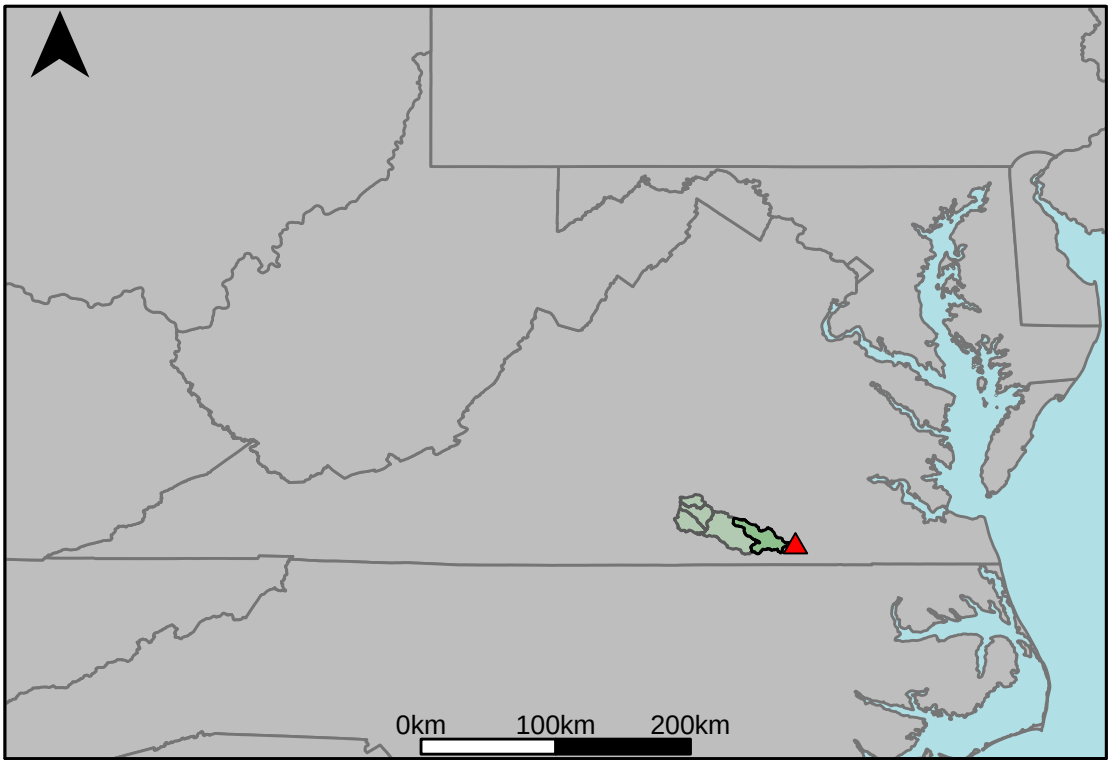
Appendix E.4: USGS Gage 02052000 vs. MN4_8260_8400



This river segment follows part of the flow of the Meherrin River. The gage is located in Emporia City, VA (Lat 3641'24", Long 7732'27") approximately 0.3 miles north of Emporia, VA. Drainage area is 744 sq. miles. This gage started taking data in 1951 and is still taking data. The flow in this area is regulated by the Virginia Electric Power Companys dam that is 0.8 miles upstream. The average daily discharge error between the model and gage data for the 20 year timespan was 3.58%, with 43.8% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	61	58.6	-3.93
Feb. Low Flow	151	144	-4.64
Mar. Low Flow	166	183	10.2
Apr. Low Flow	298	312	4.7
May Low Flow	397	534	34.5
Jun. Low Flow	413	403	-2.42
Jul. Low Flow	348	303	-12.9
Aug. Low Flow	176	170	-3.41
Sep. Low Flow	112	116	3.57
Oct. Low Flow	60	76.2	27
Nov. Low Flow	52	58.2	11.9
Dec. Low Flow	58	66.8	15.2

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	727	701	-3.58
Jan. Mean Flow	1010	939	-7.03
Feb. Mean Flow	1130	1170	3.54
Mar. Mean Flow	1430	1460	2.1
Apr. Mean Flow	1120	1070	-4.46
May Mean Flow	701	604	-13.8
Jun. Mean Flow	451	396	-12.2
Jul. Mean Flow	306	253	-17.3
Aug. Mean Flow	364	362	-0.55
Sep. Mean Flow	647	665	2.78
Oct. Mean Flow	299	361	20.7
Nov. Mean Flow	599	524	-12.5
Dec. Mean Flow	702	648	-7.69

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	637	385	-39.6
Feb. High Flow	1710	1010	-40.9
Mar. High Flow	2910	1160	-60.1
Apr. High Flow	4550	2640	-42
May High Flow	4230	2470	-41.6
Jun. High Flow	5020	3560	-29.1
Jul. High Flow	4200	3030	-27.9
Aug. High Flow	1940	1020	-47.4
Sep. High Flow	782	383	-51
Oct. High Flow	1040	346	-66.7
Nov. High Flow	1180	760	-35.6
Dec. High Flow	470	382	-18.7

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	3.6	7.35	104
Med. 1 Day Min	21	39.5	88.1
Min. 3 Day Min	4.29	7.5	74.8
Med. 3 Day Min	28.7	42.3	47.4
Min. 7 Day Min	6.36	8.27	30
Med. 7 Day Min	40.9	47.9	17.1
Min. 30 Day Min	13.5	12.7	-5.93
Med. 30 Day Min	81	63.7	-21.4
Min. 90 Day Min	25	34.2	36.8
Med. 90 Day Min	162	122	-24.7
7Q10	15.1	15.5	2.65
Year of 90-Day Min. Flow	2002	2002	0
Drought Year Mean	165	231	40
Mean Baseflow	260	328	26.2

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	18000	29700	65
Med. 1 Day Max	8320	7770	-6.61
Max. 3 Day Max	16800	18900	12.5
Med. 3 Day Max	6910	6490	-6.08
Max. 7 Day Max	10700	12400	15.9
Med. 7 Day Max	4080	4560	11.8
Max. 30 Day Max	4370	4240	-2.97
Med. 30 Day Max	1870	1900	1.6
Max. 90 Day Max	2990	2920	-2.34
Med. 90 Day Max	1410	1390	-1.42

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	16.5	21.6	30.9
5% Non-Exceedance	48	44.3	-7.71
50% Non-Exceedance	334	346	3.59
95% Non-Exceedance	2820	2460	-12.8
99% Non-Exceedance	6700	5780	-13.7
Sept. 10% Non-Exceedance	40.3	33	-18.1

Fig. 1: Hydrograph

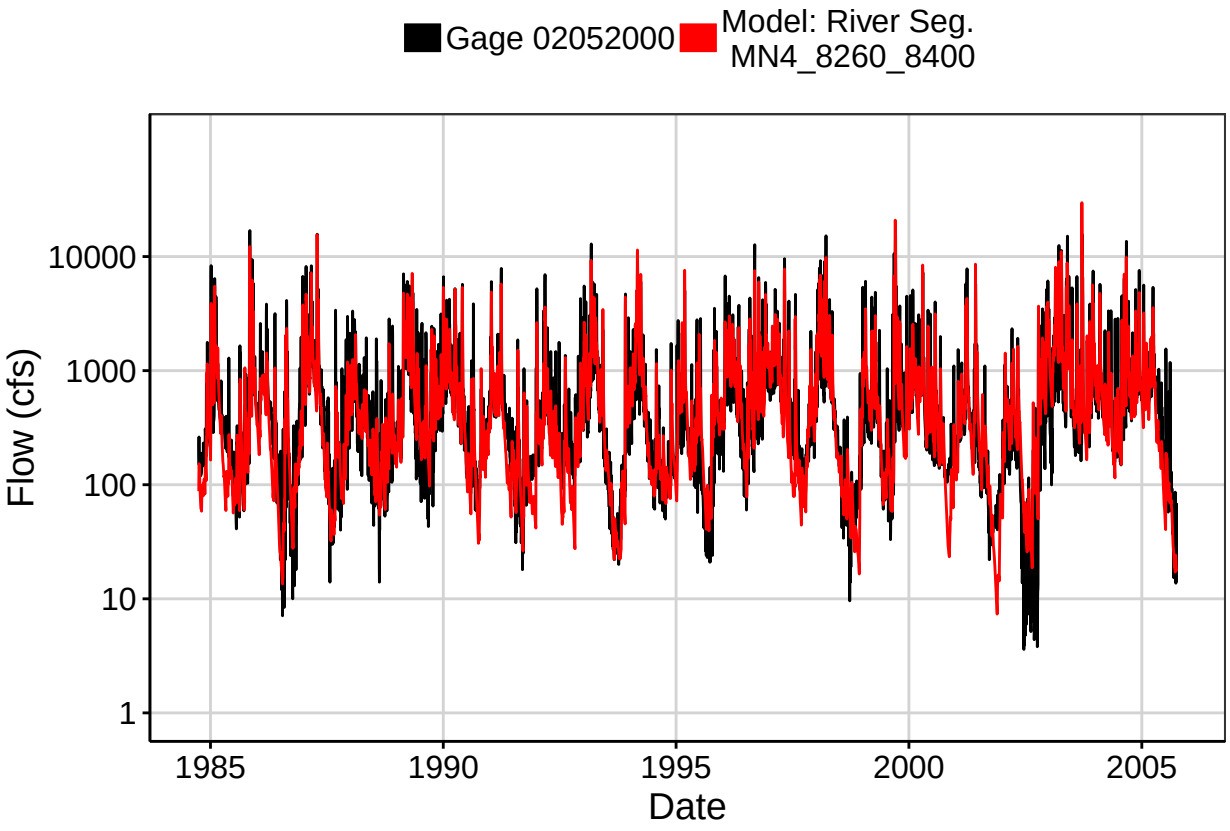


Fig. 2: Zoomed Hydrograph

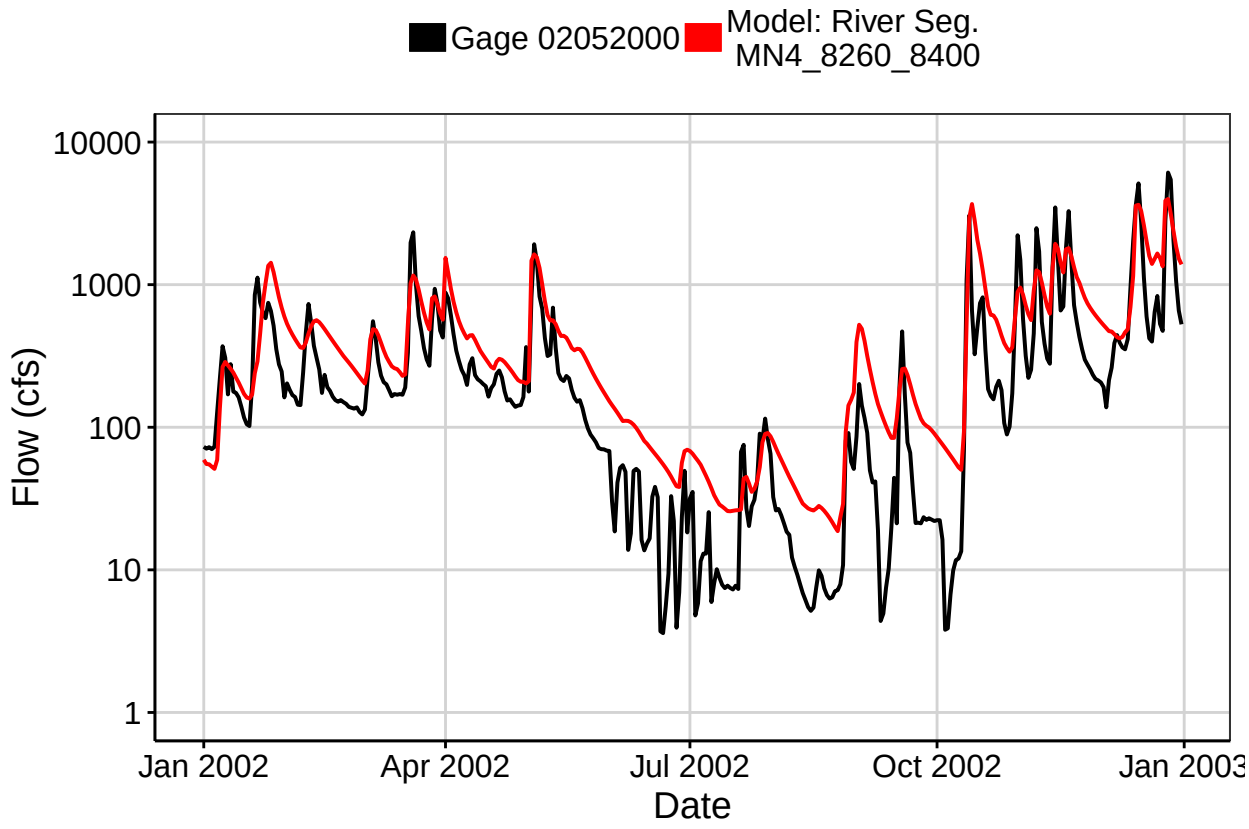


Fig. 3: Flow Exceedance

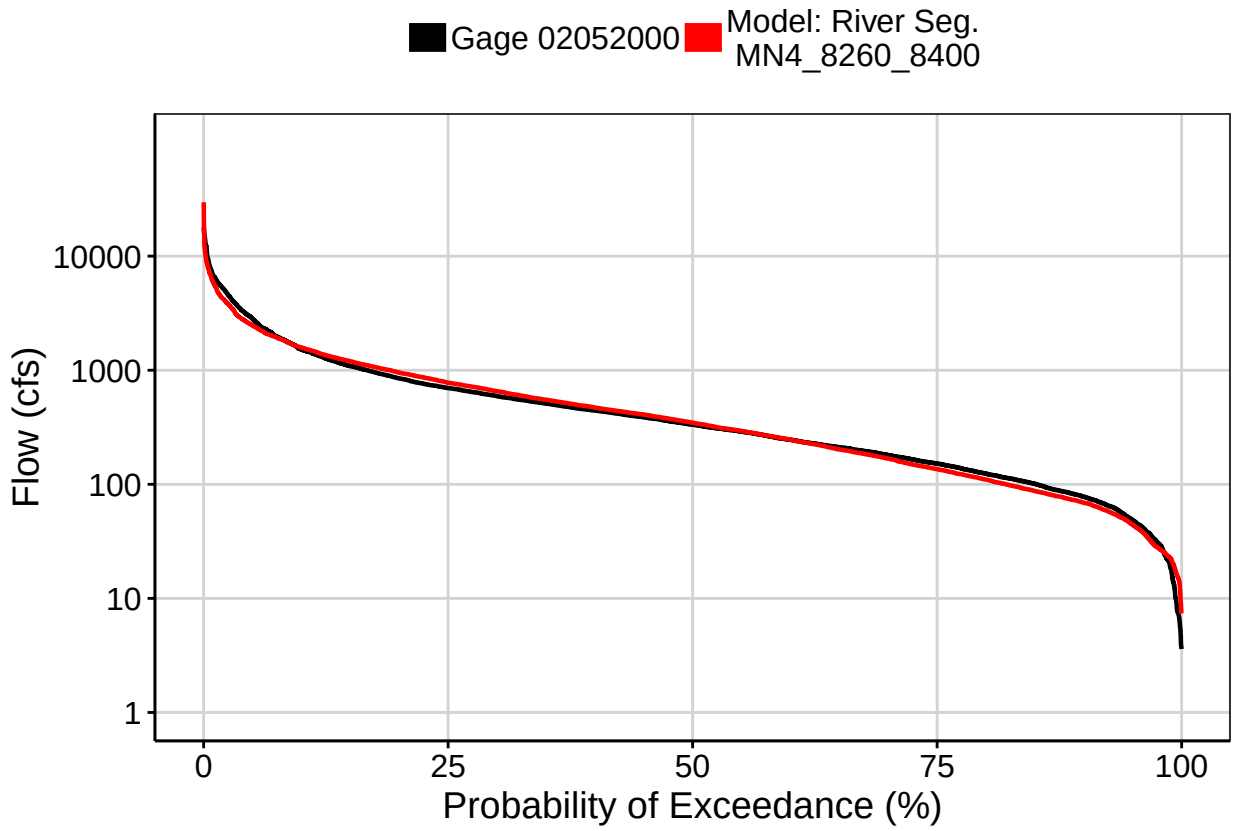


Fig. 4: Baseflow

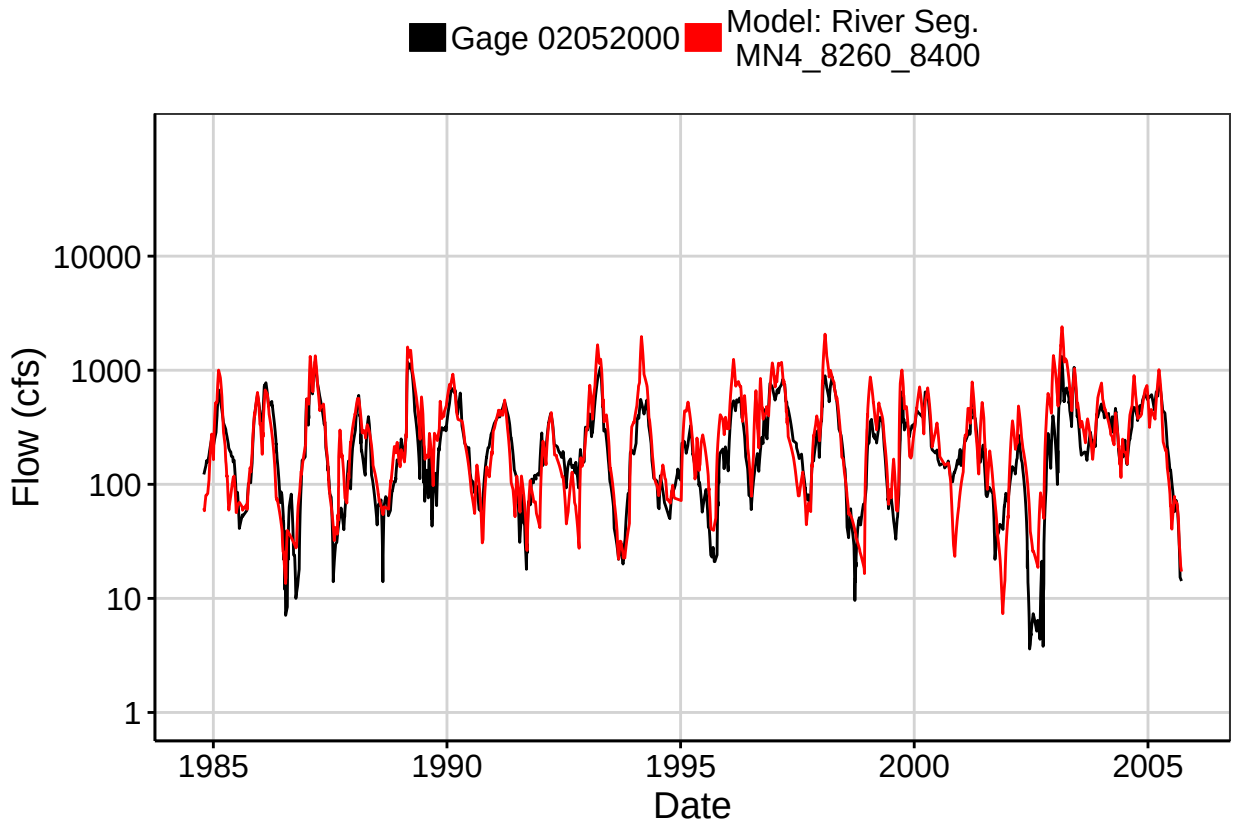


Fig. 5: Combined Baseflow

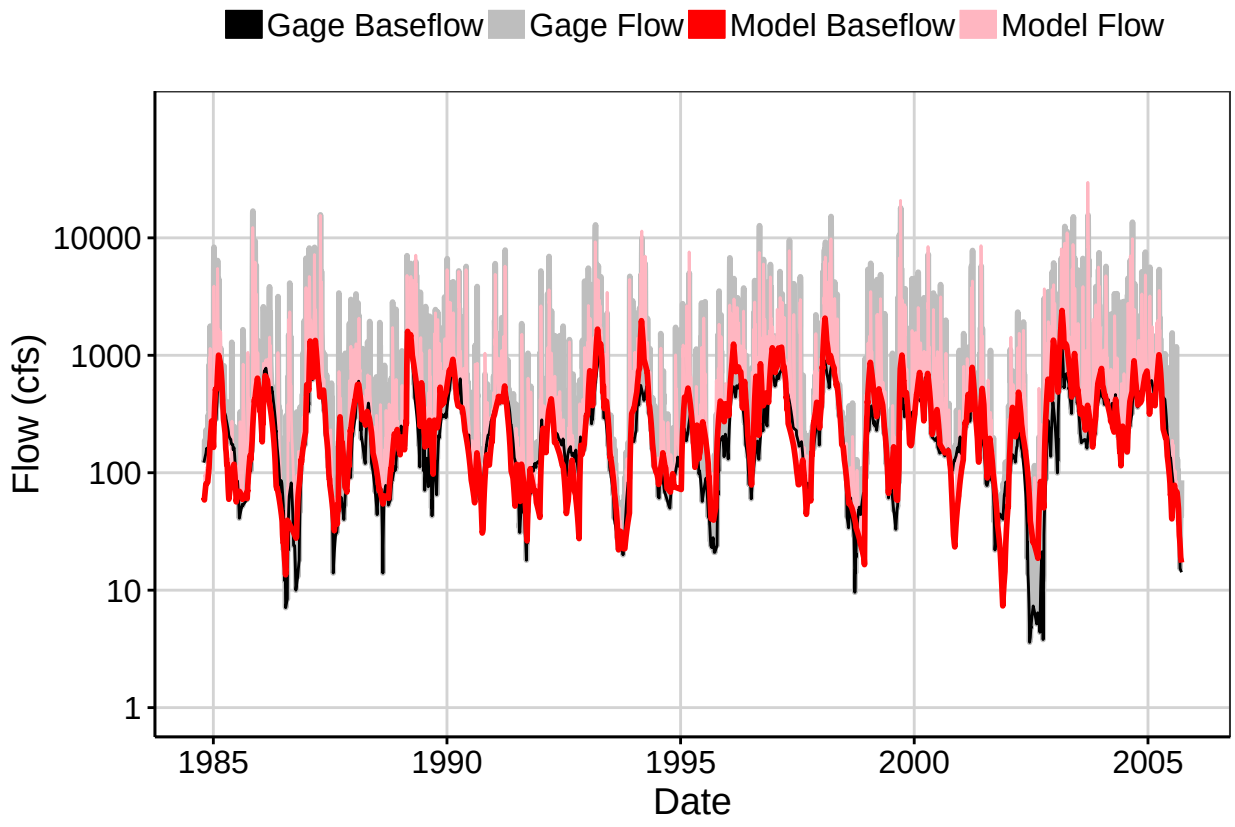


Fig. 6: Largest Error Segment

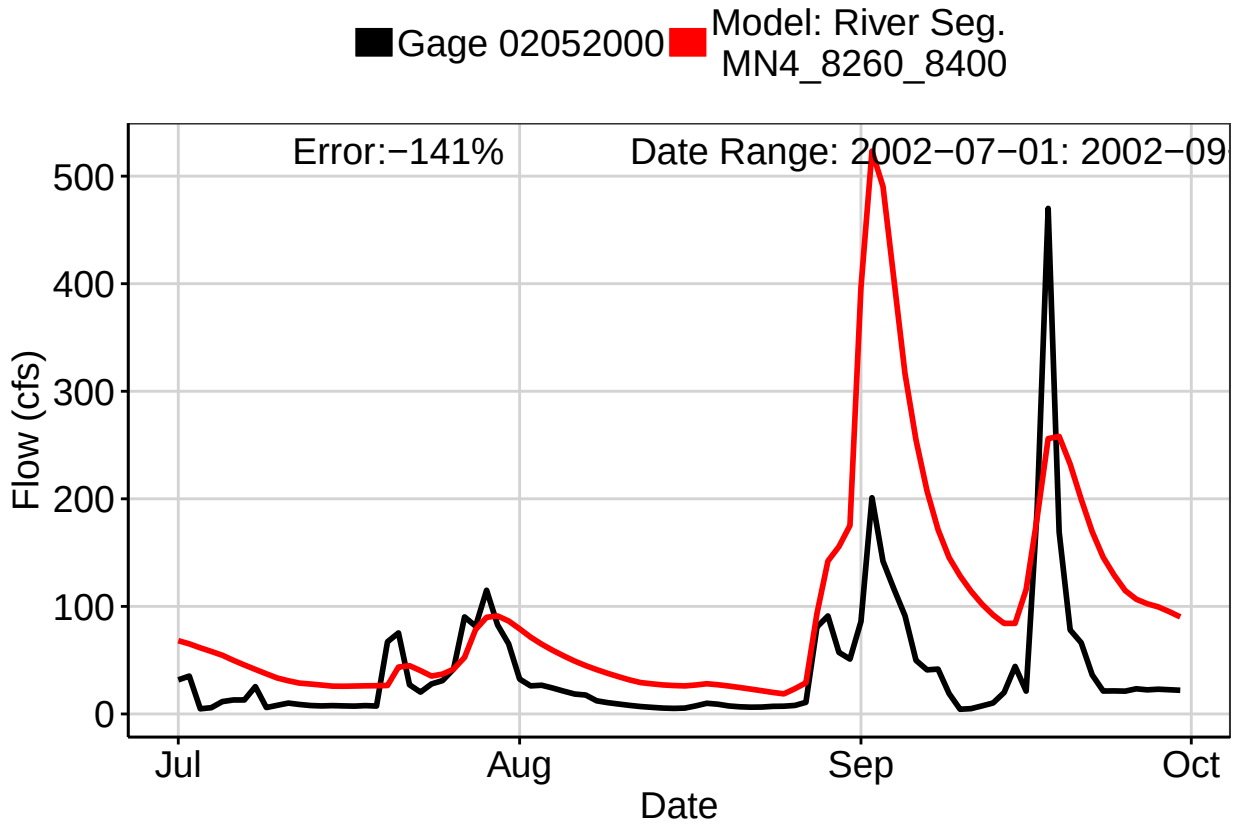


Fig. 7: Second Largest Error Segment

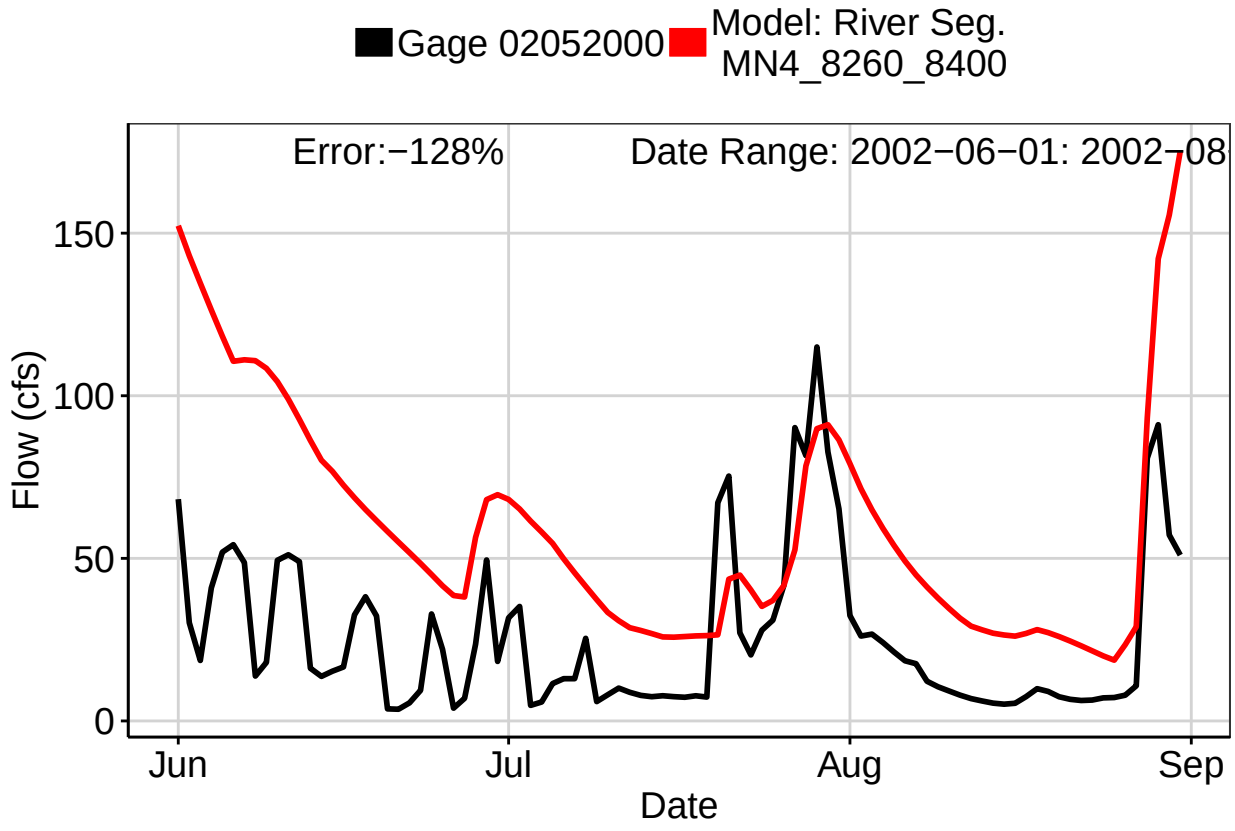


Fig. 8: Third Largest Error Segment

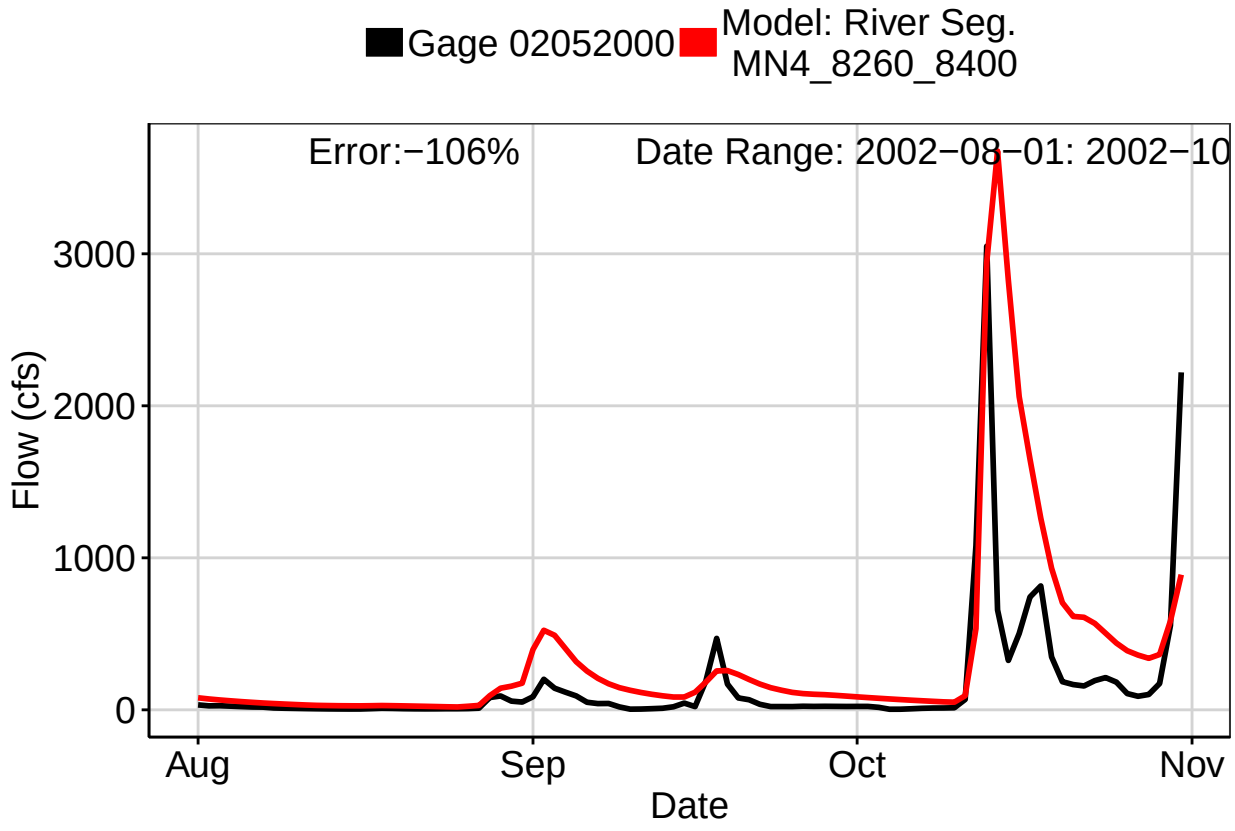


Fig. 9: Residuals Plot