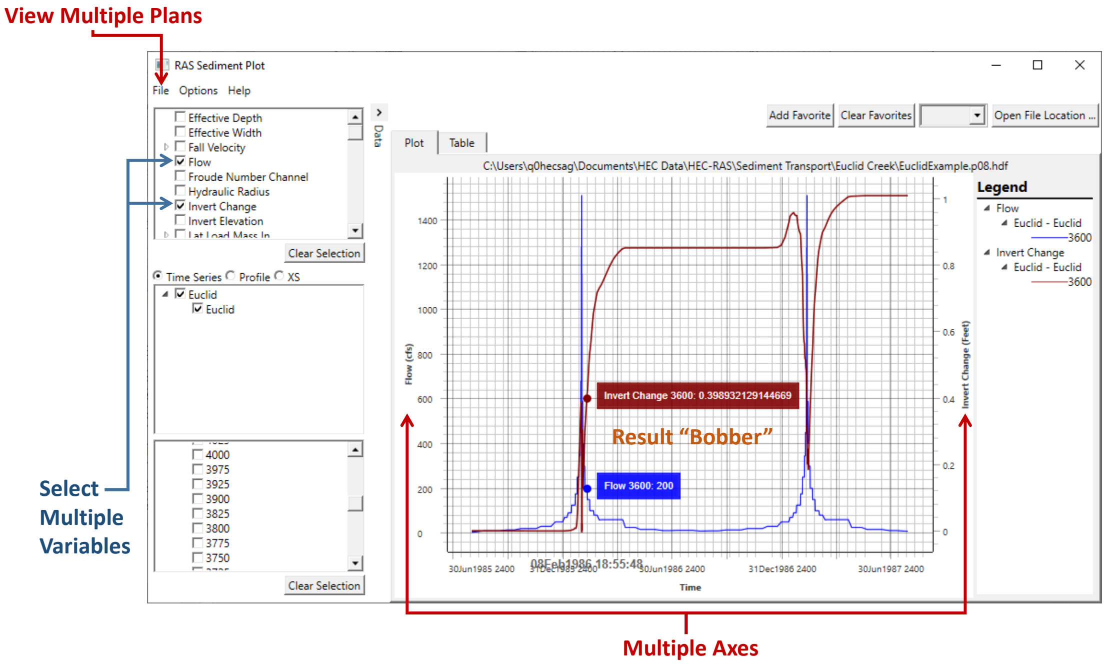
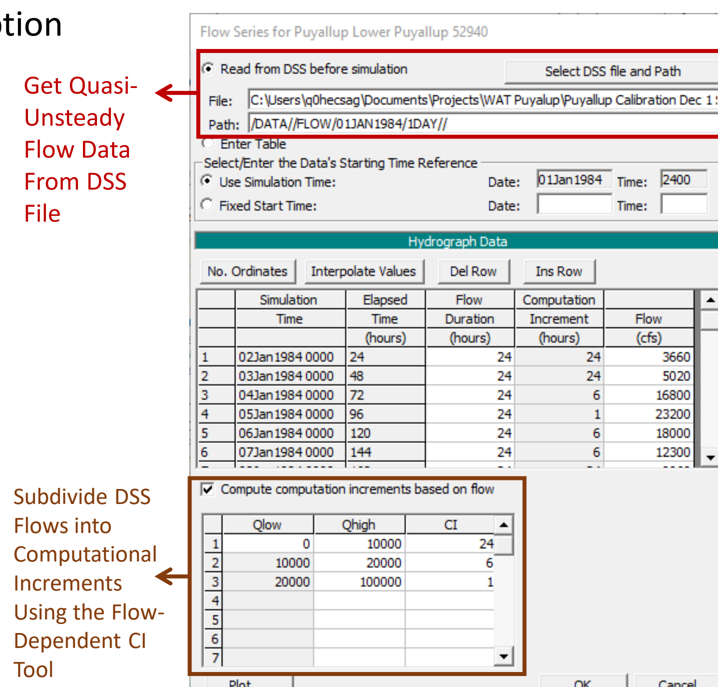
New Output Viewer



1

Quasi-Unsteady DSS Flow Option

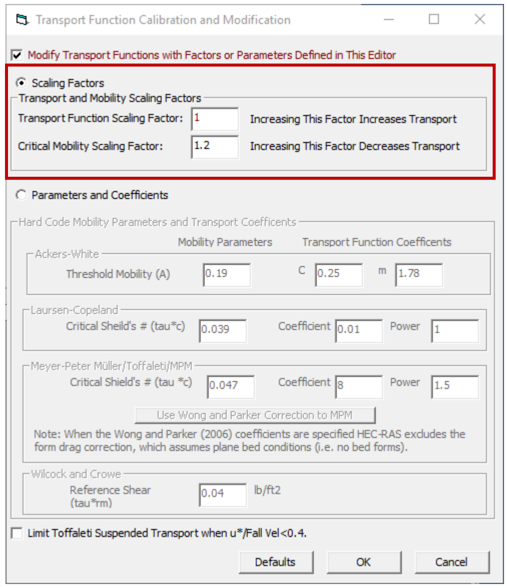


	Simulation Time	Elapsed Time (hours)	Flow Duration (hours)	Computation Increment (hours)	Flow (cfs)
1	02Jan1984 0000	24	24	24	3660
2	03Jan1984 0000	48	24	24	5020
3	04Jan1984 0000	72	24	6	16800
4	05Jan1984 0000	96	24	1	23200
5	06Jan1984 0000	120	24	6	18000
6	07Jan1984 0000	144	24	6	12300

	Qlow	Qhigh	CI
1	0	10000	24
2	10000	20000	6
3	20000	100000	1
4			
5			
6			
7			

2

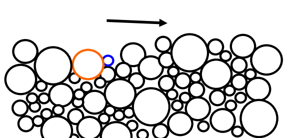
Calibration Scaling Factors For Transport Functions



3

Hiding Features

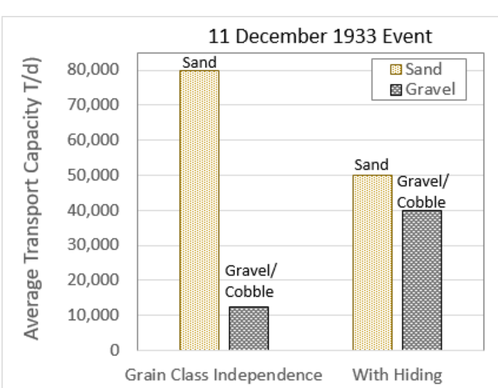
Hiding

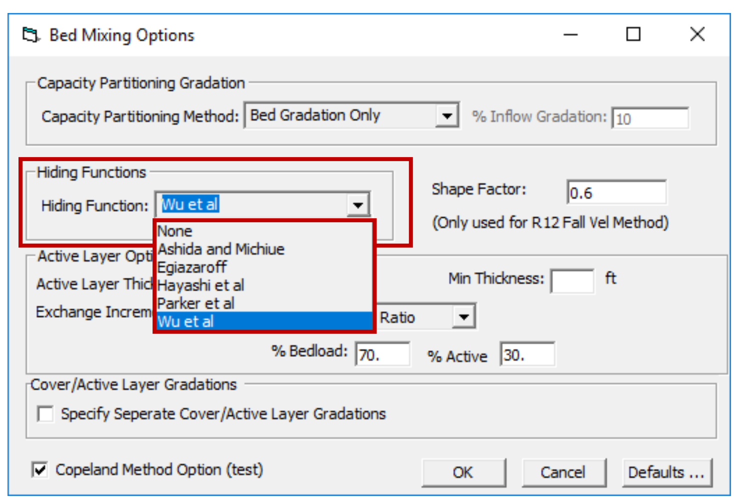


Parker (e-book)

γ~0.8

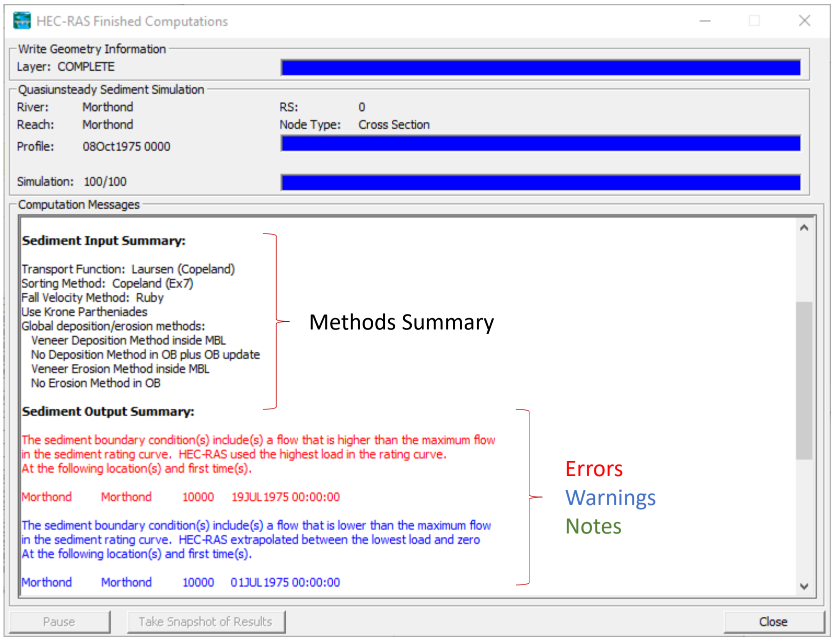
$$\frac{\tau^*_{ci}}{\tau^*_{cg}} = \left(\frac{d_i}{d_{sg}}\right)^{-\gamma}$$





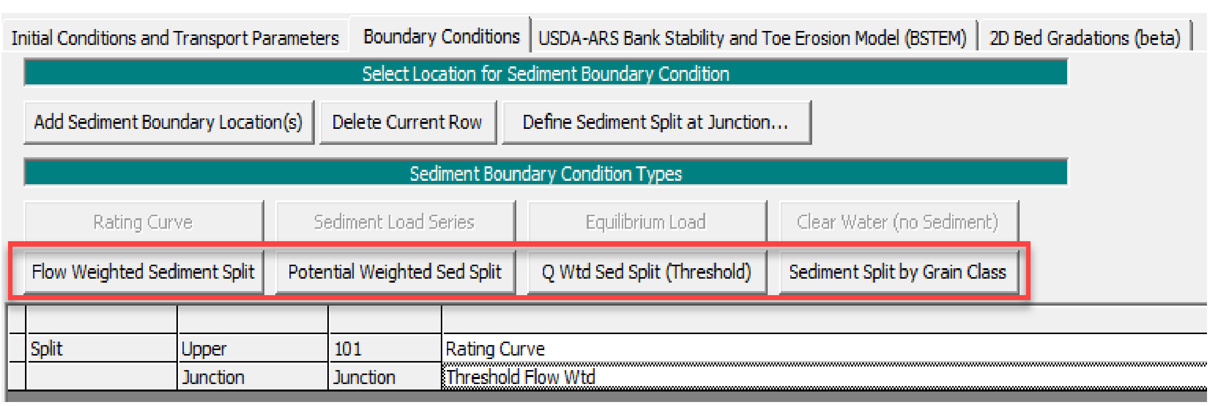
4

Runtime Algorithm Summary and Errors/Warnings/Notes



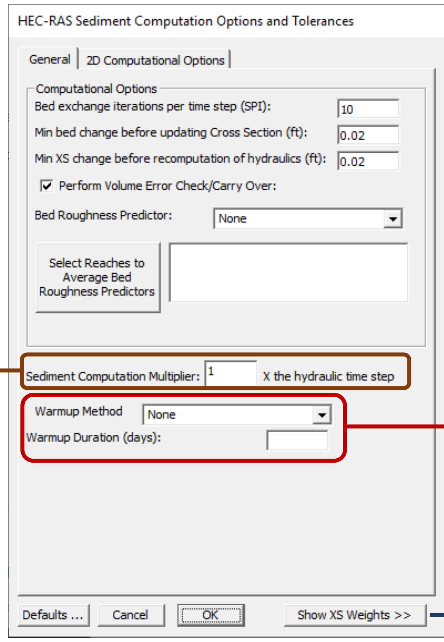
5

Flow Split Options Including
Split Flows at a Distributary Based on Potential Instead of Flow



6

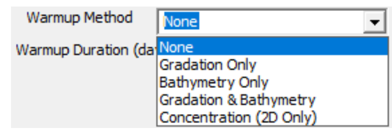
Sediment Warmup Period



Decouple Unsteady hydraulic and sediment time steps

Warm up:

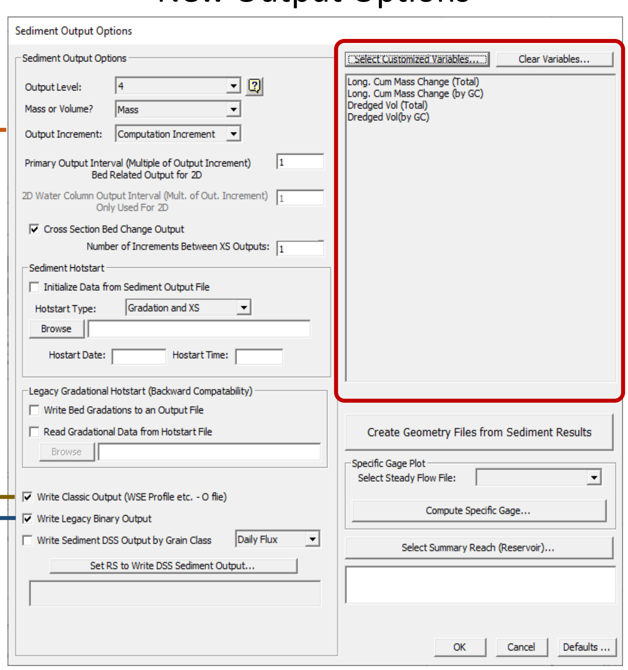
- Gradation Only
- Bathymetry Only
- Both Gradation and Bathymetry



Hide XS weights which should generally not be adjusted

7

New Output Options



Added Period Averaged Output

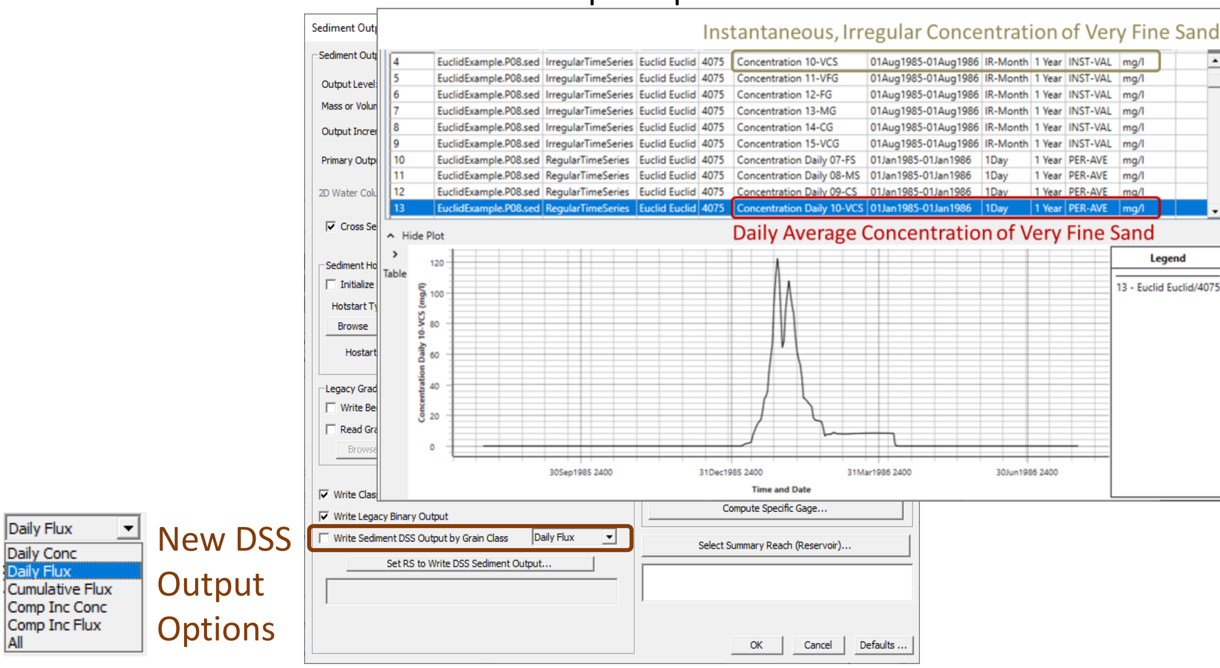
Customized User Output Options

User Option to Turn Off Steady Flow Output if it Gets Too

User Option to Turn Off Large Legacy Output File

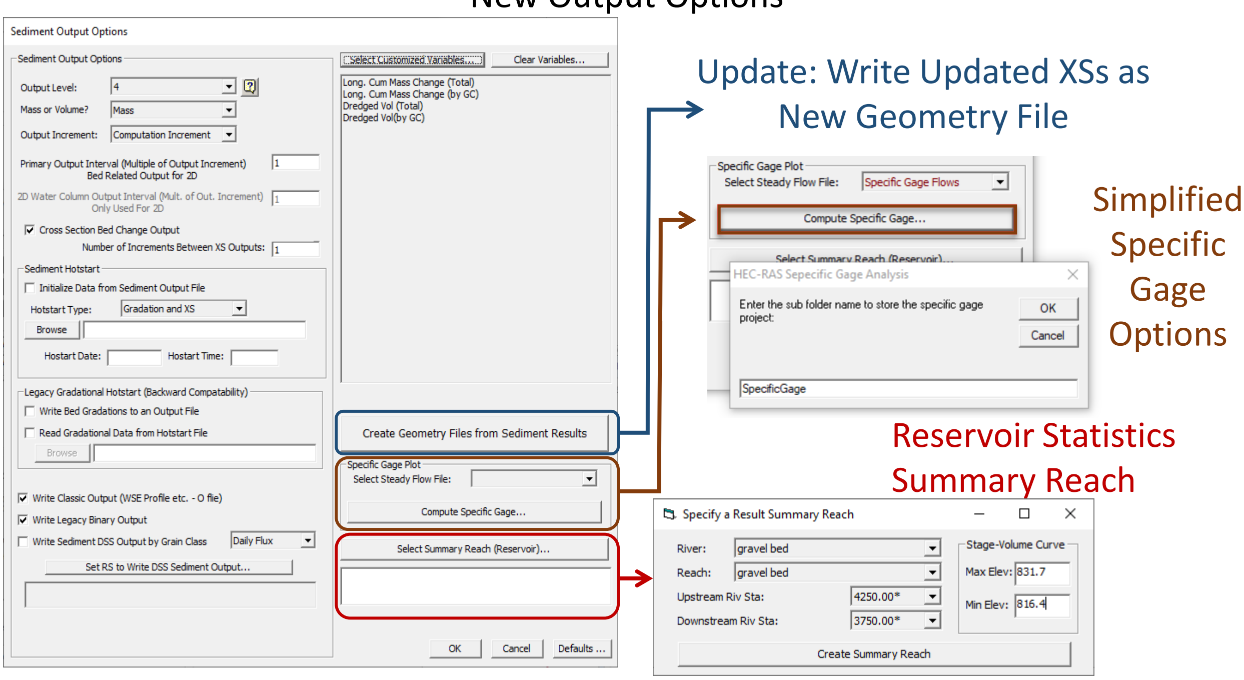
8

New Output Options



9

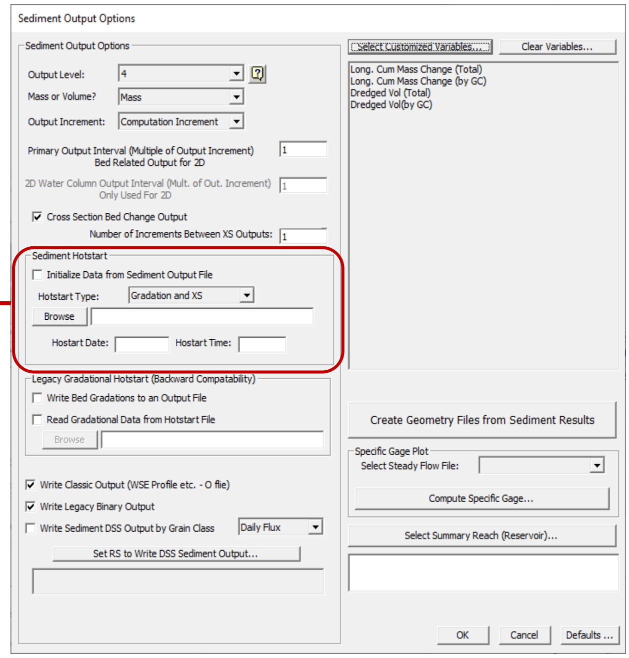
New Output Options



10

New Output Options

Hotstart bathymetry and/or gradation from any time step of any sediment output file



11

Flux Weighted Capacity Partitioning

We have always partitioned capacity based on the grain class distribution in the bed:

Gs(i) = P(i)*Pot(i)

But if the inflowing load includes grain classes not in the bed, they deposit. This feature partitions capacity partially based mostly on the bed but also based on the inflowing load.

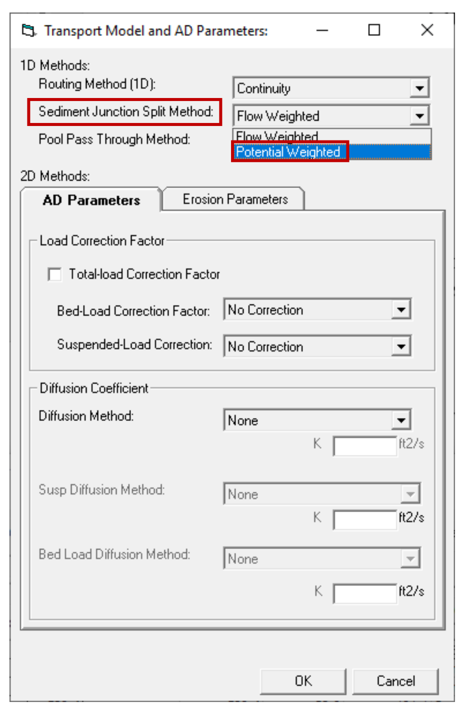
So if:

P(i) = % of grain class in the bed
f(i) = % of grain class in upstream flux (mass in)
F% = User specified percent (e.g. 18% in the figure, default 10%)
Pot(i) = the transport potential of the grain class

Then Capacity (Gs(i)) would be:

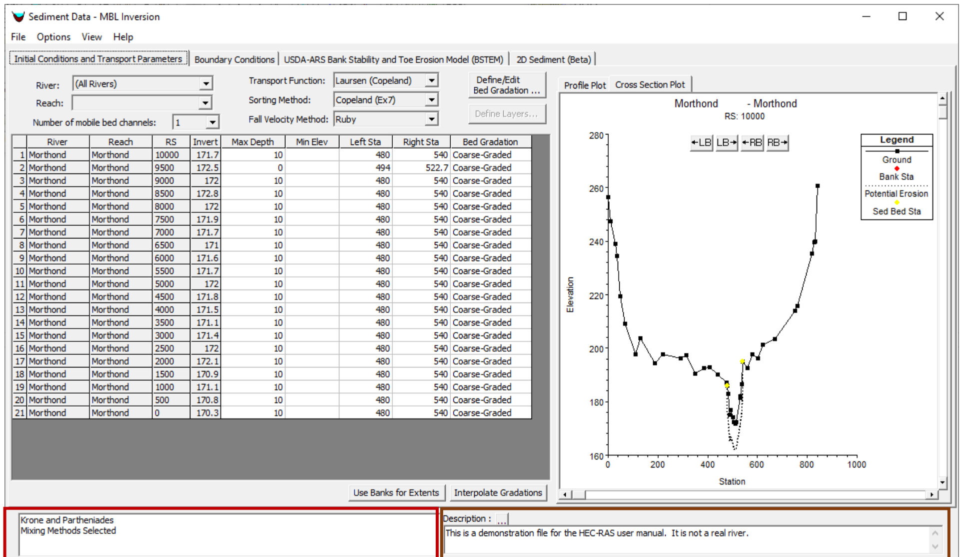
Gs(i) = ((100-F%)/100)*P(i)*Pot(i) + (F%/100)*f(i)*Pot(i)

Bed Term Upstream Flux Term



12

Sediment File Description and Option Flags



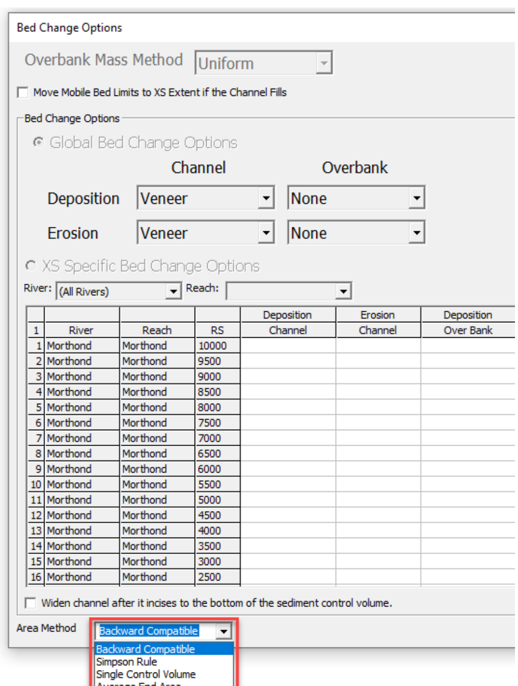
Option flags help users keep track of which options they have selected without looking through all the sub menus. This avoids a lot of errors and duplicated simulations.

The Description box allows users to document the file and provide meta-data that will help them and future users understand the assumptions and data represented.

13

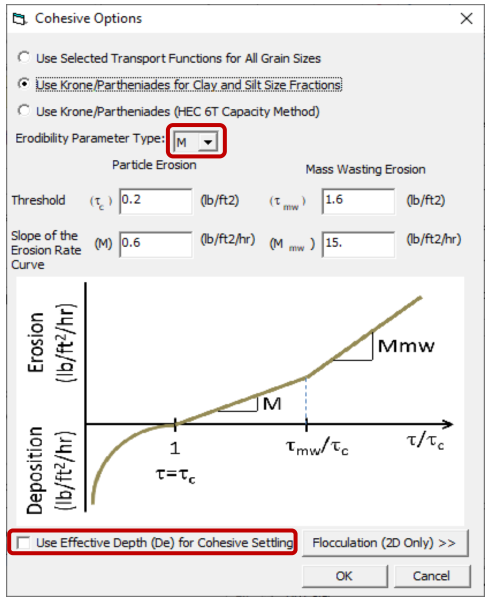
Area-Volume Conversion Methods

Previous versions of HEC-RAS followed HEC 6 using the Simpson rule to covert Volume to Area for bed change and a simple, rectangular control volume to account for the volume-area change in the bed mixing algorithms. This led to mass errors and, in extreme cases, depositing cross sections that were losing mass. We retained this area-volume change option to maintain backward compatibility, but provided options to make the Area-Volume computations consistent between the two algorithms. New models use the Simpson rule by default in both places, but users can also chose a simplified control volume or a new end-area method.



14

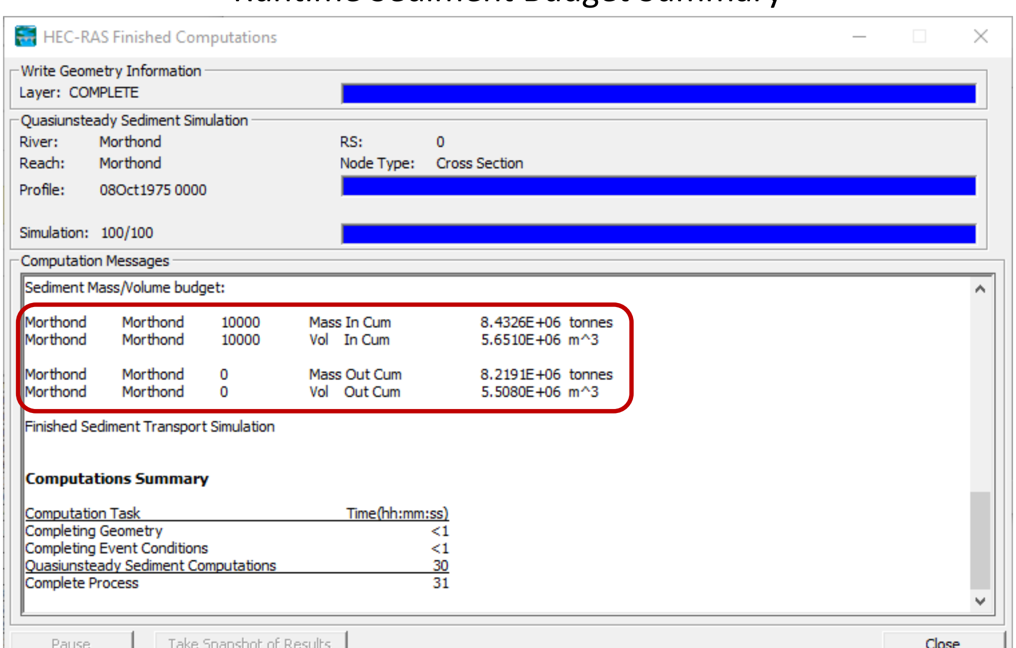
Dimensional or Dimensionless Erodibility Options (i.e. M or Kd Cohesive Options)



Also, we added the ability to apply effective depth to the cohesive settling options.

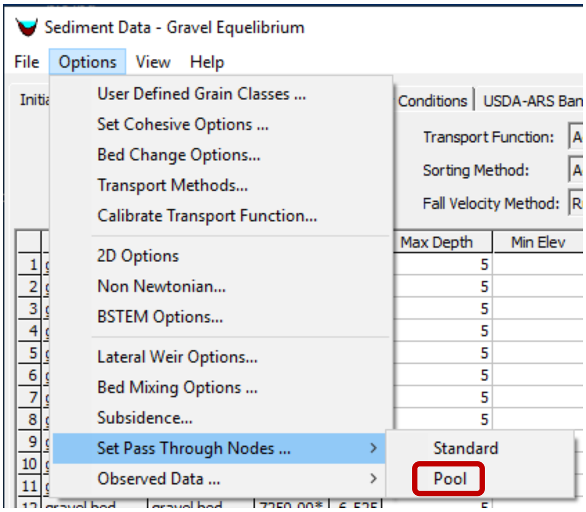
15

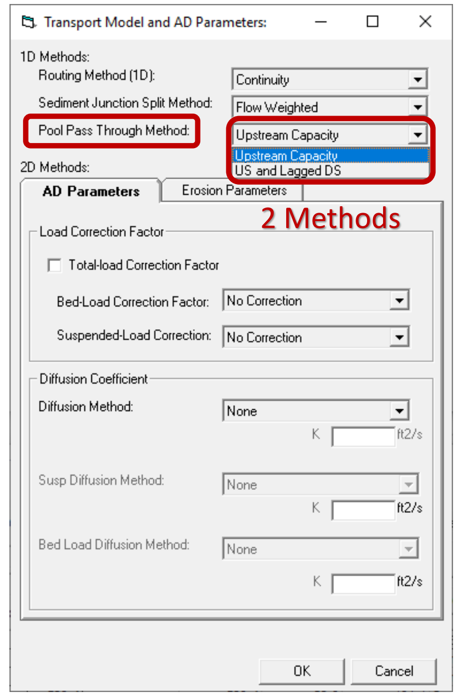
Runtime Sediment Budget Summary



16

Pool "Pass Through" Method

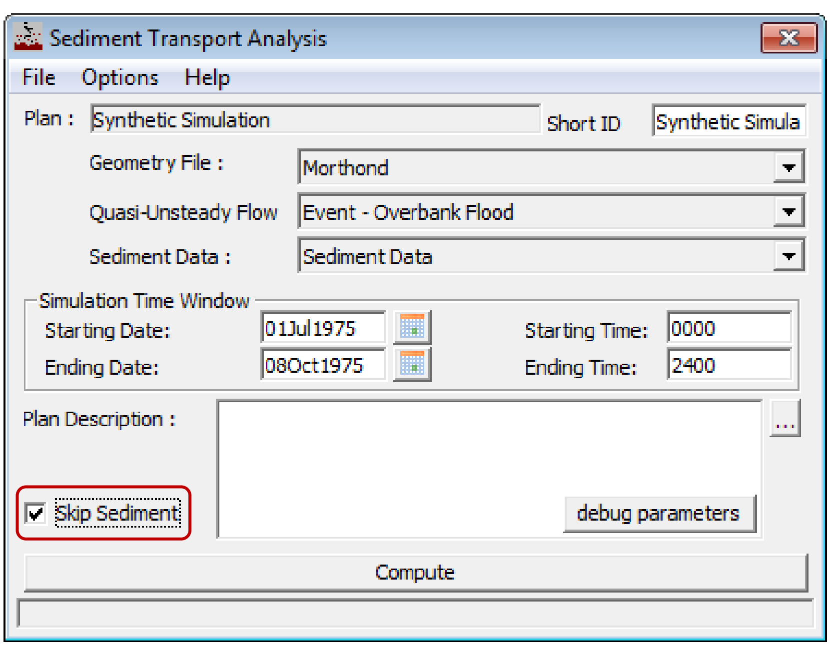




Computes pool capacity based on bounding cross sections to avoid inappropriate deposition but allow base level change.

17

Fixed Bed – Quasi-Unsteady Hydraulic Mode



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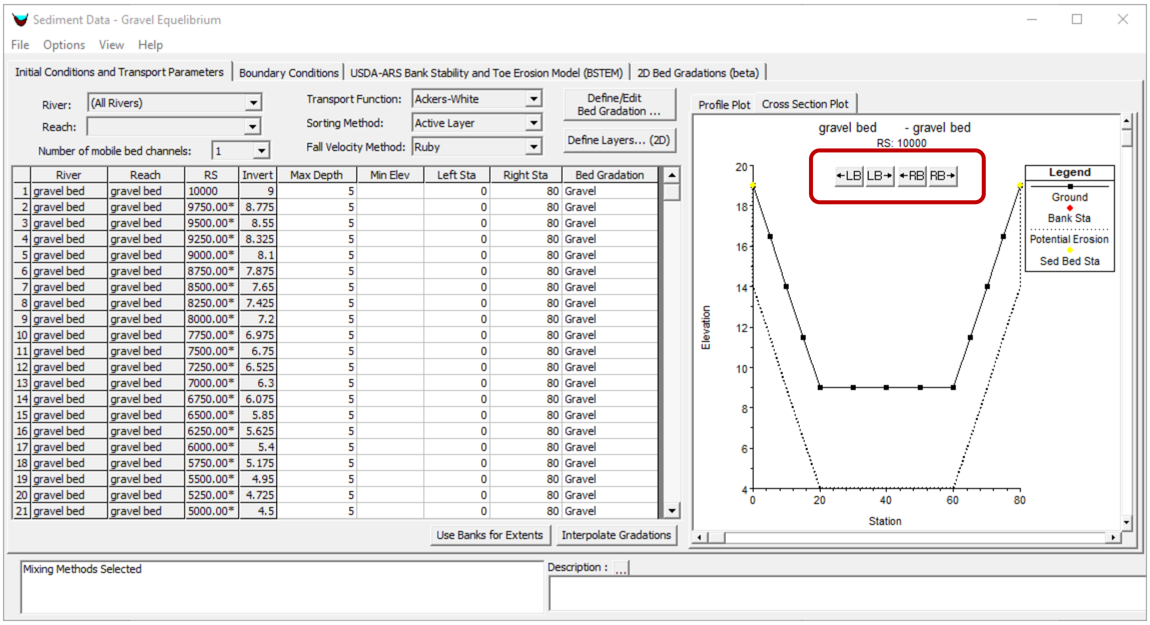
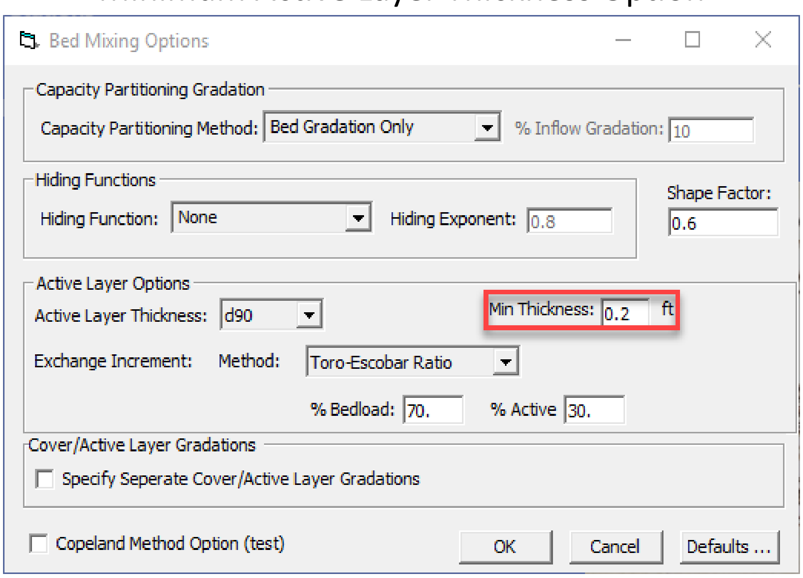
Movable Bed Limit Adjustment Buttons



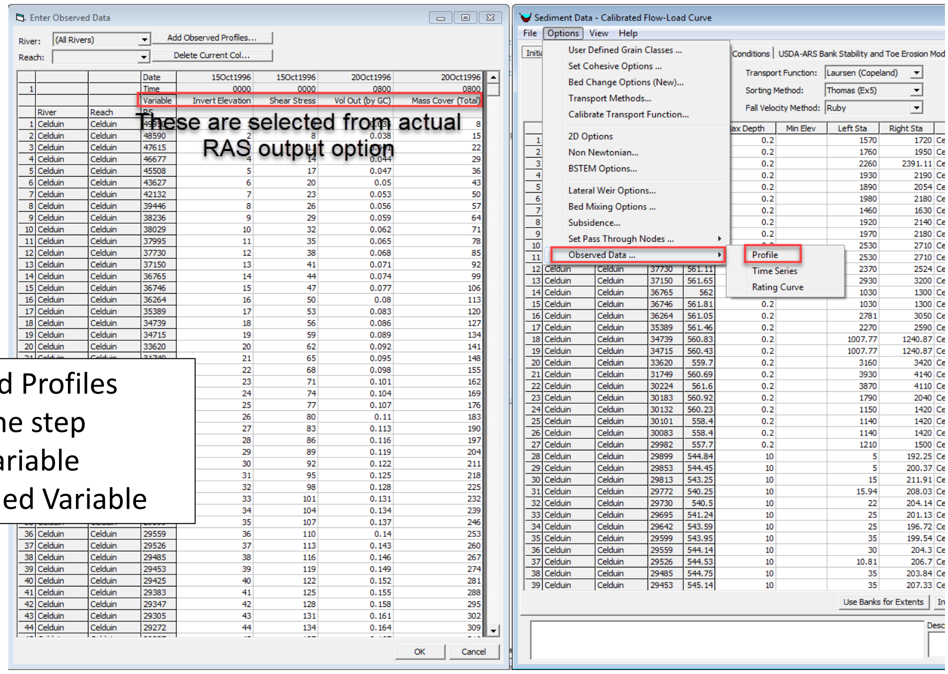
	River	Reach	RS	Invert	Max Depth	Min Elev	Left Sta	Right Sta	Bed Gradation
1	gravel bed	gravel bed	10000	9	5		0	80	Gravel
2	gravel bed	gravel bed	9750.00*	8.775	5		0	80	Gravel
3	gravel bed	gravel bed	9500.00*	8.55	5		0	80	Gravel
4	gravel bed	gravel bed	9250.00*	8.325	5		0	80	Gravel
5	gravel bed	gravel bed	9000.00*	8.1	5		0	80	Gravel
6	gravel bed	gravel bed	8750.00*	7.875	5		0	80	Gravel
7	gravel bed	gravel bed	8500.00*	7.65	5		0	80	Gravel
8	gravel bed	gravel bed	8250.00*	7.425	5		0	80	Gravel
9	gravel bed	gravel bed	8000.00*	7.2	5		0	80	Gravel
10	gravel bed	gravel bed	7750.00*	6.975	5		0	80	Gravel
11	gravel bed	gravel bed	7500.00*	6.75	5		0	80	Gravel
12	gravel bed	gravel bed	7250.00*	6.525	5		0	80	Gravel
13	gravel bed	gravel bed	7000.00*	6.3	5		0	80	Gravel
14	gravel bed	gravel bed	6750.00*	6.075	5		0	80	Gravel
15	gravel bed	gravel bed	6500.00*	5.85	5		0	80	Gravel
16	gravel bed	gravel bed	6250.00*	5.625	5		0	80	Gravel
17	gravel bed	gravel bed	6000.00*	5.4	5		0	80	Gravel
18	gravel bed	gravel bed	5750.00*	5.175	5		0	80	Gravel
19	gravel bed	gravel bed	5500.00*	4.95	5		0	80	Gravel
20	gravel bed	gravel bed	5250.00*	4.725	5		0	80	Gravel
21	gravel bed	gravel bed	5000.00*	4.5	5		0	80	Gravel

Minimum Active Layer Thickness Option



Constrains active layer to stable thickness for small particles (where 2-3 d90 isn't appropriate or stable).

New Observed Profile Data Editor

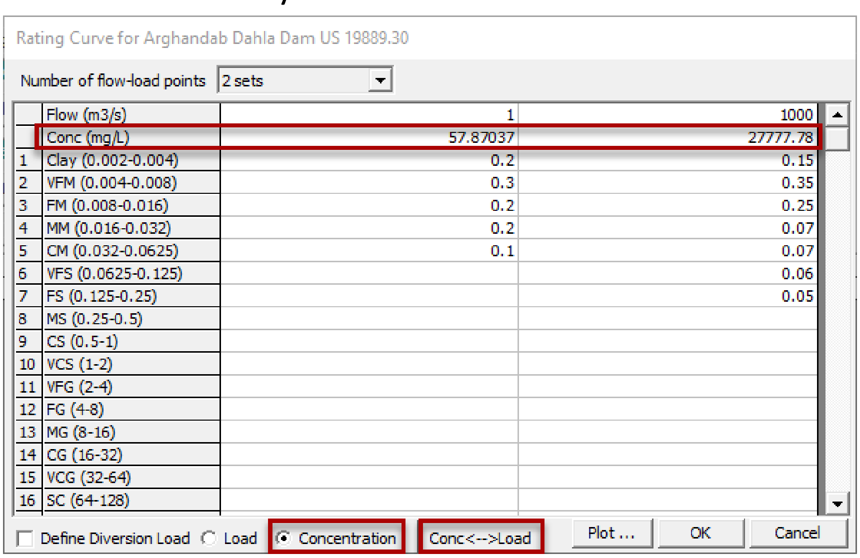


Can Attach Observed Profiles

- To the nearest time step
- To a Computed Variable
- As a Generic Named Variable

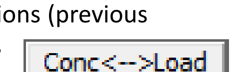
21

Sediment Boundary Concentration Mode and Conversion



	Flow (m3/s)	1	1000
	Conc (mg/L)	57.87037	27777.78
1	Clay (0.002-0.004)	0.2	0.15
2	VFM (0.004-0.008)	0.3	0.35
3	FM (0.008-0.016)	0.2	0.25
4	MM (0.016-0.032)	0.2	0.07
5	CM (0.032-0.0625)	0.1	0.07
6	VFS (0.0625-0.125)		0.06
7	FS (0.125-0.25)		0.05
8	MS (0.25-0.5)		
9	CS (0.5-1)		
10	VCS (1-2)		
11	VFG (2-4)		
12	FG (4-8)		
13	MG (8-16)		
14	CG (16-32)		
15	VCG (32-64)		
16	SC (64-128)		

Recent versions added the ability to specify boundary condition rating curves as concentrations (previous versions were limited to load) and provides a conversion button that automatically converts load-to-concentration or concentration-to-load.



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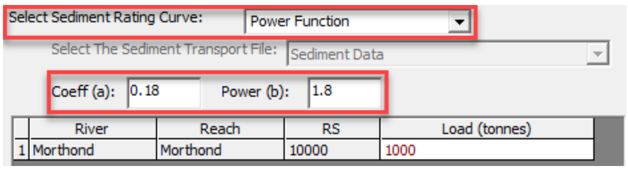
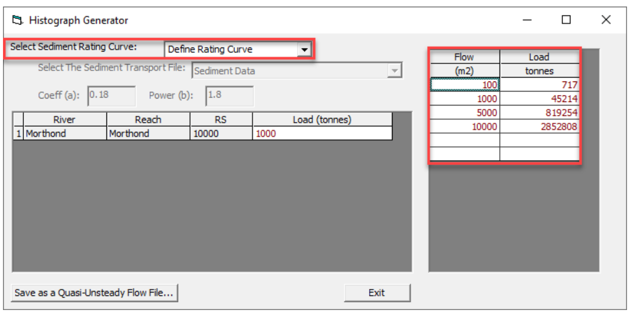
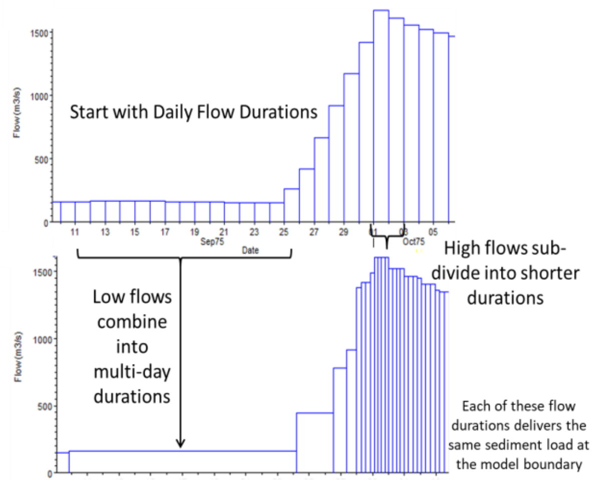
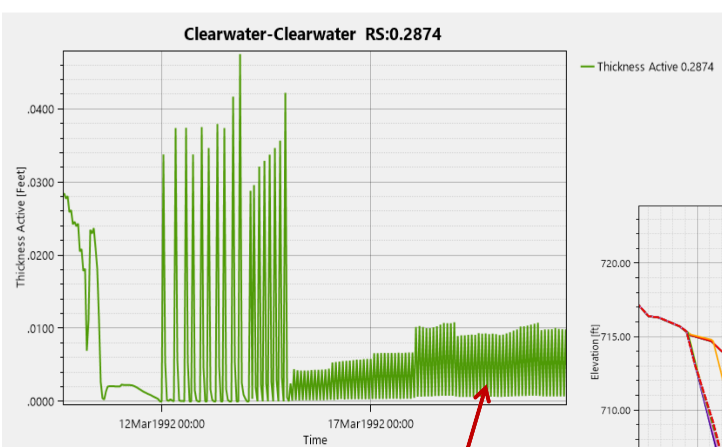
Power Function and Rating Curve Features For the Histograph Generator



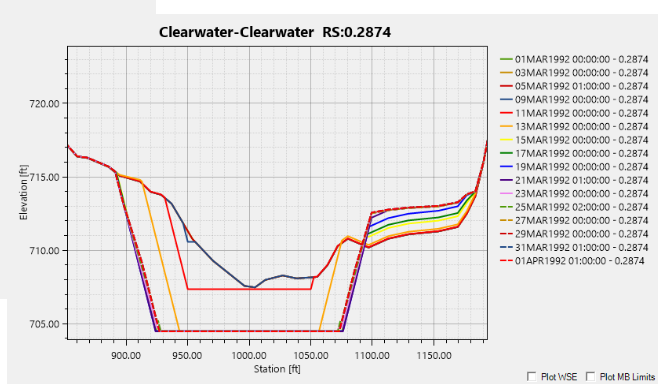




Improvement to bedrock/hard bottom transport

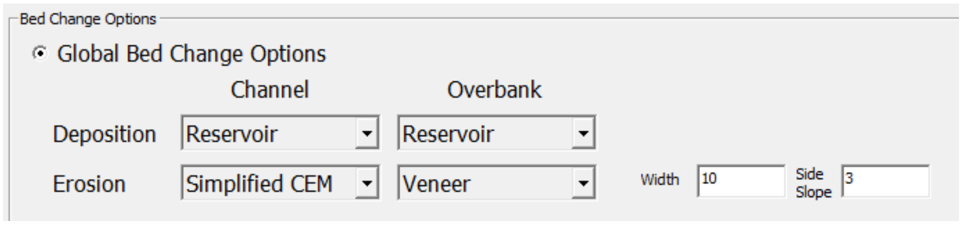


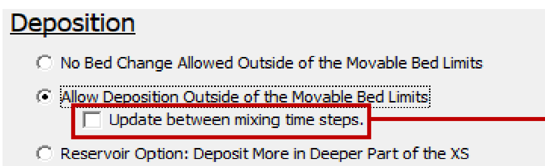
Instability Before Feature



Model uses initial bed gradation to compute capacity when it encounters bedrock or other hard bottoms (e.g. concrete channel) to avoid zero capacity time steps and artificial deposition

Mix and Match Overbank and Channel XS Change Options

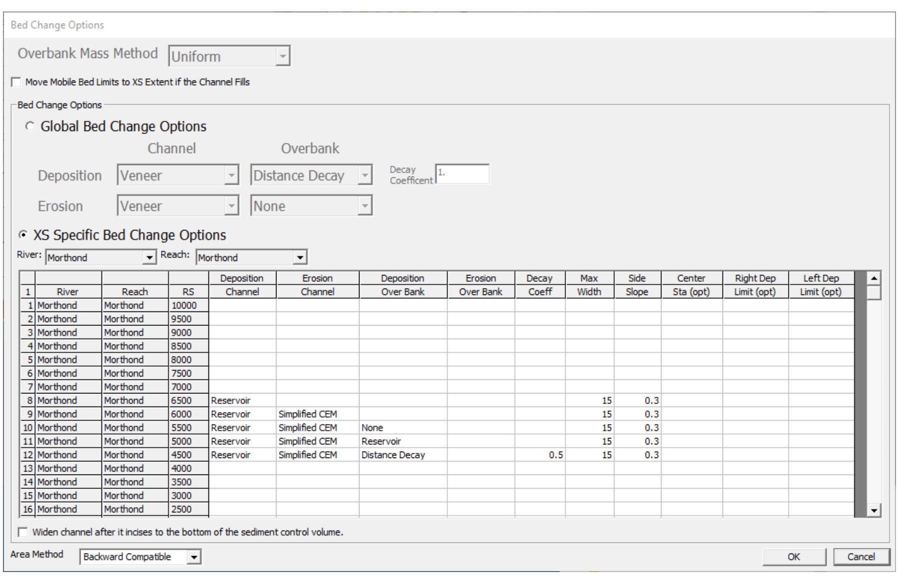




Update to Overbank Deposition
(Usually Corrects Overestimation)

25

Define Overbank and Channel XS Change Options by Cross Section



1	River	Reach	RS	Deposition Channel	Erosion Channel	Deposition Over Bank	Erosion Over Bank	Decay Coeff	Max Width	Side Slope	Center Sta (opt)	Right Dep Limit (opt)	Left Dep Limit (opt)
1	Morthond	Morthond	10000										
2	Morthond	Morthond	9500										
3	Morthond	Morthond	9000										
4	Morthond	Morthond	8500										
5	Morthond	Morthond	8000										
6	Morthond	Morthond	7500										
7	Morthond	Morthond	7000										
8	Morthond	Morthond	6500	Reservoir					15	0.3			
9	Morthond	Morthond	6000	Reservoir	Simplified CEM				15	0.3			
10	Morthond	Morthond	5500	Reservoir	Simplified CEM	None			15	0.3			
11	Morthond	Morthond	5000	Reservoir	Simplified CEM	Reservoir			15	0.3			
12	Morthond	Morthond	4500	Reservoir	Simplified CEM	Distance Decay		0.5	15	0.3			
13	Morthond	Morthond	4000										
14	Morthond	Morthond	3500										
15	Morthond	Morthond	3000										
16	Morthond	Morthond	2500										

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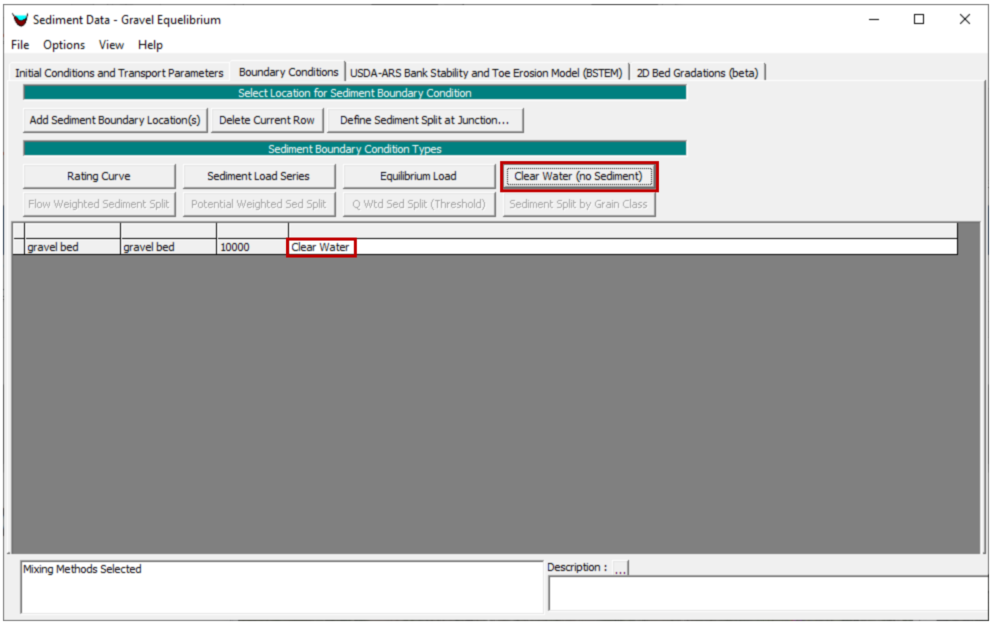
Clear Water Boundary Condition



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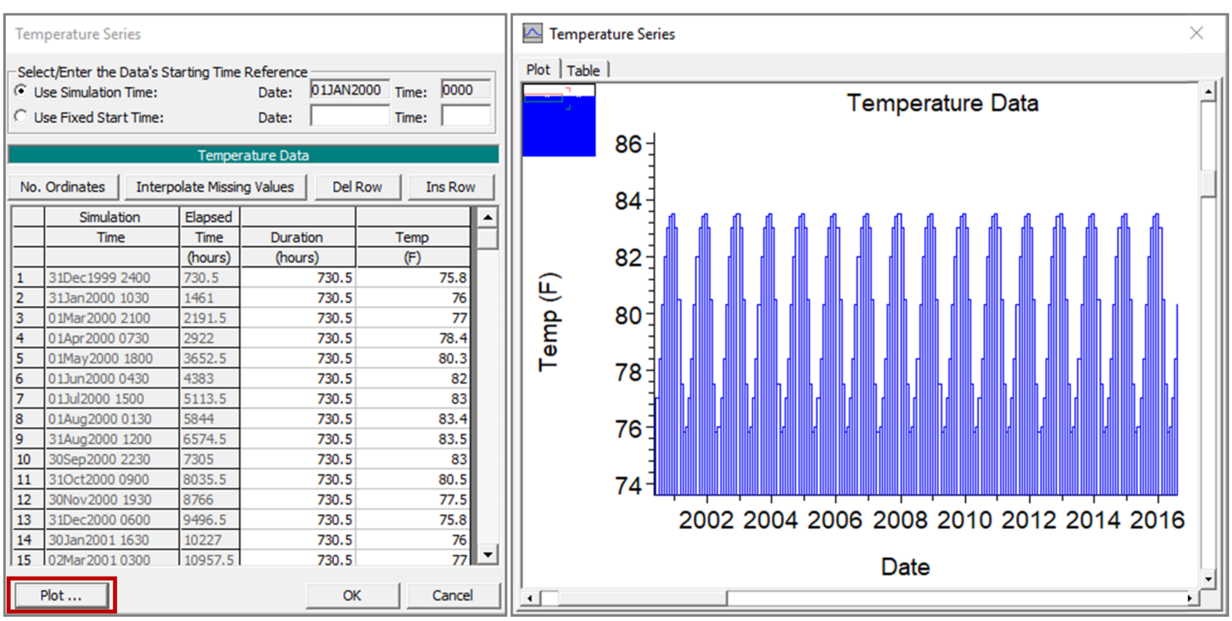
Temperature Plot



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