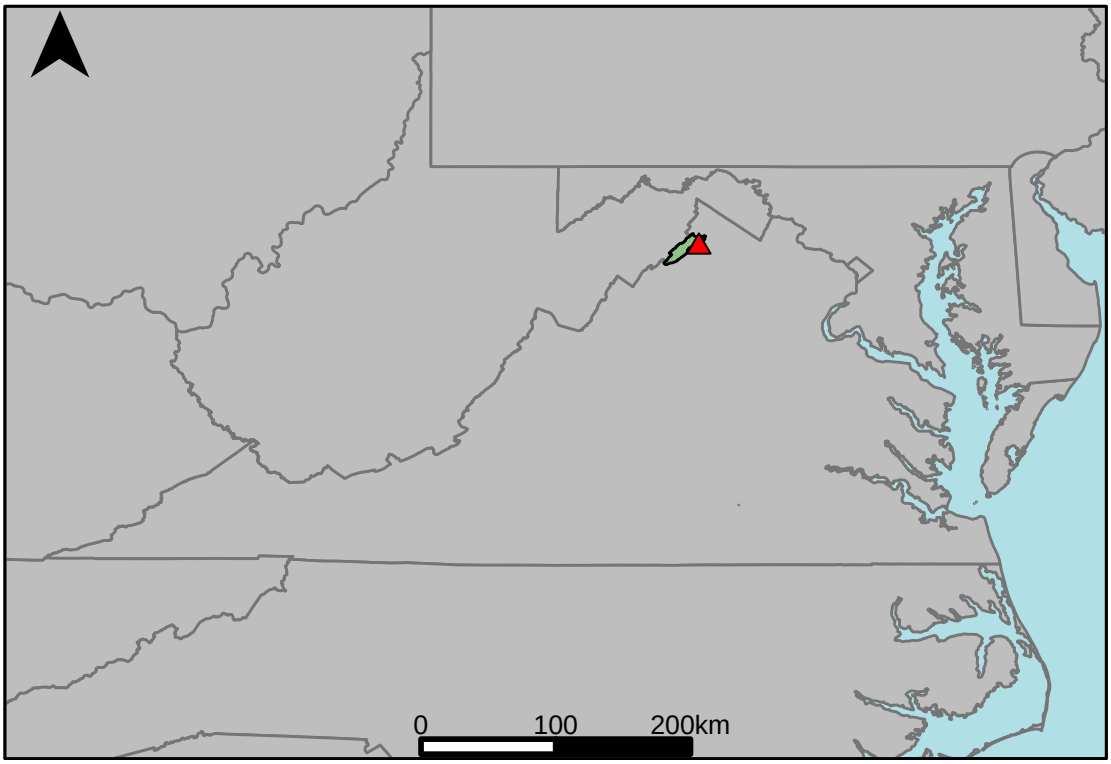
Appendix B.14: USGS Gage 01634500 vs. PS1_4790_4830 Shenandoah River



This river segment follows part of the flow of the Cedar Creek, a tributary of the Potomac. The gage is located in Frederick County (Lat. 39°04'52.4", Long. -78°19'47.0"), approximately 5.8 miles west of Stephens City, VA. Drainage area is 102 sq. miles. This gage started taking data in 1937 and is still taking data. There are no known anthropogenic alterations in this area that would affect the flow conditions. The average daily discharge error between the model and gage data for the 20 year timespan was 5.5%, with 39.6% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	11	10.2	-7.27
Feb. Low Flow	17	18.6	9.41
Mar. Low Flow	33	38.6	17
Apr. Low Flow	43	48.1	11.9
May Low Flow	48	67.3	40.2
Jun. Low Flow	59	71.8	21.7
Jul. Low Flow	56	52	-7.14
Aug. Low Flow	35	33.6	-4
Sep. Low Flow	19.9	19.6	-1.51
Oct. Low Flow	11	10.1	-8.18
Nov. Low Flow	10	6.85	-31.5
Dec. Low Flow	8.6	4.83	-43.8

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	109	103	-5.5
Jan. Mean Flow	139	122	-12.2
Feb. Mean Flow	140	155	10.7
Mar. Mean Flow	239	220	-7.95
Apr. Mean Flow	188	148	-21.3
May Mean Flow	135	109	-19.3
Jun. Mean Flow	81.4	66.7	-18.1
Jul. Mean Flow	33.7	38.7	14.8
Aug. Mean Flow	29.1	41.2	41.6
Sep. Mean Flow	69.3	90.7	30.9
Oct. Mean Flow	46.4	53.6	15.5
Nov. Mean Flow	99.6	96.9	-2.71
Dec. Mean Flow	114	94.5	-17.1

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	58	77.2	33.1
Feb. High Flow	300	293	-2.33
Mar. High Flow	285	261	-8.42
Apr. High Flow	337	238	-29.4
May High Flow	277	243	-12.3
Jun. High Flow	774	1020	31.8
Jul. High Flow	472	435	-7.84
Aug. High Flow	383	248	-35.2
Sep. High Flow	171	148	-13.5
Oct. High Flow	63	91	44.4
Nov. High Flow	46	57.1	24.1
Dec. High Flow	79	73.9	-6.46

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	3.4	1.04	-69.4
Med. 1 Day Min	7.67	3.85	-49.8
Min. 3 Day Min	3.57	1.05	-70.6
Med. 3 Day Min	7.84	4.08	-48
Min. 7 Day Min	4	1.05	-73.8
Med. 7 Day Min	8.93	4.59	-48.6
Min. 30 Day Min	5.07	1.2	-76.3
Med. 30 Day Min	11.1	7.32	-34.1
Min. 90 Day Min	7.51	2.77	-63.1
Med. 90 Day Min	19.8	17.3	-12.6
7Q10	5.62	1.59	-71.7
Year of 90-Day Min. Flow	1999	1999	0
Drought Year Mean	34.7	40.6	17
Mean Baseflow	45.5	49.3	8.35

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	7400	8150	10.1
Med. 1 Day Max	2060	2050	-0.48
Max. 3 Day Max	3640	3010	-17.3
Med. 3 Day Max	1170	978	-16.4
Max. 7 Day Max	1710	1450	-15.2
Med. 7 Day Max	663	590	-11
Max. 30 Day Max	795	657	-17.4
Med. 30 Day Max	344	258	-25
Max. 90 Day Max	446	424	-4.93
Med. 90 Day Max	200	163	-18.5

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	5.9	1.64	-72.2
5% Non-Exceedance	9.3	4.17	-55.2
50% Non-Exceedance	50	53.6	7.2
95% Non-Exceedance	369	332	-10
99% Non-Exceedance	1070	885	-17.3
Sept. 10% Non-Exceedance	6.7	2.81	-58.1

Fig. 1: Hydrograph

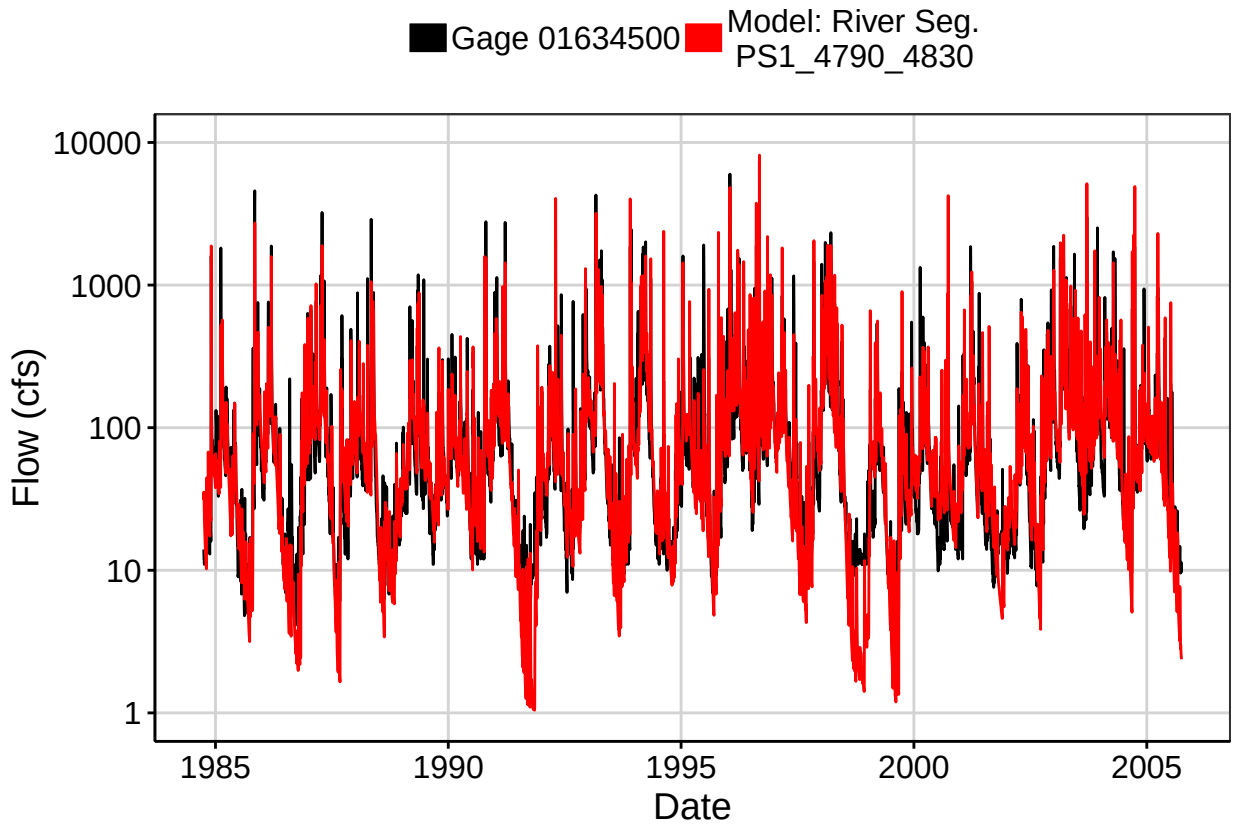


Fig. 2: Zoomed Hydrograph

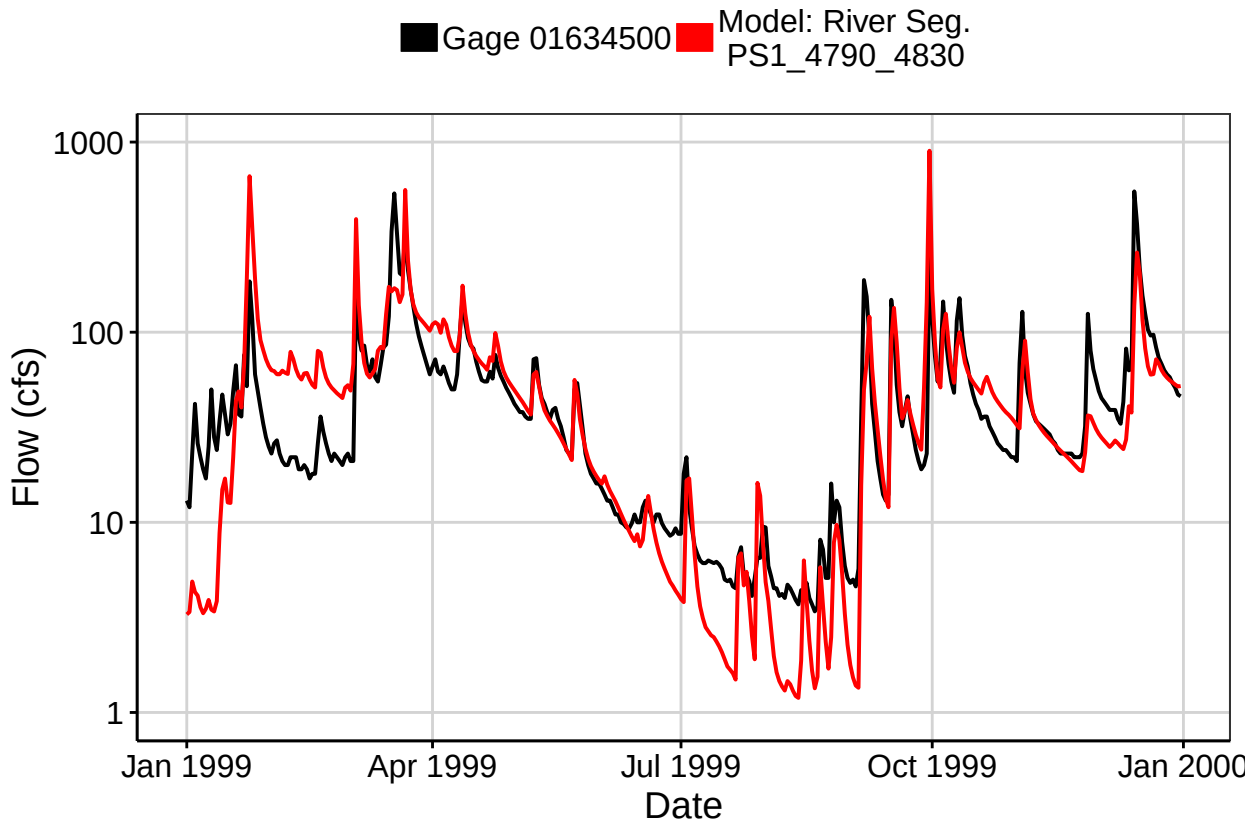


Fig. 3: Flow Exceedance

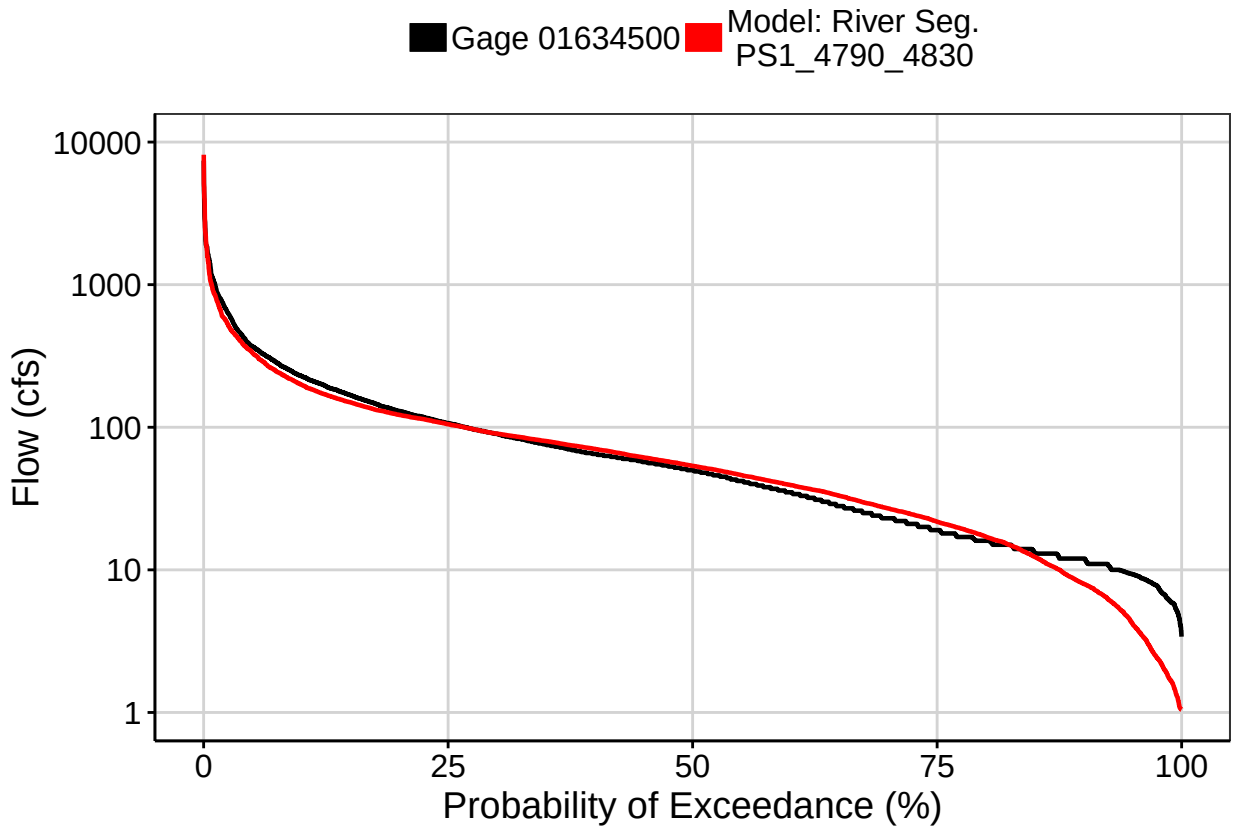


Fig. 4: Baseflow

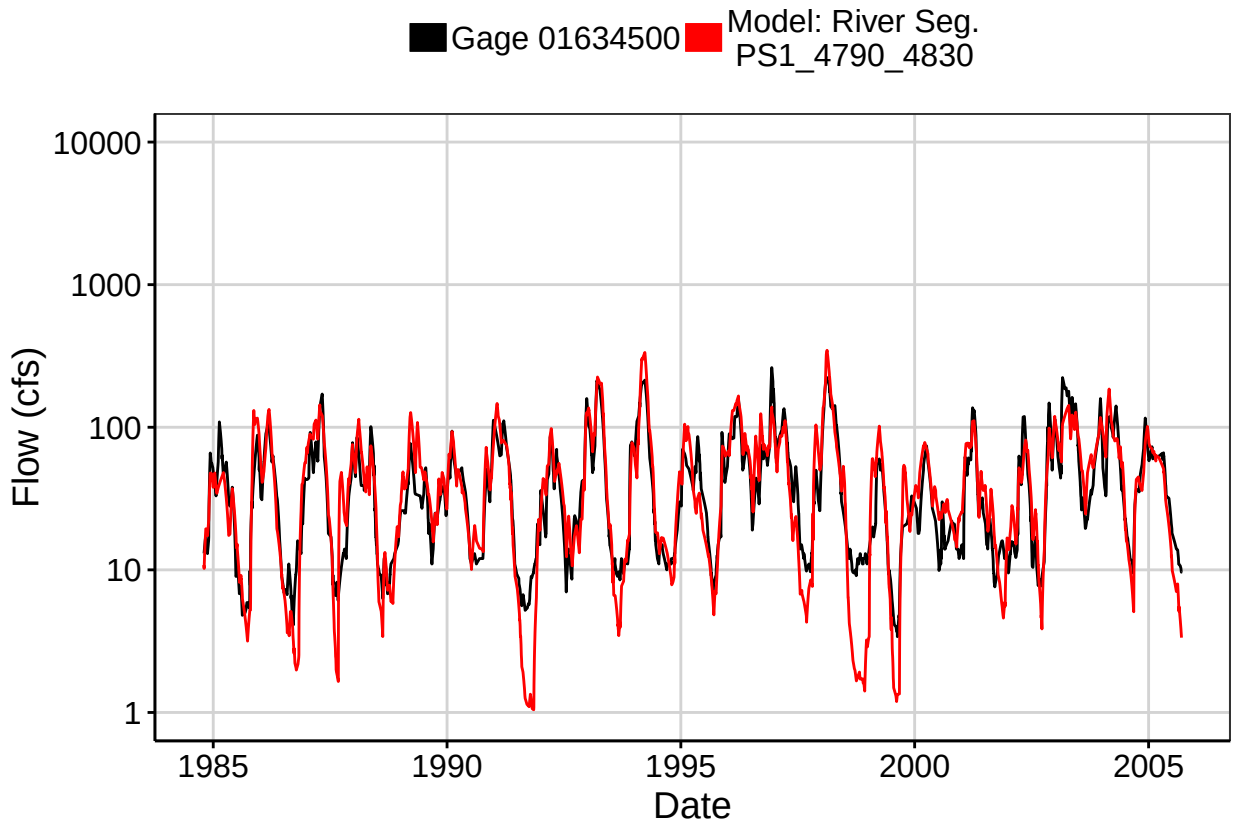


Fig. 5: Combined Baseflow

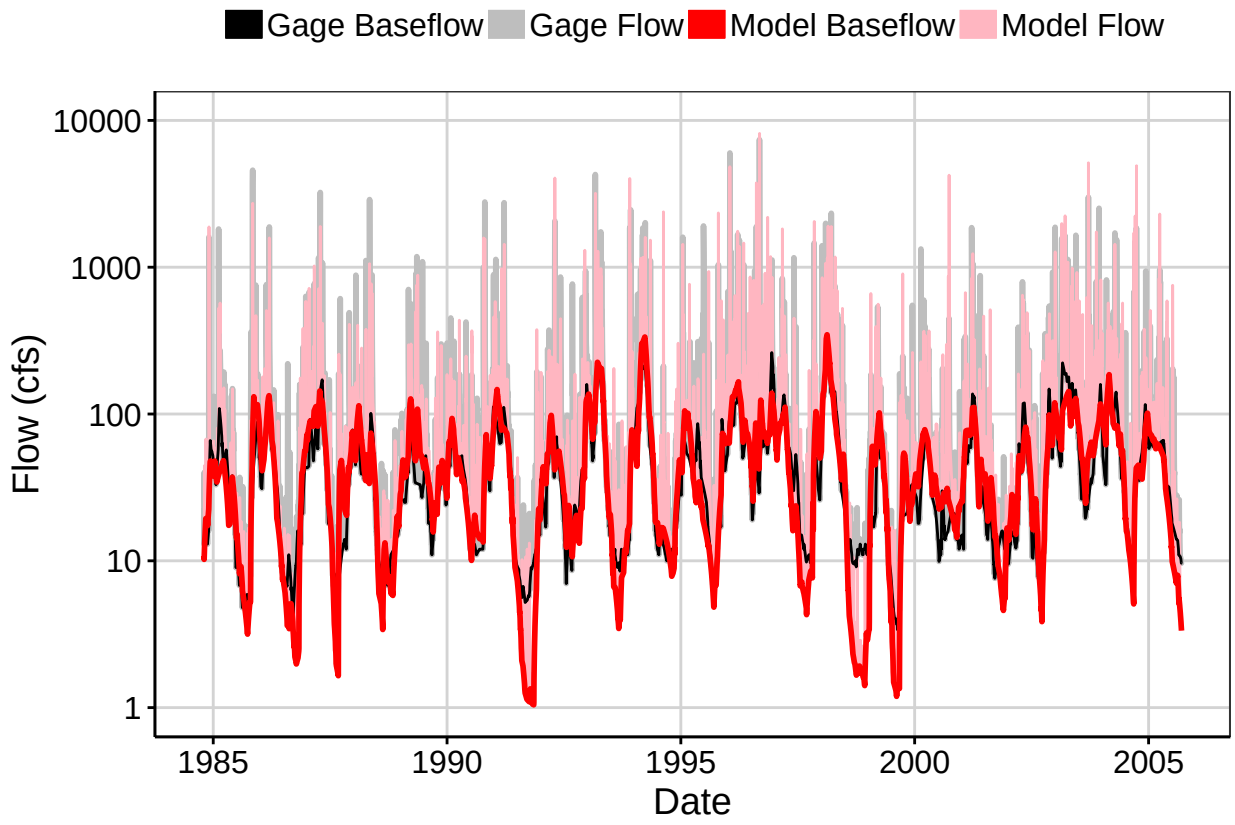


Fig. 6: Largest Error Segment

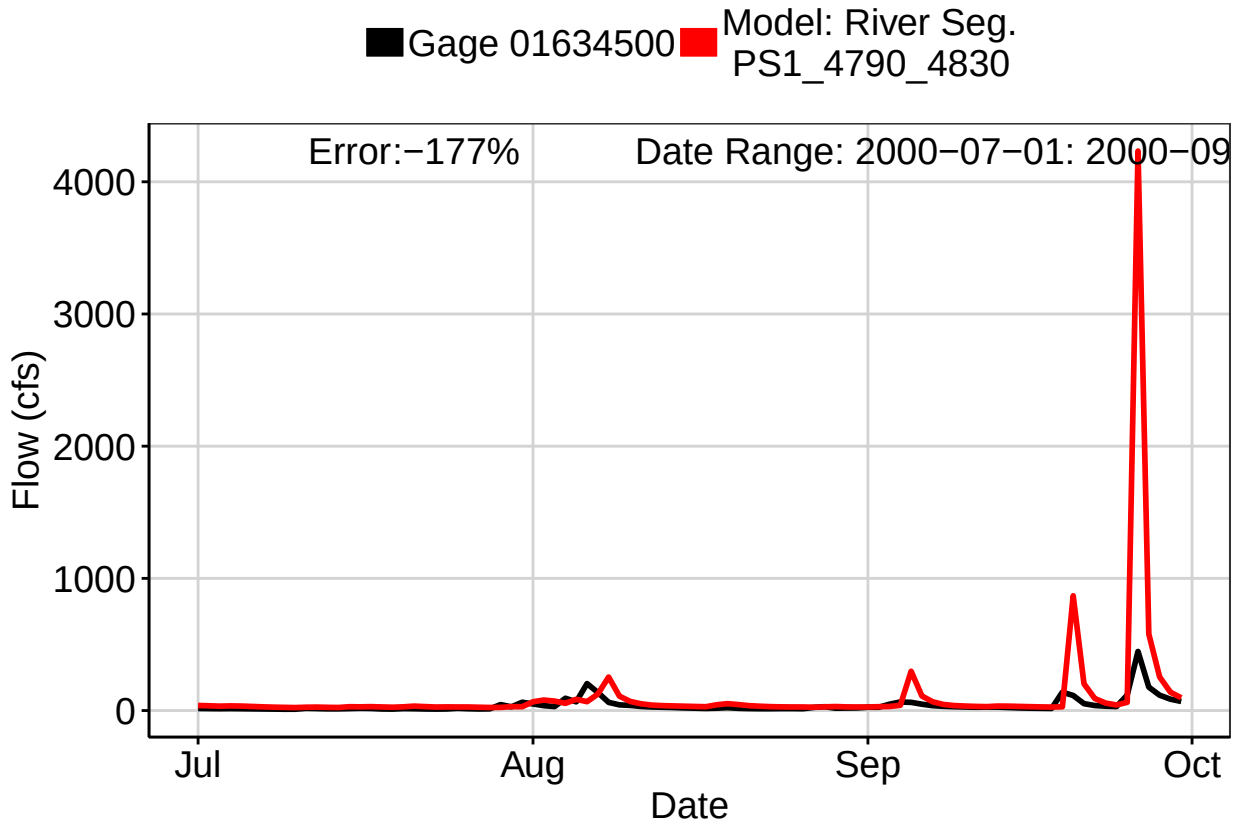


Fig. 7: Second Largest Error Segment

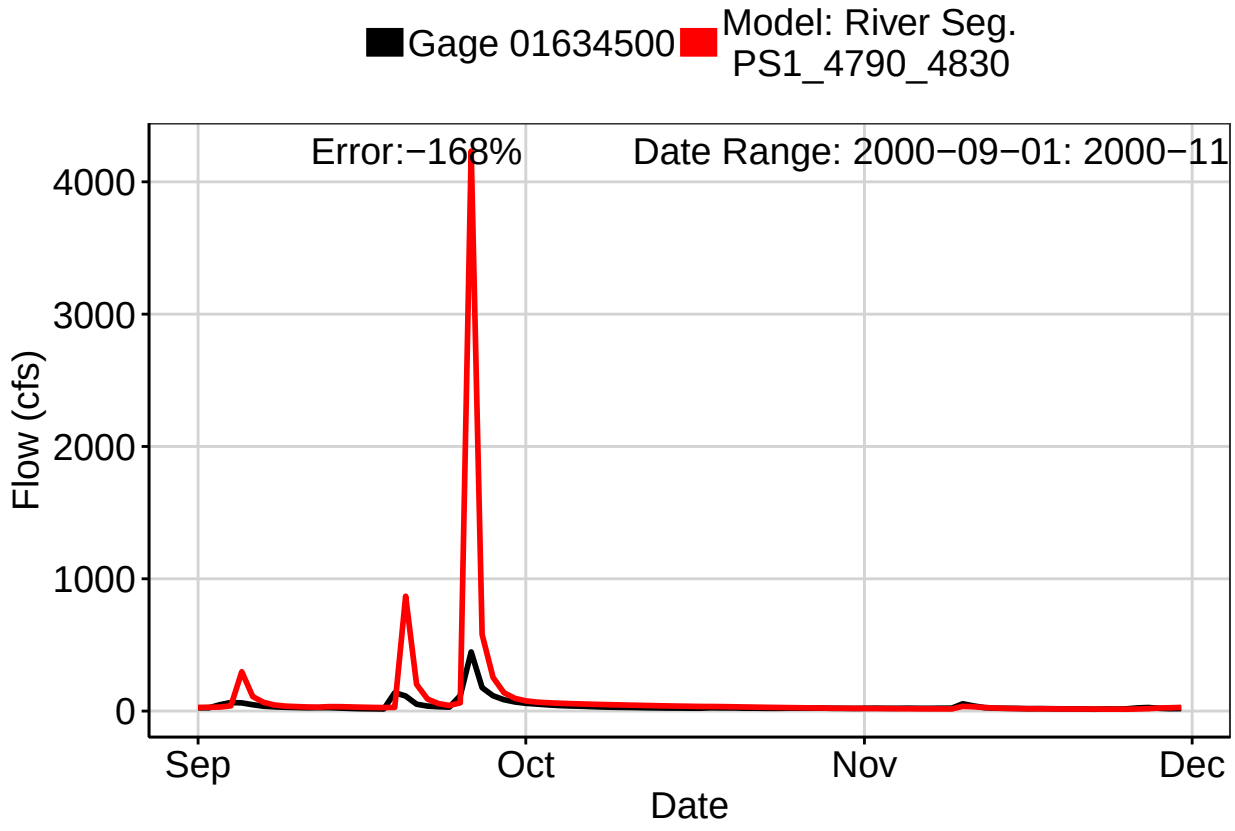


Fig. 8: Third Largest Error Segment

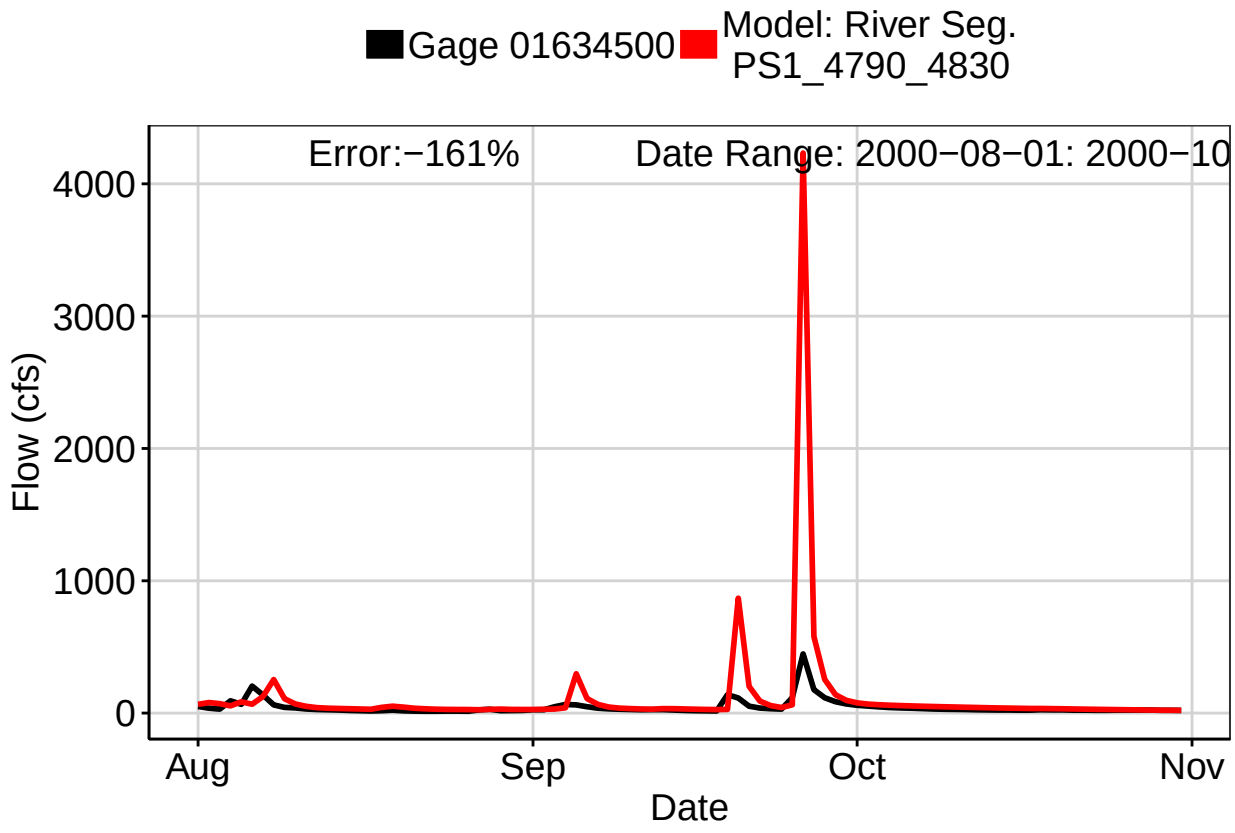


Fig. 9: Residuals Plot