RiverWare 6.1: User Interface enhancements for Post-Run Dispatching

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(0) Overview

The enhancements to the user interface for support of Post-Run Dispatching generally involve the role of the run period start and finish dates in various series-data related displays and analysis computations. These include:

- 1. Plots:
 - a. Toolbar buttons for zooming time series plots to either the run period or to the the full extent of series slot data.
 - b. A persistent setting for whether new series plots should initially be zoomed to the run period or to the full extent of the series slot data.
- 2. <u>Statistical Table Slots</u>: ability to limit the analysis time range to the run period, as an alternative to the full time range of the input series slot or to a specified range.
- 3. <u>Series timestep Date/Time Spinners</u>: In various dialogs, the Date/Time Spinner ranges had been limited to the run period. This limitation is no longer imposed.
- 4. <u>Run period start and finish divider ornaments</u> are now supported more completely in the various series-related displays. This applies to the <u>Open Series Slot Dialog</u>, the <u>SCT</u>, and the <u>Run Analysis</u> <u>Dialog</u>.
- (0.1) Document Status
 - 3-24-2011: Initial writing
 - 4-06-2011: Updates to reflect post-development review changes.

(1) Plots

The plot dialog supports two new toolbar icon buttons. These new operations are also in the Graph menu. They are enabled only when the bottom axis represents time.

- "R" icon -- Scale to run range
- "S" icon -- Scale to specified time-range. This brings up a small modal dialog to set



the beginning and end timesteps. The Date/Time spinners are initialized from the current display range within the selected plot. See below.

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File Edit Graph Data Window	
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<u>Scale to run range</u>	

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http://cadswes2.colorado.edu/~philw/2011/PostRunDispatch/UiChanges.html



A new "Initial Time-Axis Auto Scaling"

configuration option, saved with the model file, indicates whether new series plots should initially be zoomed to the full extent of the series slot data or to the Run Period.

This new setting can be made in the Axis Default Configuration Settings dialog (see image). As before, this dialog is accessible via the Plot Dialog: Edit >> Preferences... >> (Plot Dialog Settings dialog) >> Default Axis Settings...

This initial zooming is applied when Slots are added to a new or empty plot graph.

Technical: The RiverWare 6.1 model file format now contains one of these records to indicate the value of this setting, i.e. for the Full Slot Data Range ("F") or the Run Range ("R"):

PlotInitTimeAxisAutoScaleChar {F}
PlotInitTimeAxisAutoScaleChar {R}

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Format	Decimal	~						
Precision	2	*						
Tick Marks		\equiv						
Max Major Ticks:	8	\$						
Max Minor Ticks:	5	*						
Initial Time-Axis Auto Scaling								
Full Slot Data Time Range	•							
🔘 Run Range	3							
Two-Column Table Slots: Plot	Axes Assignment							
Normally, for two-column tab	le slots,							
column-u values are placed o column-1 values are placed o	n the vertical axis, a n the vertical axis.	Ina						
Override: Place vertical length values (elevation or head) on vertical axis for appropriate table slots,								
such as the Elevation Volu	Jme Table,							
Ok And								

(2) Statistical Table Slots

The Filter settings in the Statistical Table Slot dialog now contain three radio buttons to choose between three ways of filtering the input series data:

- Run Range
- Slot Data Range
- Specified Range

Only the "Run Range" option is new. The former functionality supported either of the two other options ("Slot Data Range" or "Specified Range") depending on the former "Time Range" checkbox.

The chosen option is interpreted (with actual begin and end date/times) and applied at the time of evaluation of the Statistical Table Slot.

Newly created Statistical Table Slots default to the "Run Range" filter mode.

In the Statistical Table Slot dialog, information about the Range option is now always shown in the Filter description field. (Previously, range information was shown only in the case of a Specified Range). Now, both the Time Range *mode* AND the resulting begin and end dates are shown -- as illustrated in the screenshots below.

K Filter for Antlers_Data.Flow_Exceedence ?X
Filter By Time
Time Range
 Run Range Slot Data Range
Specified Range:
Jul 6, 1956 🗇 to Jun 30, 1957 🗘
Filter By Months
🗌 January 🗹 May 📄 September
🗌 February 🗹 June 📄 October
March July November
April August December
Filter By Value
Greater than a Minimum:
Less than a Maximum:
Number of Largest Values:
OK Apply Cancel

Slot: Antlers_Data.Flow	Select Slot 👍
Filter: Run Range (Jul 1, 1956 to Jun 30, 1957); Month Ids: 5,6;	Filter Input Data
Slot: Antlers_Data.Flow Filter: Slot Range (Jun 30, 1956 to Jun 30, 1957); Month Ids: 5,6;	Select Slot
Slot: Antlers_Data.Flow	Select Slot
Filter: Specified Range (Jul 6, 1956 to Jun 30, 1957); Month Ids: 5,6;	Filter Input Data

Technical: The RiverWare 6.1 model file record associated with each Statistical Table Slot in the model was modified to support the new time range filtering choices. The following changes have been made:

(1) A boolean flag (encoded as "0" or "1") indicating that a Specified Range is being used has been changed to a single character code.

OLD: '0' -- range filter off (uses the Full Slot Data range)

- '1' -- range filter on (uses Specified Range)
- NEW: 'R' -- Run Range

'F' -- Full Slot Data Range

'S' -- Specified Range

(2) The "Specified" time range values (beginning and edit date/times) are always included, i.e. even if "Specified Range" is not the current filter. In new Statistical Table Slots or old imported slots, the "Specified" time range values are arbitrarily initialized to the Run period.

(3) Series timestep Date/Time Spinners

Timestep Date/Time spinners in the following dialogs are no longer constrained to the current Run Range. (Except for the first case, these spinners are used for series data timestep navigation).

- 1. Diagnostics Configuration Dialog
- 2. Open Object Dialog
- 3. Open Series Slot Dialog
- 4. SCT

Technical: Some fixes needed to be applied to allow time scroll operations (e.g. global time scrolls initiated from some other dialog) to function outside of the current Run Range.

(4) Run period ornaments

Additional Pre-run Timestep and Post-run Timestep dividers were added to these three dialogs:

- <u>Open Series Slot Dialog</u>
- <u>SCT</u>
- Run Analysis Dialog (plus additional ornament: dotted line along row or header columns)

(4.1) Open Series Slot Dialog

The Open Series Slot Dialog supported only automatic regular (calendar-) period dividers. The regular period divider type depends on the series timestep size, e.g. *daily series* have regular period dividers between *months.* Regular period dividers are shown in green, and are unconditionally shown*.

Now, Pre-Run/Run and Run/Post-Run Dividers are also unconditionally shown*. Pre-Run/Run dividers are blue. Run/Post-Run Dividers are red.

*However, only dividers between timesteps within the dialog's series data range appear in the dialog.

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	Elevation			
Value:			ft	
Scroll: Jan 27, 1993	7 🗘		1~	
	Pool Elevation ft	ו		
01-27-1997 Mon	785.00	Ι		Bre-Rup Divider
01-28-1997 Tue	785.26	ΤВ		(blue)
01-29-1997 Wed	785.65	0		(blue)
01-30-1997 Thu	788.22	Т		
01-31-1997 Fri	790.21	0		Begular Time Interval
02-01-1997 Sat	791.86	0		Divider (green)
02-02-1997 Sun	793.23	0		Divider (green)
02-03-1997 Mon	794.21	0		
02-04-1997 Tue	794.93	0		
02-05-1997 Wed	795.39	0		
02-06-1997 Thu	795.71	0		
02-07-1997 Fri	NaN	0		
02-08-1997 Sat	NaN	0	-	Post-Run Divider
02-09-1997 Sun	NaN	0		(red)
02-10-1997 Mon	NaN	0		(icu)
Show: 🗌 Description	ı			

(4.2) SCT

The SCT had supported both Pre-Run/Run dividers and Run/Post-Run Dividers. But the two divider types had a single user-configurable color. Now these two divider types have independent configurable colors.

K	SCT (Gr	eatWe	estRiverBasin7.1	Demo.mdl.gz)		X		K	l s	ст	Configuration				?×
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٢	Series Slots	Sc	alar Slots Other 9	ilots					9	Color	Settings				
	50,105 5,005		Maushaia Charana	Marabaia Chausan	Mauria Chanana				1		4-Hour Divider				
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H	1/25	Sup	140.40						ļ		weekend Divider				
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	1/29	Wed	140.40	785.65	140.40			-	4	T	Pre-Simulation Bo	undarv Divide	r		
	1/30	Thu	140.40	788.22	140.40					=					
	1/31	Fri	143.81	790.21	143.53	1					Post-Simulation B	oundary Divid	er (NE	W)	
	2/1	Sat	169.54	791.86	144.62				1		Copy Crosshatch				
	2/2	Sun	206.66	793.23	145.53			/		=					
	2/3	Mon	235.57	794.21	146.23				l		Read Only Cross	hatch			
	2/4	Tue	256.49	794.93	146.74				1		Dispatch Disabled	l Crosshatch			
	2/5	Wed	276.17	795.39	147.10					=					
	2/6	Thu	298.17	795.71	147.33				l		Overdetermined	Values			
	2/7	Fri			NaN		ſ		ſ		Slot Divider Backg	ground			
lŀ	2/8	Sat			NaN				Ì	۲	Summary Coll Bac	karound			
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The "factory" (hard-coded) default for these two divider types are as follows:

- 1. Pre-Run / Run Divider: BLUE
- 2. Run / Post-Run Divider: RED

However, new SCTs are created with the *user's saved defaults*. The factory default settings can be recovered by clearing the SCT's default settings. This is done in the SCT by selection Config >> Defaults >> Clear Default Settings. See below.

SCT (GreatWestRiverBasin7.1Demo.mdl.gz)												×				
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2/2	Su							Cl	ear De	fault	Settin	gs	N			
2/3	Mo						5	_		-		-	-M	-		

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http://cadswes2.colorado.edu/~philw/2011/PostRunDispatch/UiChanges.html

Technical: The RiverWare 6.1 SCT file format now has a record for the Post-Run divider color. Note that SCT config files are loaded using Flex/Bison processing (rather than Tcl processing, which is used for model files). Here the new record with the default "RGB" color value (dark red):

COLOR_POSTSIM_TSTEP_DIV 170 0 0

(4.3) Run Analysis Dialog

Before this change, the Run Analysis dialog ornamented "Pre-Run" timestep rows and columns in two ways:

- 1. With a solid Blue divider line before the first "Simulation" timestep (i.e. after the last "Pre-Run" timestep).
- 2. With a dotted Blue line along the edge of "Pre-Run" row or column headers.

With this change, similar ornamentations are implemented for "Post-Run" timesteps, in Red.

Model Run Analysis Simulation													×							
File View Object Color																				
Sort: Custom V Scroll: January 27, 1997																				
01-25-1997 01-25-1997 01-26-1997 01-26-1997 01-28-1997 01-30-1997 01-30-1997 01-31-1997 01-31-1997 01-31-1997 02-01-1997 02-01-1997 02-03-1997 02-03-1997 02-03-1997 02-03-1997 02-03-1997 02-03-1997 02-03-1997 02-01-1997 02-03-1997												02-12-1997								
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No Selection Click on the grid to select an Object/Timestep																				

Pre-run Timesteps

Post-run Timesteps

The number of Post-Run timesteps is established within the "Simulation Run Parameters" dialog (accessible from the Run Control dialog). See the **"Number** of Post-Run Dispatch Timesteps" integer spinner.

K Simulation Run Par	ameters 🛛 🛛 🔀									
UWater Quality	 Inline Process Post Process 									
WQ Constituent	WQ Solution Approach:									
None 💉	None 😽									
Max Iterations (EngrObj Slots) 1000										
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