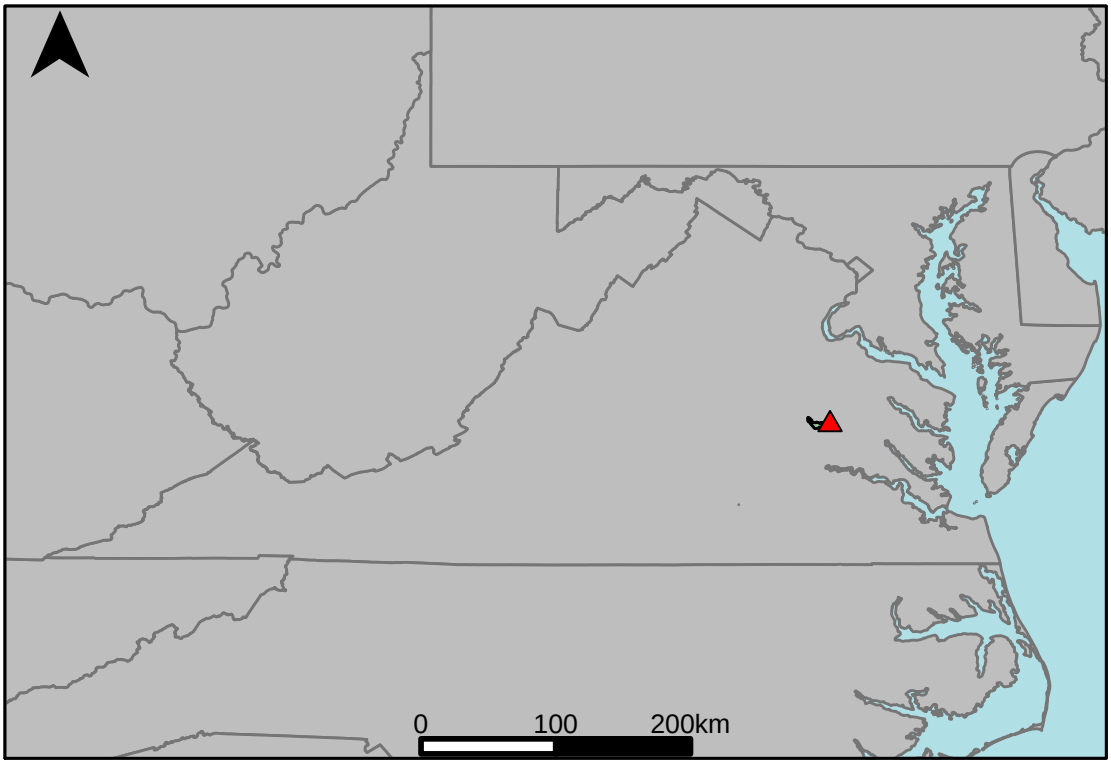
Appendix D.6: USGS Gage 01673550 vs. YP0_6860_6840 Pamunkey River



This river segment follows part of the flow of the Totopotomoy Creek, a tributary of the York. The gage is located in Hanover County (Lat. 37°39'45.5", Long. -77°15'27.9"), approximately 13 miles southeast of Ashland, VA. Drainage area is 25.5 sq. miles. This gage started taking data in 1977 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 1.91%, with 45.4% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	4.2	2.13	-49.3
Feb. Low Flow	8.6	4.72	-45.1
Mar. Low Flow	11	6.46	-41.3
Apr. Low Flow	13	12.2	-6.15
May Low Flow	19	18	-5.26
Jun. Low Flow	20.8	13.9	-33.2
Jul. Low Flow	21	9.01	-57.1
Aug. Low Flow	11	7.65	-30.5
Sep. Low Flow	6.2	4	-35.5
Oct. Low Flow	3.8	2.8	-26.3
Nov. Low Flow	3.6	2.97	-17.5
Dec. Low Flow	2.8	1.81	-35.4

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	26.2	25.7	-1.91
Jan. Mean Flow	29.4	34.3	16.7
Feb. Mean Flow	34.4	42.4	23.3
Mar. Mean Flow	42.5	46.7	9.88
Apr. Mean Flow	36.6	31.8	-13.1
May Mean Flow	26.7	23.7	-11.2
Jun. Mean Flow	17.1	16.5	-3.51
Jul. Mean Flow	15.9	13.8	-13.2
Aug. Mean Flow	25.4	16.3	-35.8
Sep. Mean Flow	22.4	21.9	-2.23
Oct. Mean Flow	15.3	14.4	-5.88
Nov. Mean Flow	23.8	20.2	-15.1
Dec. Mean Flow	25.7	26.8	4.28

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	38	31.6	-16.8
Feb. High Flow	45	63.1	40.2
Mar. High Flow	59.5	73.2	23
Apr. High Flow	79	91.8	16.2
May High Flow	87	95.8	10.1
Jun. High Flow	119	134	12.6
Jul. High Flow	100	110	10
Aug. High Flow	76	54.4	-28.4
Sep. High Flow	36.2	43.5	20.2
Oct. High Flow	72	58.7	-18.5
Nov. High Flow	52	50.4	-3.08
Dec. High Flow	32	29.4	-8.13

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	0.00	1.20e-01	Inf
Med. 1 Day Min	2.20	1.04	-5.27e+01
Min. 3 Day Min	0.00	1.20e-01	-7.99e+14
Med. 3 Day Min	2.23	1.19	-4.66e+01
Min. 7 Day Min	0.00	1.30e-01	5.22e+15
Med. 7 Day Min	2.41	1.43	-4.07e+01
Min. 30 Day Min	7.00e-02	2.90e-01	3.18e+02
Med. 30 Day Min	3.59	3.32	-7.52
Min. 90 Day Min	1.00	2.53	1.53e+02
Med. 90 Day Min	9.38	9.13	-2.67
7Q10	0.00	3.50e-01	1.27e+08
Year of 90-Day Min. Flow	2.00e+03	2.00e+03	0.00
Drought Year Mean	7.63	7.31	-4.19
Mean Baseflow	1.40e+01	1.15e+01	-1.79e+01

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	3840	1280	-66.7
Med. 1 Day Max	286	291	1.75
Max. 3 Day Max	1760	614	-65.1
Med. 3 Day Max	195	208	6.67
Max. 7 Day Max	816	440	-46.1
Med. 7 Day Max	111	129	16.2
Max. 30 Day Max	265	152	-42.6
Med. 30 Day Max	54.2	65.4	20.7
Max. 90 Day Max	129	114	-11.6
Med. 90 Day Max	39.9	43.5	9.02

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	0.29	0.57	95.2
5% Non-Exceedance	2.4	1.62	-32.5
50% Non-Exceedance	17	15.3	-10
95% Non-Exceedance	73	79	8.22
99% Non-Exceedance	181	176	-2.76
Sept. 10% Non-Exceedance	1.9	1.48	-22.1

Fig. 1: Hydrograph

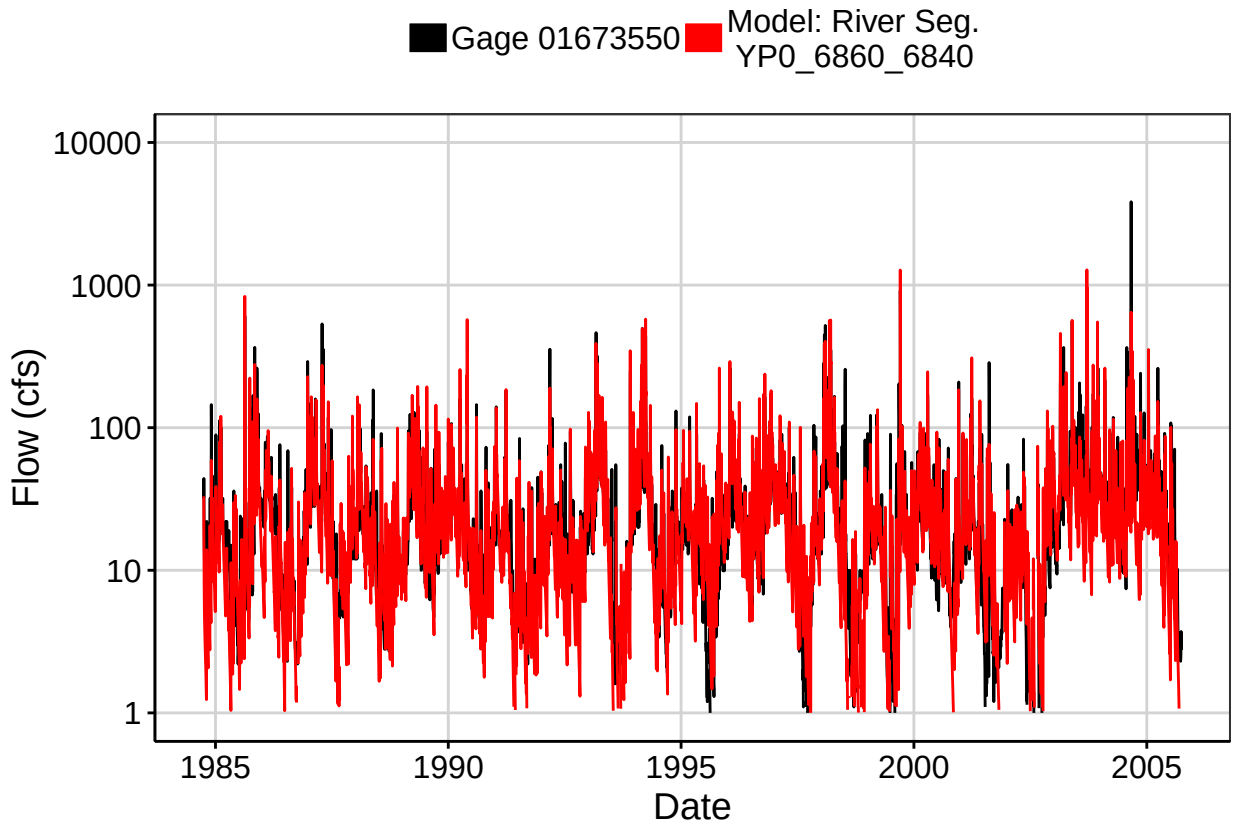


Fig. 2: Zoomed Hydrograph

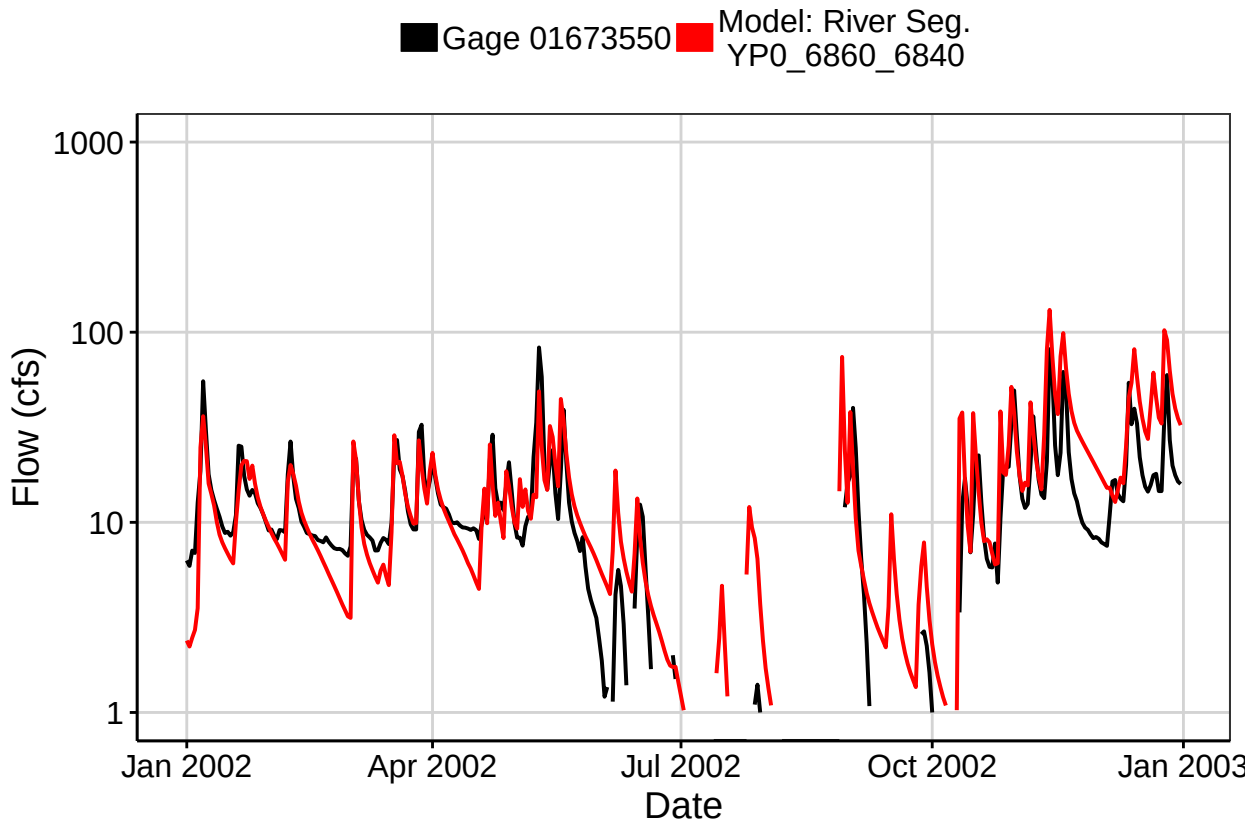


Fig. 3: Flow Exceedance

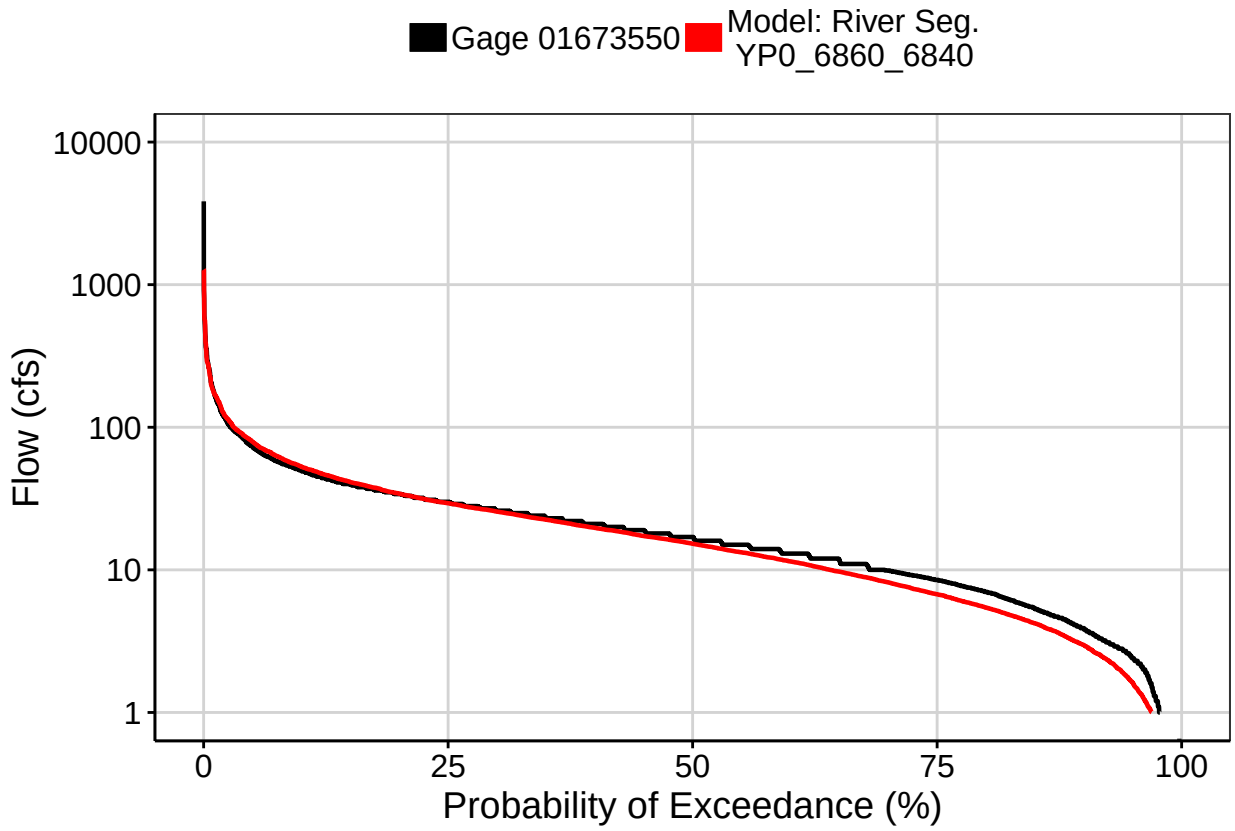


Fig. 4: Baseflow

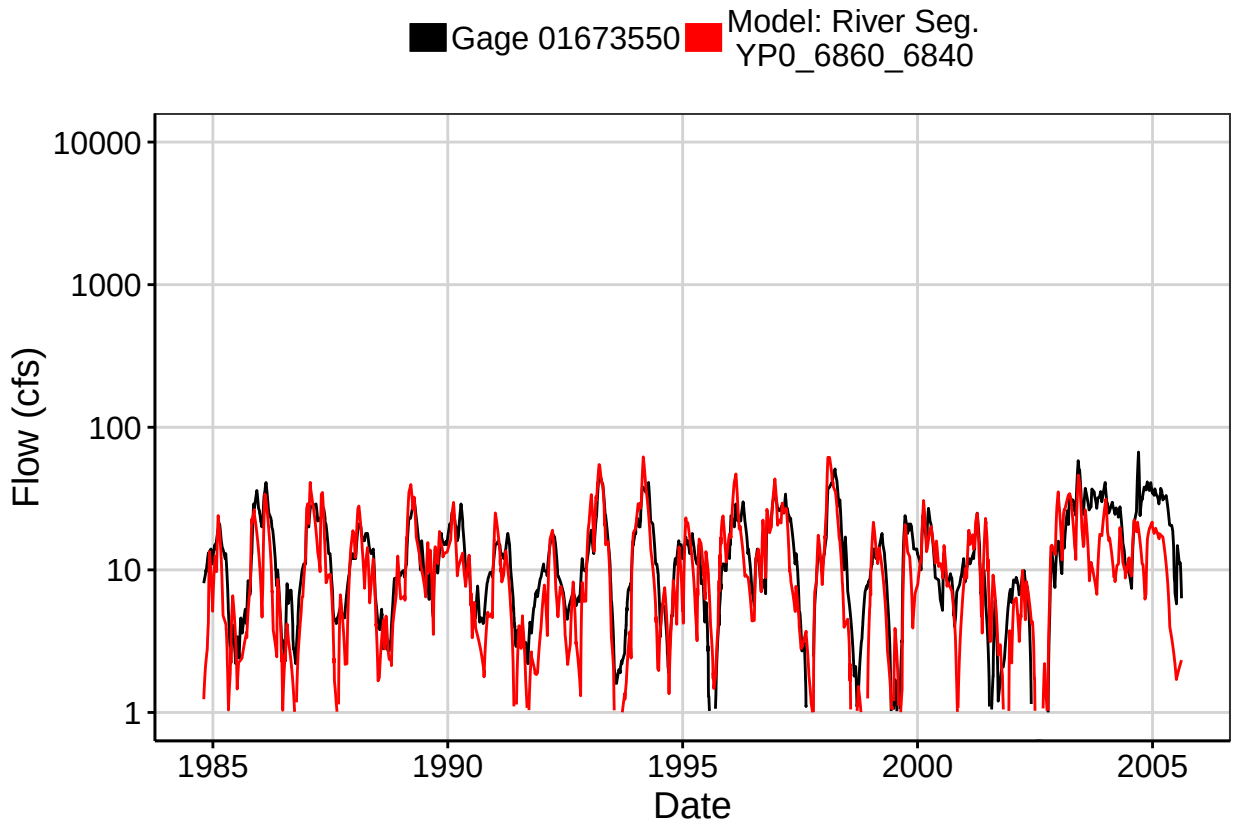


Fig. 5: Combined Baseflow

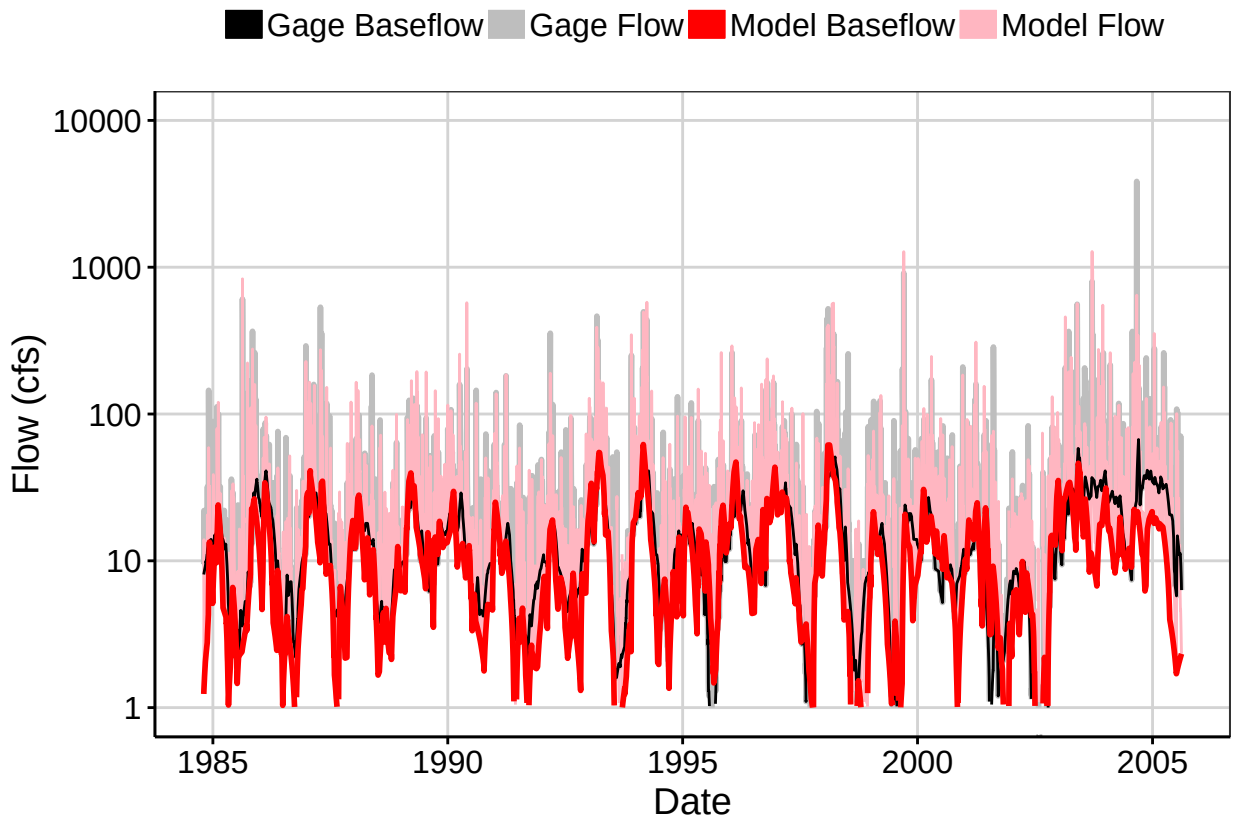


Fig. 6: Largest Error Segment

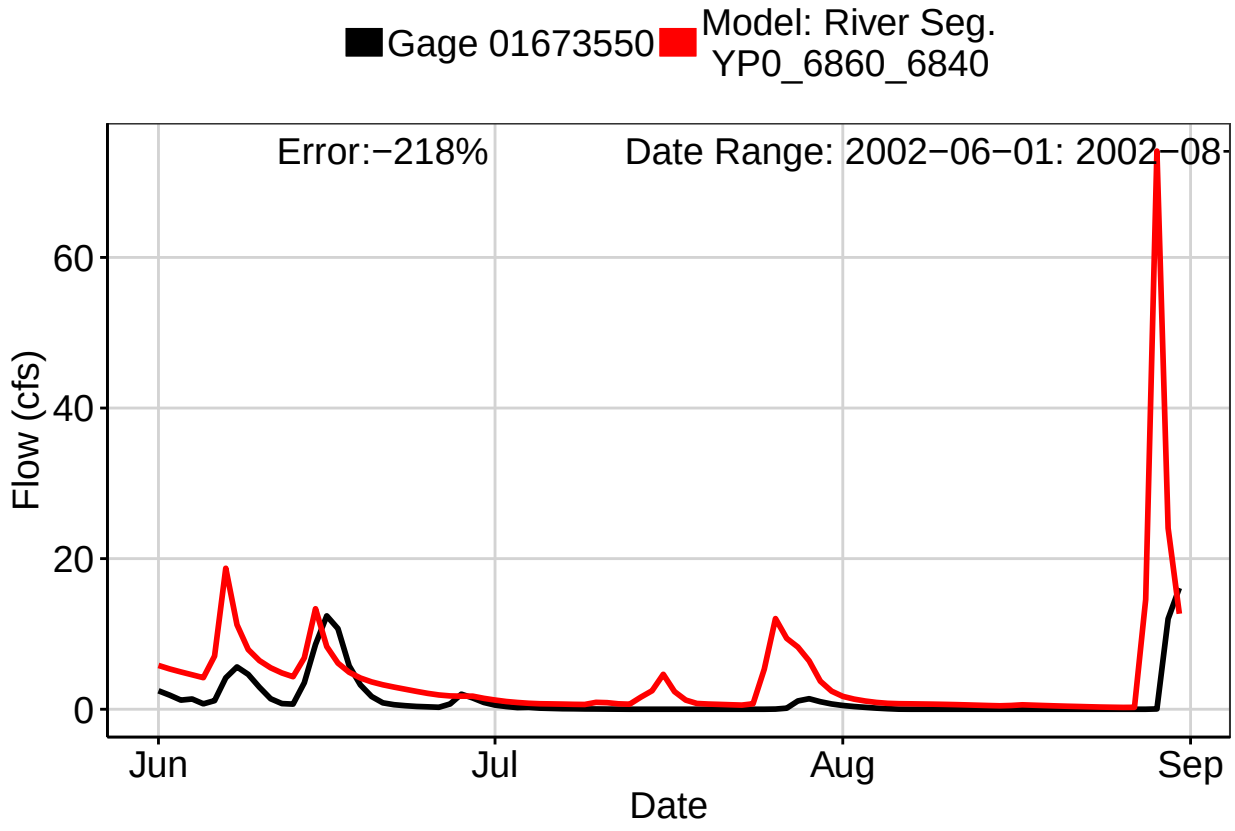


Fig. 7: Second Largest Error Segment

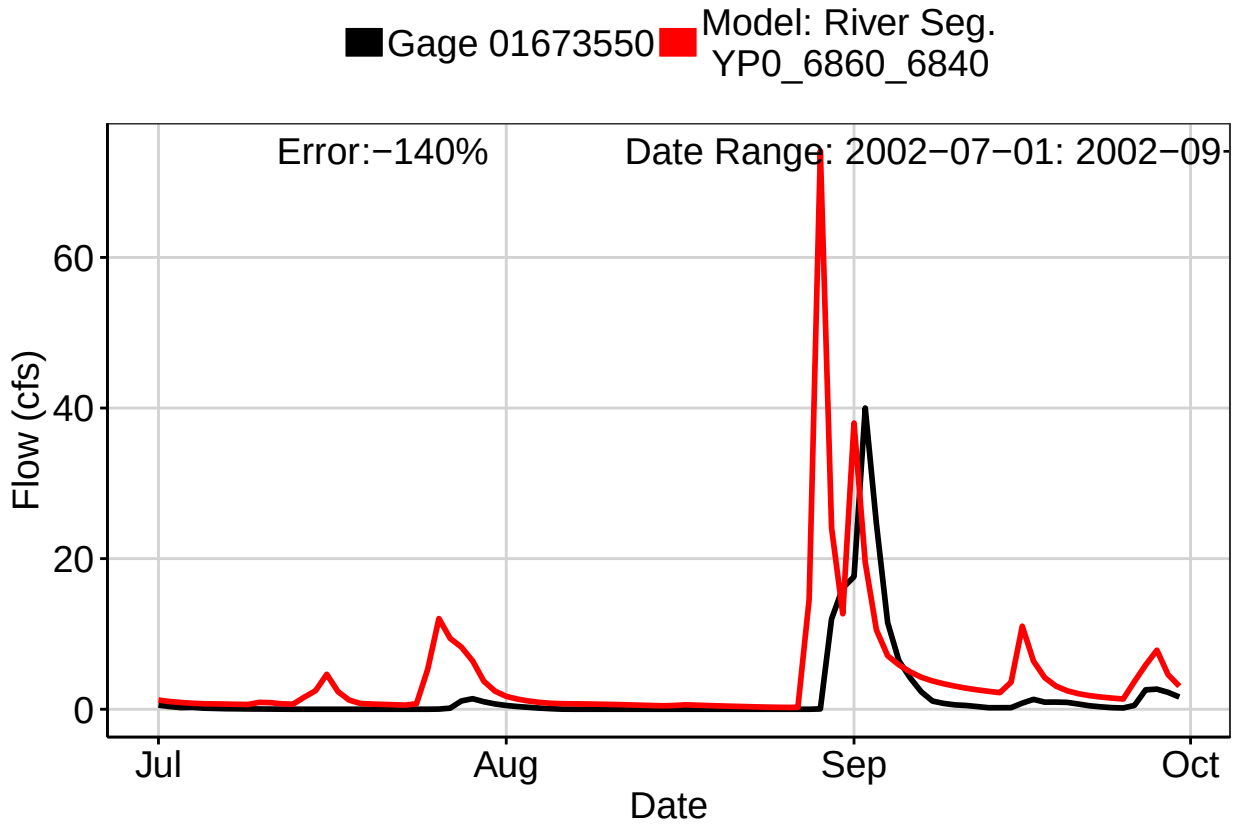


Fig. 8: Third Largest Error Segment

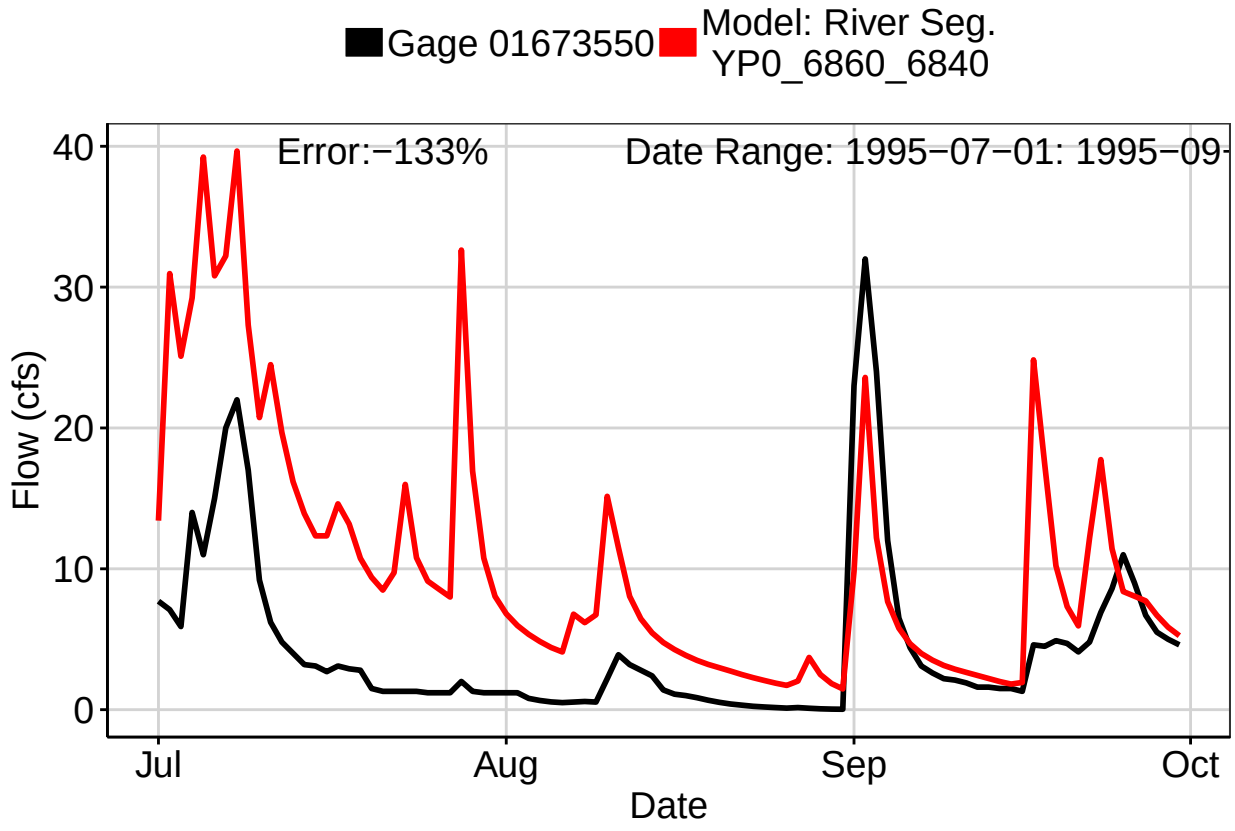


Fig. 9: Residuals Plot