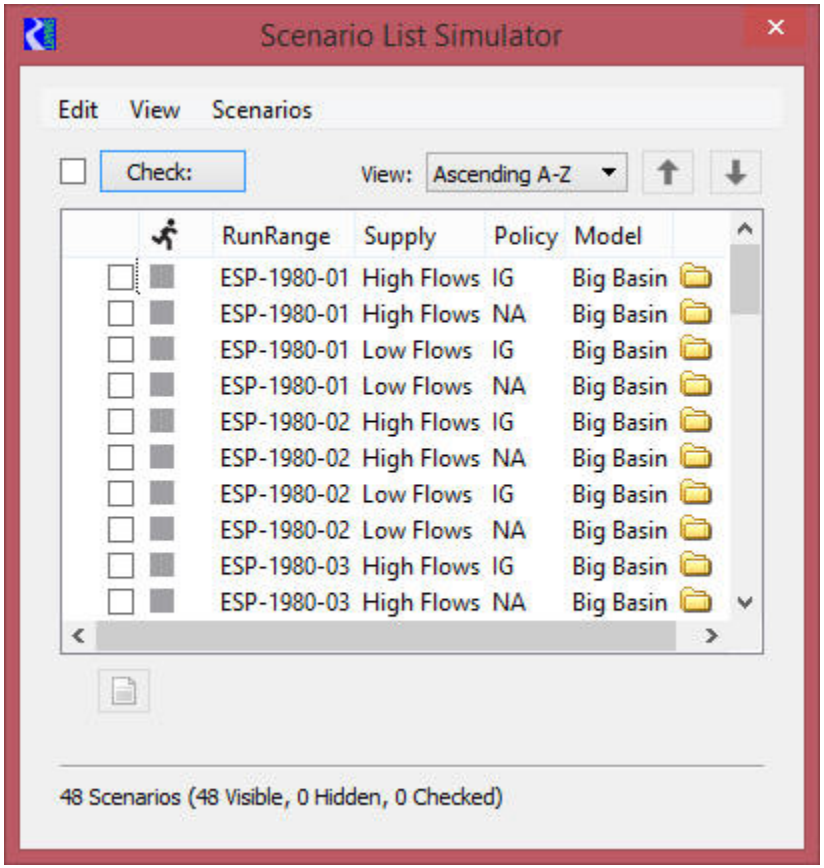
- Preview



		Start Date		End Date				Start Date		End Date		
#	Name	YYYY	MM	YYYY	MM	# Step	Name	YYYY	MM	YYYY	MM	# Step
1	1980-01	1980	01	1982	01	24	1980-01	1980	01	1982	05	28
2	1980-02	1980	02	1982	02	24	1980-02	1980	02	1982	05	27
3	1980-03	1980	03	1982	03	24	1980-03	1980	03	1982	05	26
4	1980-04	1980	04	1982	04	24	1980-04	1980	04	1982	05	25
5	1980-05	1980	05	1982	05	24	1980-05	1980	05	1982	05	24
6	1980-06	1980	06	1982	06	24	1980-06	1980	06	1982	06	24
7	1980-07	1980	07	1982	07	24	1980-07	1980	07	1982	07	24
8	1980-08	1980	08	1982	08	24	1980-08	1980	08	1982	08	24
9	1980-09	1980	09	1982	09	24	1980-09	1980	09	1982	09	24
10	1980-10	1980	10	1982	10	24	1980-10	1980	10	1982	10	24
11	1980-11	1980	11	1982	11	24	1980-11	1980	11	1982	11	24
12	1980-12	1980	12	1982	12	24	1980-12	1980	12	1982	12	24

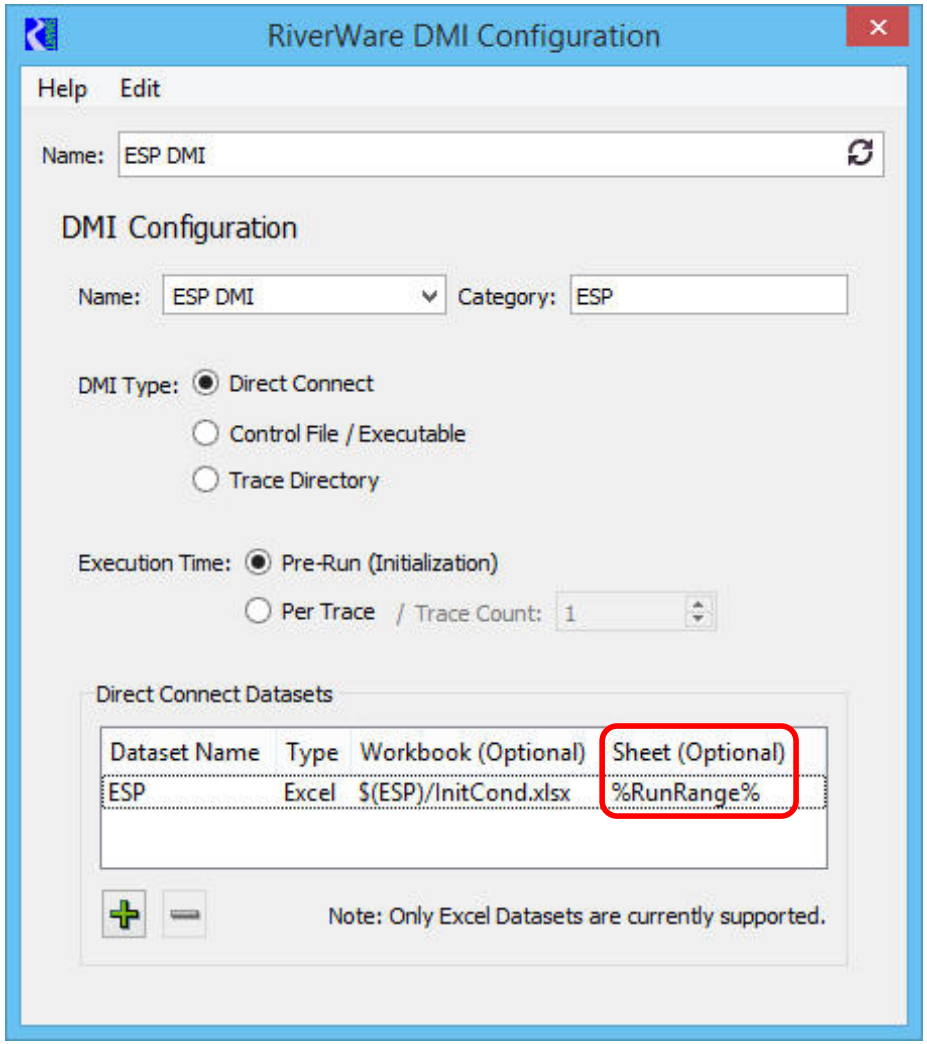
Run Range Event

- Scenarios



Run Range Event

- DMIs
  - In DMI configurations the keyword %RunRange% is replaced with the run range name, for example “ESP-1980-03”
  - This allows run ranges to have different initial conditions

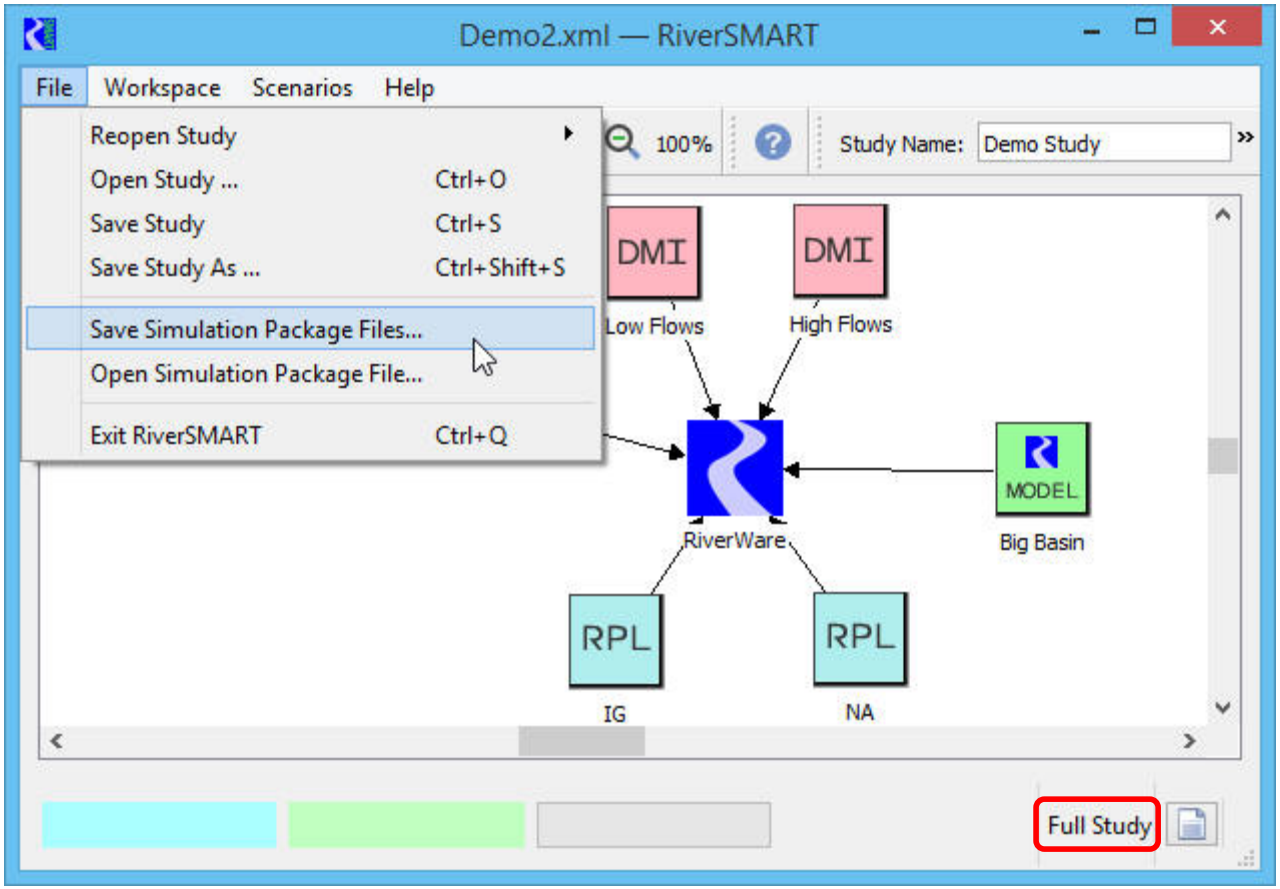


Cloud Computing

- A large study can consist of hundreds, if not thousands, of scenarios with tens of thousands of traces to simulate
- One way to simulate the traces quickly is to simulate them in the cloud
- This feature introduces three operational modes to facilitate cloud computing

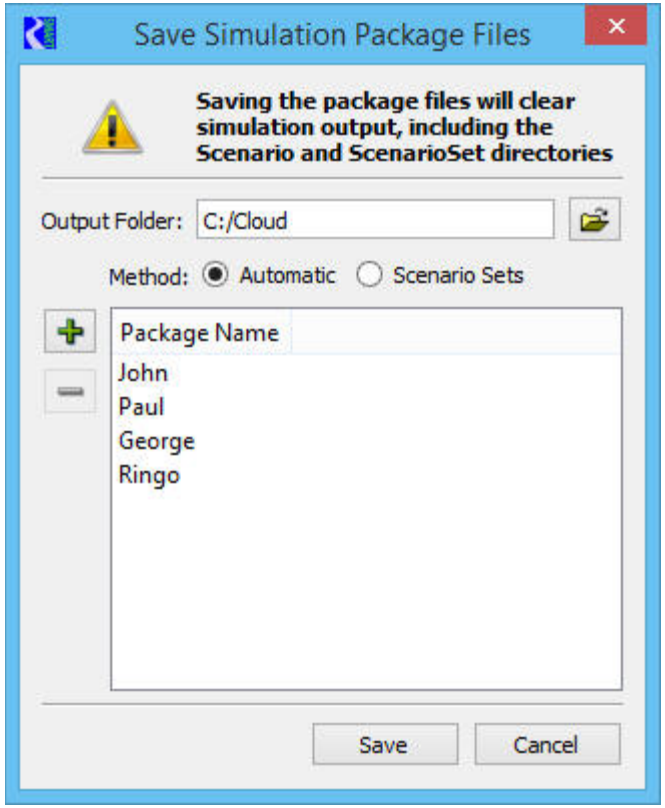
Cloud Computing

- Full Study mode (on Earth)



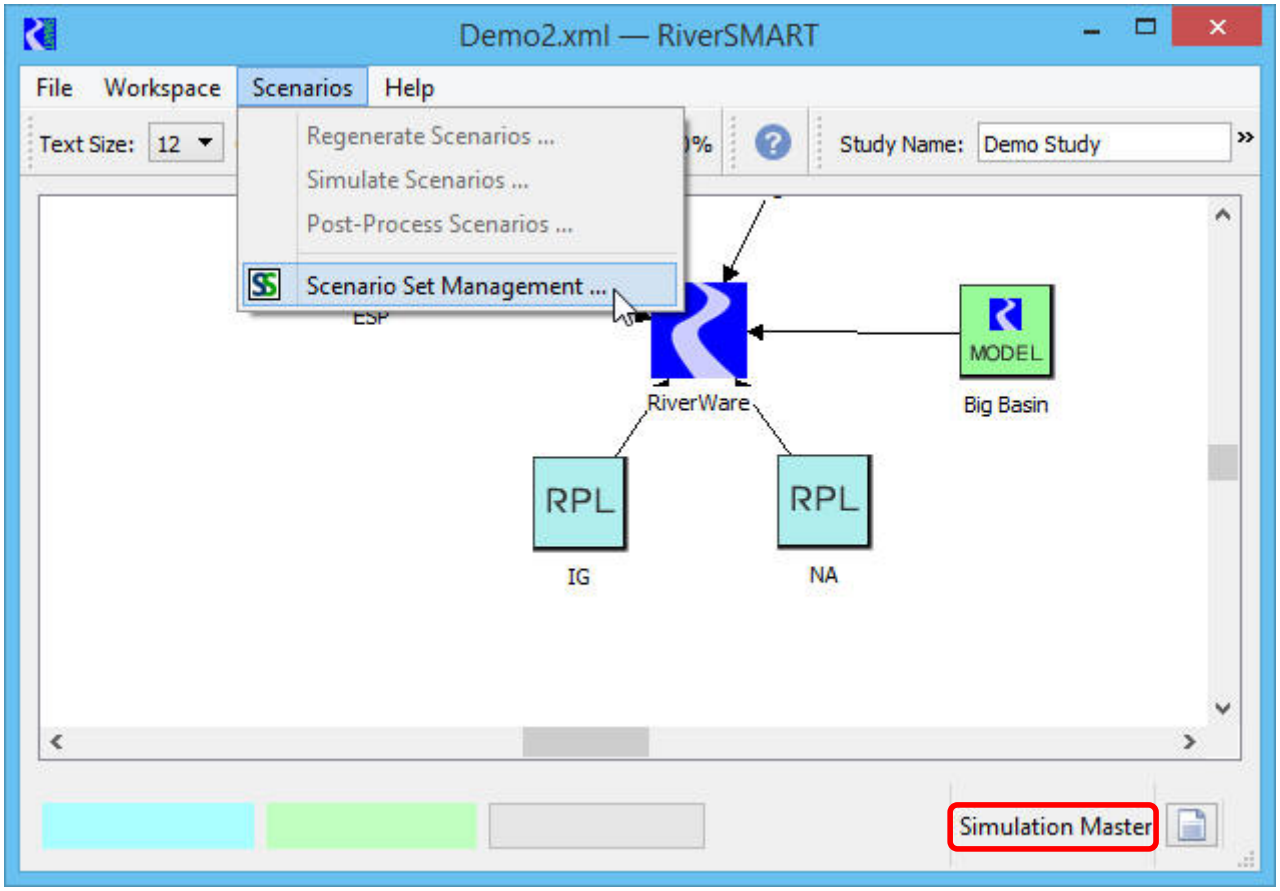
Cloud Computing

- Save simulation package files (on Earth)



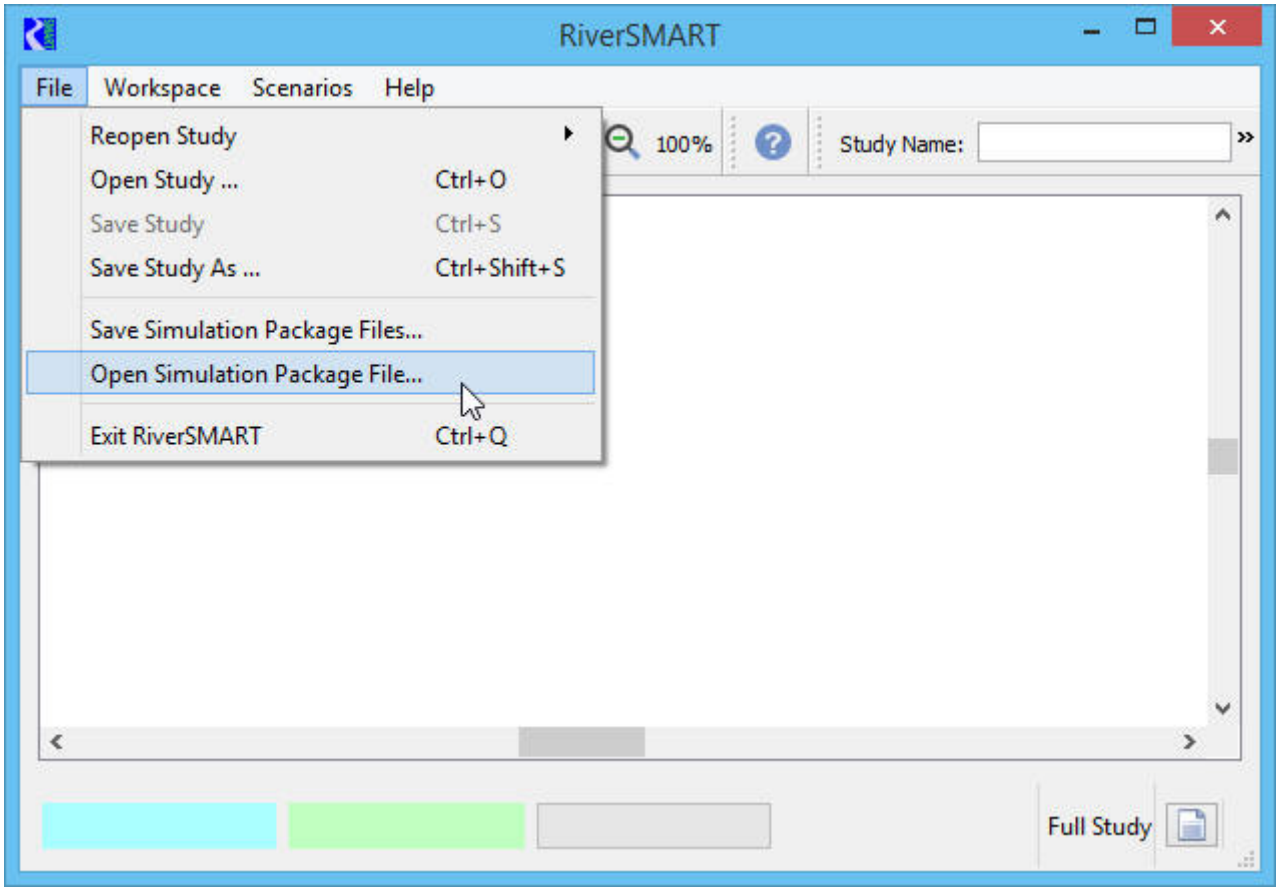
Cloud Computing

- Simulation Master mode (on Earth)



Cloud Computing

- Simulation Study mode (in the Cloud)



Cloud Computing

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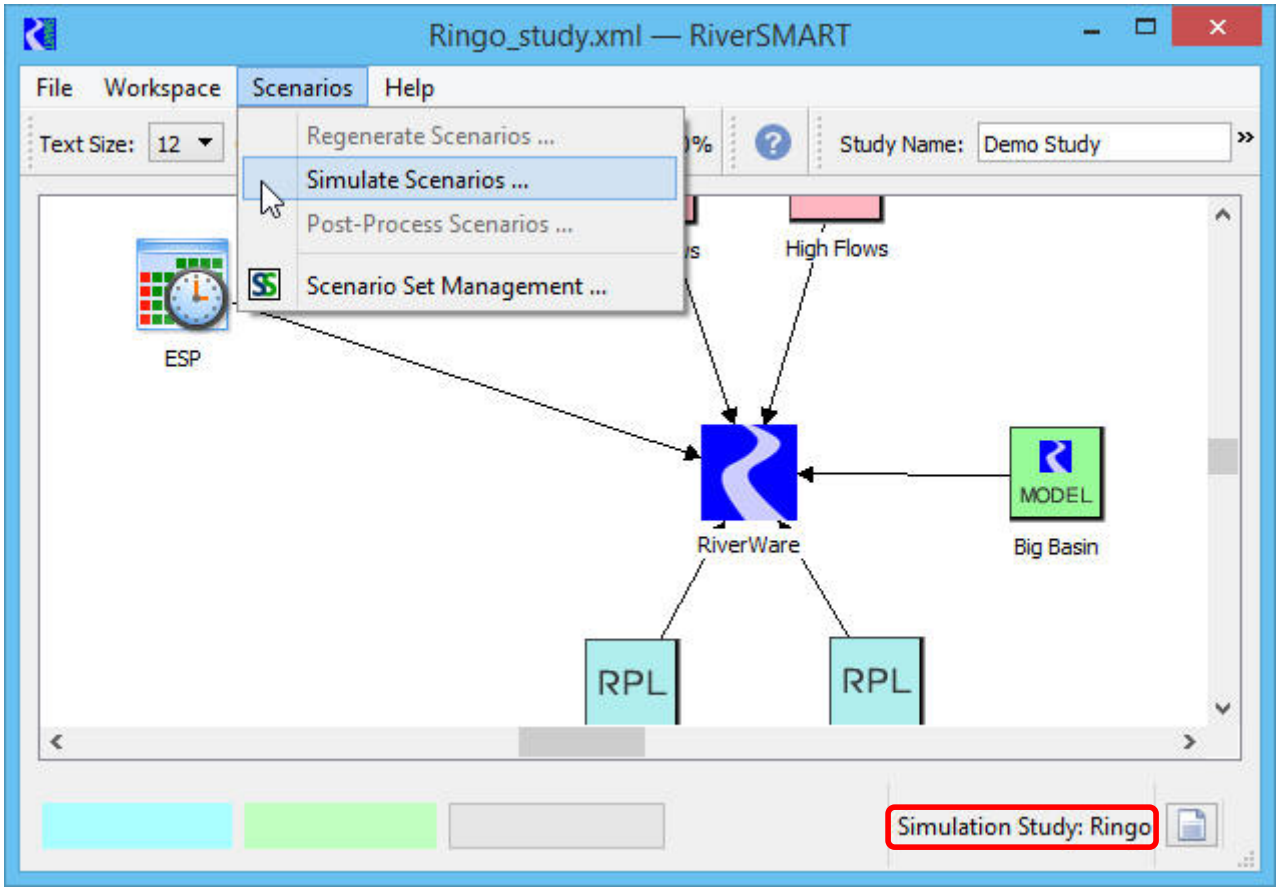

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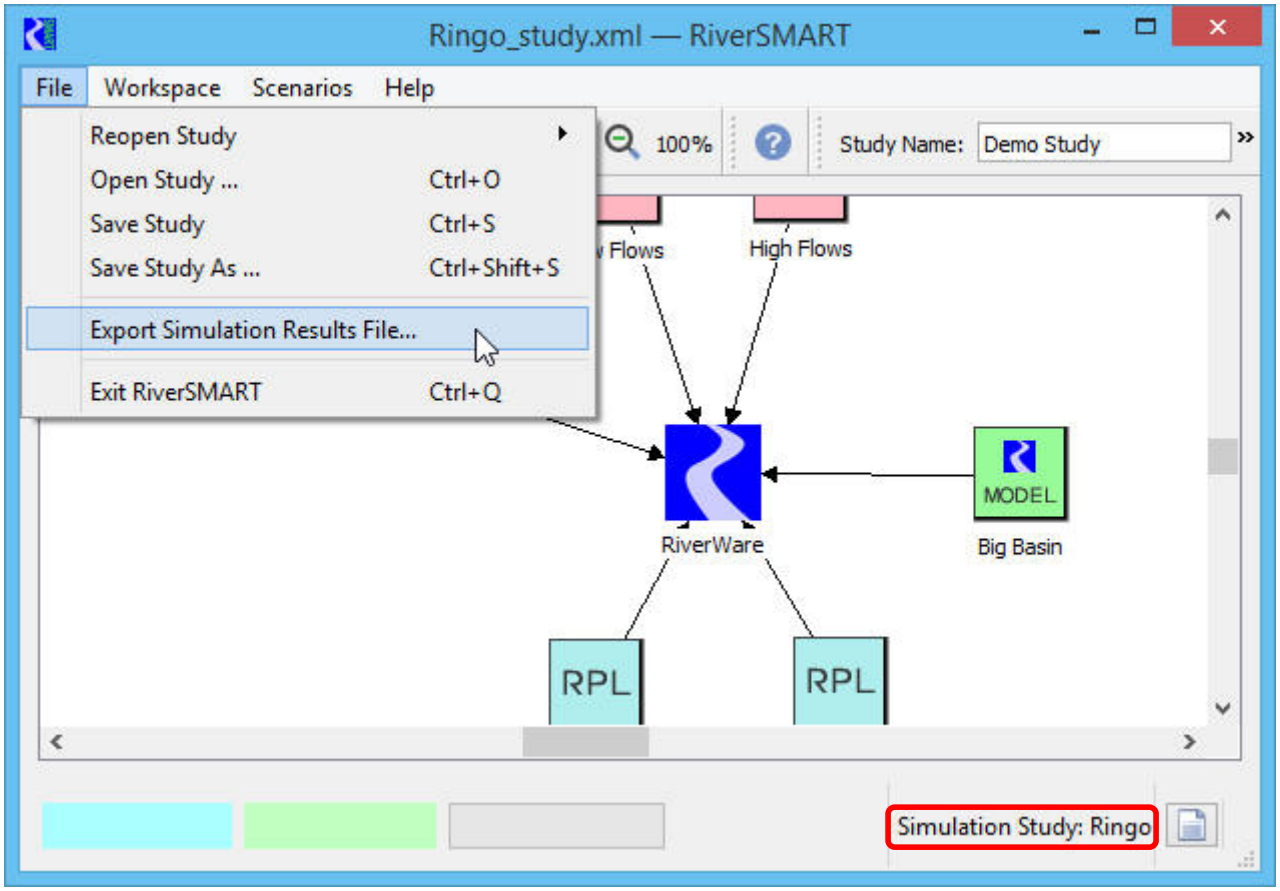

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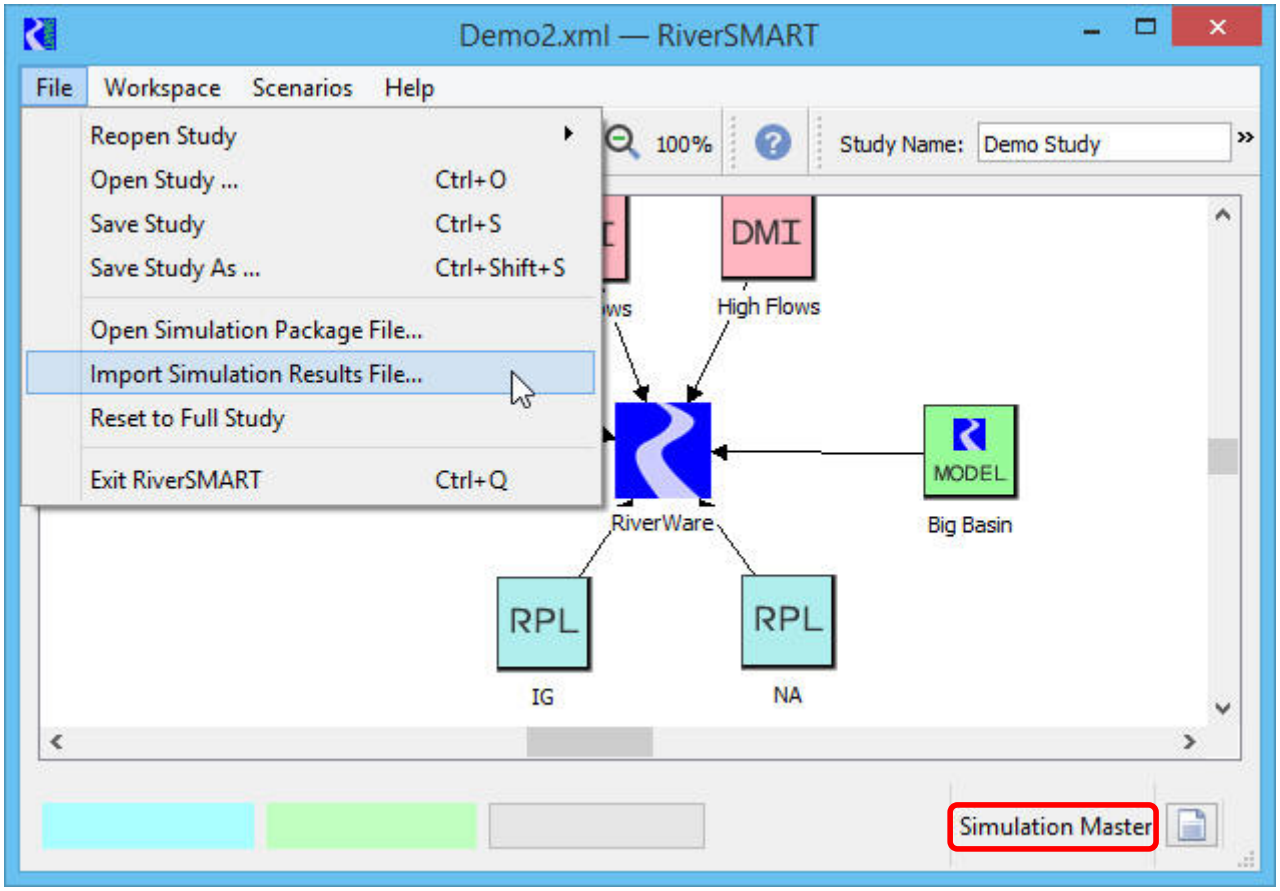
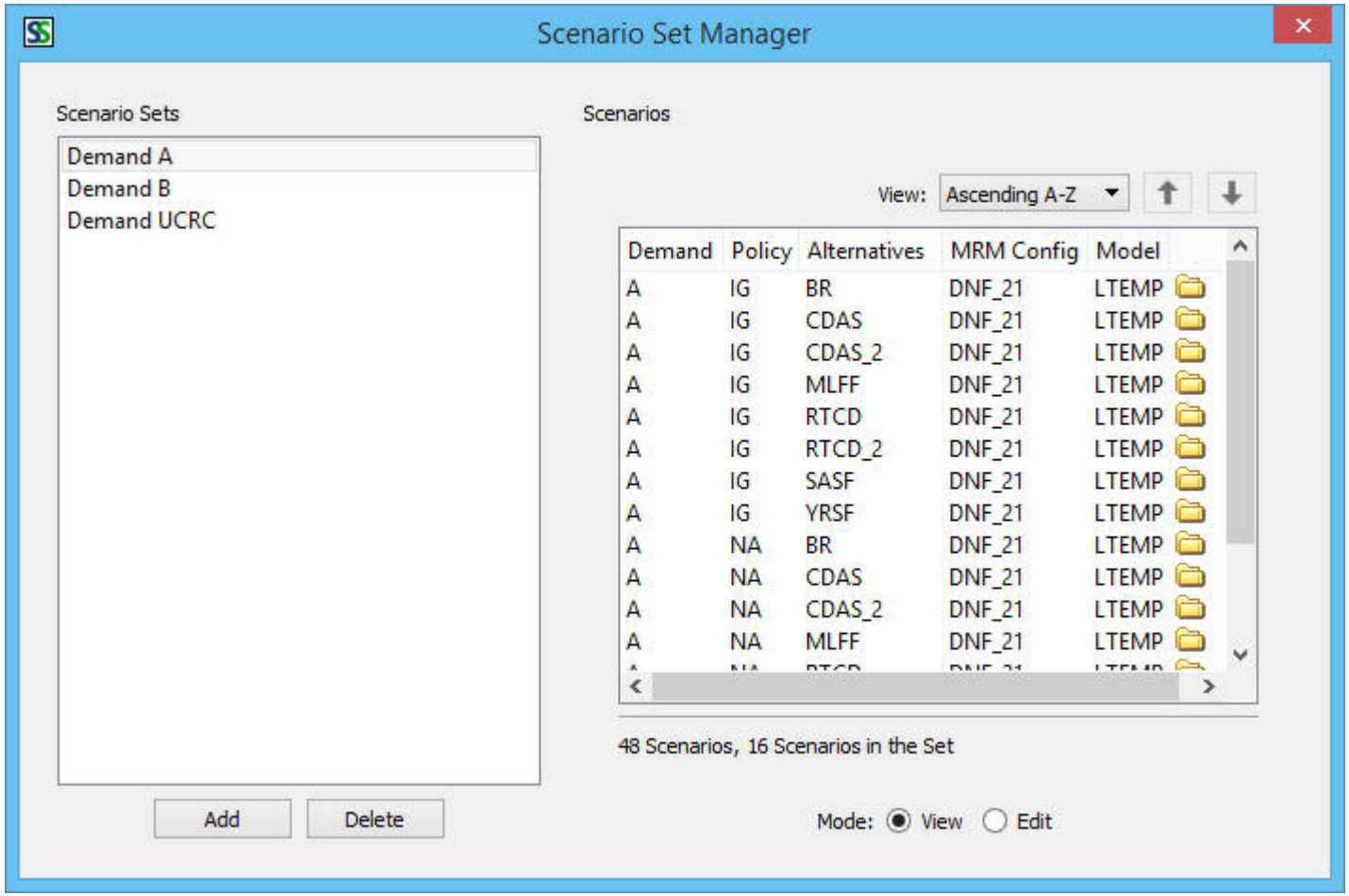


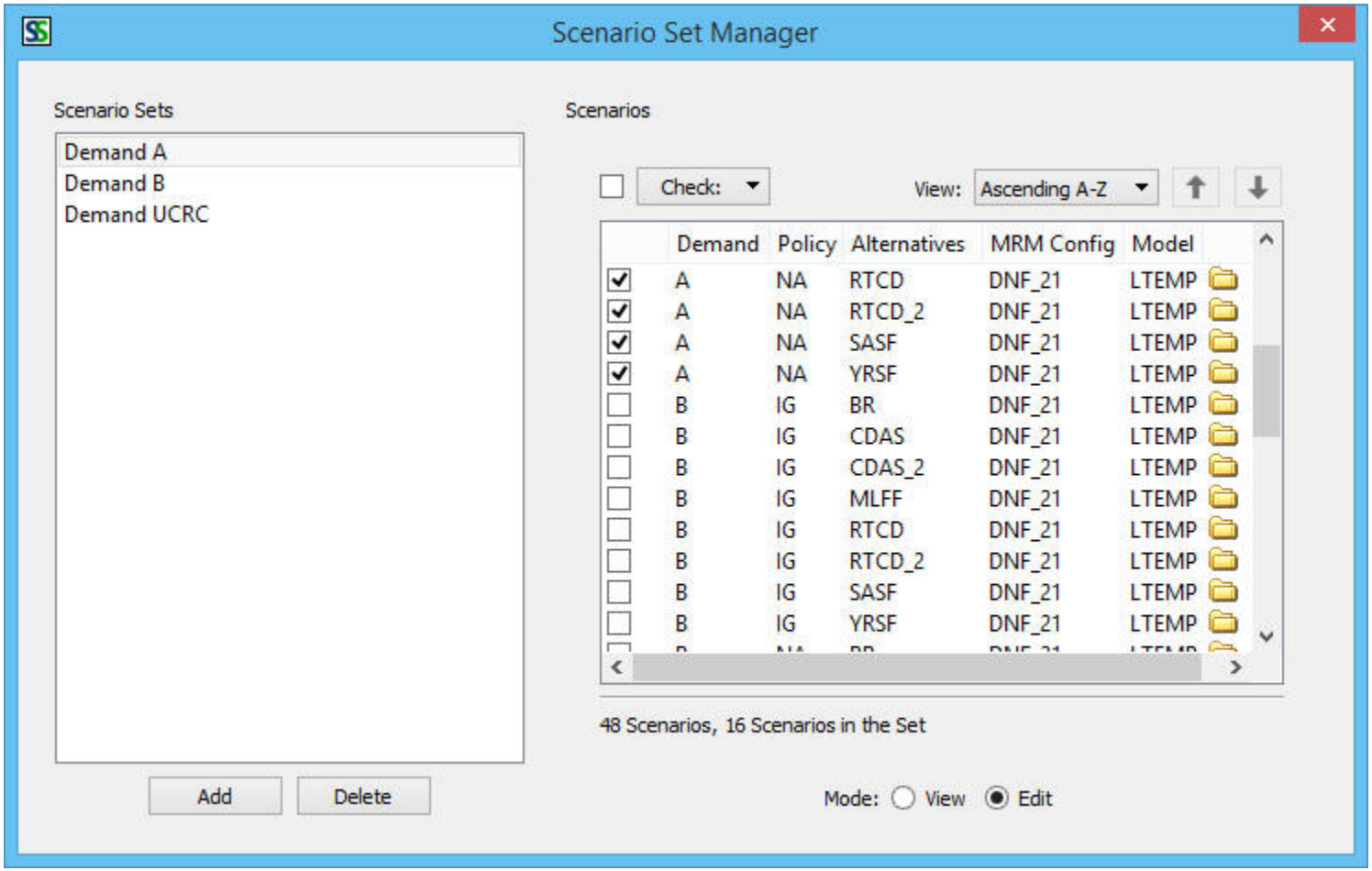
Improved Scenario Set Management

- RiverSMART supports grouping scenarios in sets, typically for analyzing simulation results
- Original scenario set manager dialog didn’t scale well to a large number of scenarios
- Re-implemented the dialog using the same architecture as the generate / simulate / post-process scenario dialogs

Improved Scenario Set Management

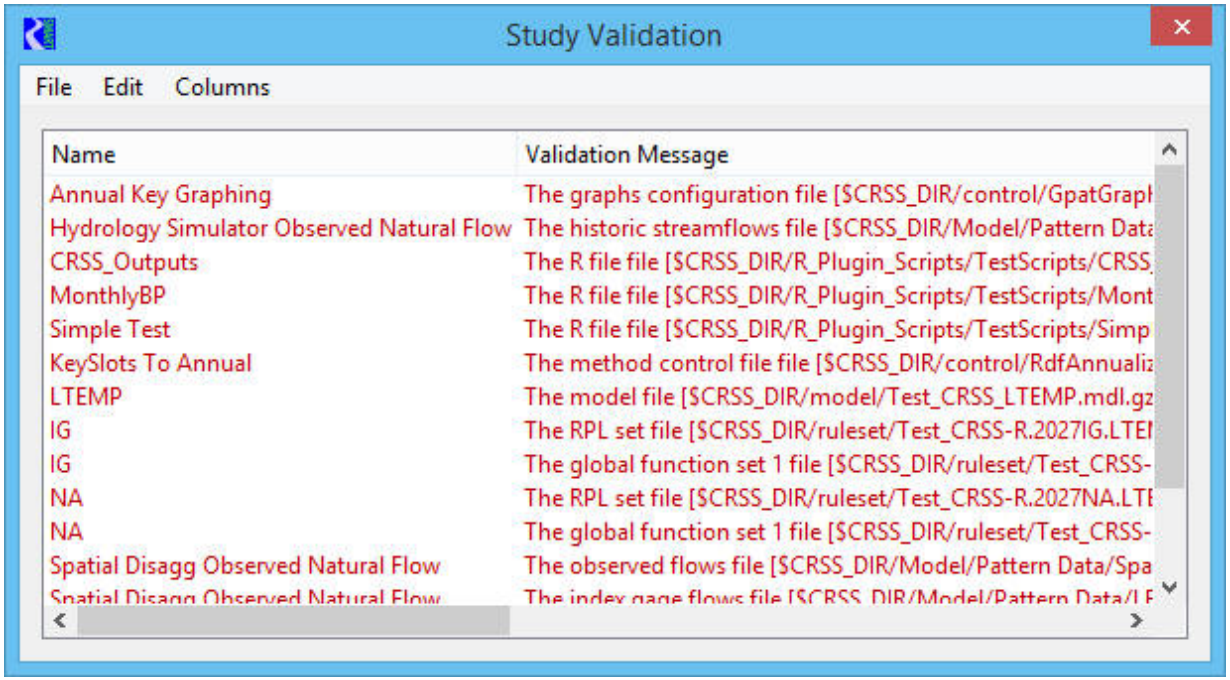


Improved Scenario Set Management



Improved Validation

- Initially validation presented one error at a time, in a modal dialog
- Improved validation presents all errors in a non-modal dialog



Improved Scenario List Performance

- RiverSMART is following RiverWare's path – studies are getting larger
- Large studies expose performance issues
- Re-implemented scenario list – common operations which took minutes now take seconds