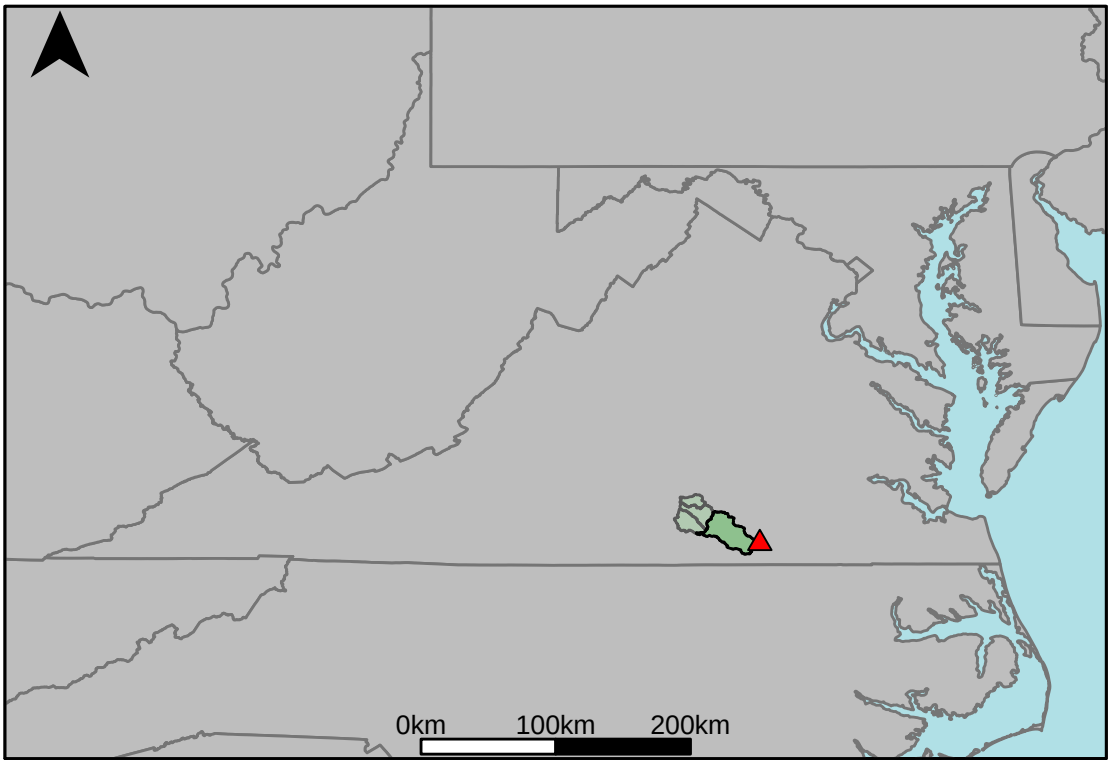
Appendix E.2: USGS Gage 02051500 vs. MN3_8190_8260



This river segment follows part of the flow of the Meherrin River. The gage is located in Brunswick County, VA (Lat 3643'0", Long 7749'55") approximately 16 miles west of Emporia, VA. Drainage area is 552 sq. miles. This gage started taking data in 1929 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 -0.2%, with 45.8% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	56	52.6	-6.07
Feb. Low Flow	124	97.1	-21.7
Mar. Low Flow	153	138	-9.8
Apr. Low Flow	212	230	8.49
May Low Flow	349	340	-2.58
Jun. Low Flow	336	310	-7.74
Jul. Low Flow	283	223	-21.2
Aug. Low Flow	152	136	-10.5
Sep. Low Flow	99	90.6	-8.48
Oct. Low Flow	56	62.5	11.6
Nov. Low Flow	52	48.7	-6.35
Dec. Low Flow	48	52.5	9.38

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	511	512	0.2
Jan. Mean Flow	708	675	-4.66
Feb. Mean Flow	786	854	8.65
Mar. Mean Flow	1030	1070	3.88
Apr. Mean Flow	771	785	1.82
May Mean Flow	500	458	-8.4
Jun. Mean Flow	335	307	-8.36
Jul. Mean Flow	207	178	-14
Aug. Mean Flow	235	242	2.98
Sep. Mean Flow	437	472	8.01
Oct. Mean Flow	216	269	24.5
Nov. Mean Flow	450	392	-12.9
Dec. Mean Flow	477	467	-2.1

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	551	320	-41.9
Feb. High Flow	1220	1120	-8.2
Mar. High Flow	1870	1170	-37.4
Apr. High Flow	2890	1710	-40.8
May High Flow	2980	1560	-47.7
Jun. High Flow	3370	2710	-19.6
Jul. High Flow	3330	2570	-22.8
Aug. High Flow	1260	708	-43.8
Sep. High Flow	592	270	-54.4
Oct. High Flow	465	320	-31.2
Nov. High Flow	609	445	-26.9
Dec. High Flow	274	317	15.7

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	2.19	8.41	284
Med. 1 Day Min	30	33.5	11.7
Min. 3 Day Min	2.22	8.51	283
Med. 3 Day Min	33	35.3	6.97
Min. 7 Day Min	2.57	8.99	250
Med. 7 Day Min	36.5	39.2	7.4
Min. 30 Day Min	10.2	12.2	19.6
Med. 30 Day Min	62.3	58.3	-6.42
Min. 90 Day Min	23	29.1	26.5
Med. 90 Day Min	125	93.6	-25.1
7Q10	11.3	14.2	25.7
Year of 90-Day Min. Flow	2002	2002	0
Drought Year Mean	111	170	53.2
Mean Baseflow	208	237	13.9

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	15400	15600	1.3
Med. 1 Day Max	7580	6440	-15
Max. 3 Day Max	12300	12900	4.88
Med. 3 Day Max	6400	5310	-17
Max. 7 Day Max	7830	9140	16.7
Med. 7 Day Max	3380	3470	2.66
Max. 30 Day Max	2990	3270	9.36
Med. 30 Day Max	1470	1430	-2.72
Max. 90 Day Max	2110	2210	4.74
Med. 90 Day Max	973	970	-0.31

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	17.2	17.4	1.16
5% Non-Exceedance	39	38.5	-1.28
50% Non-Exceedance	252	254	0.79
95% Non-Exceedance	1690	1730	2.37
99% Non-Exceedance	5340	4460	-16.5
Sept. 10% Non-Exceedance	33.2	26	-21.7

Fig. 1: Hydrograph

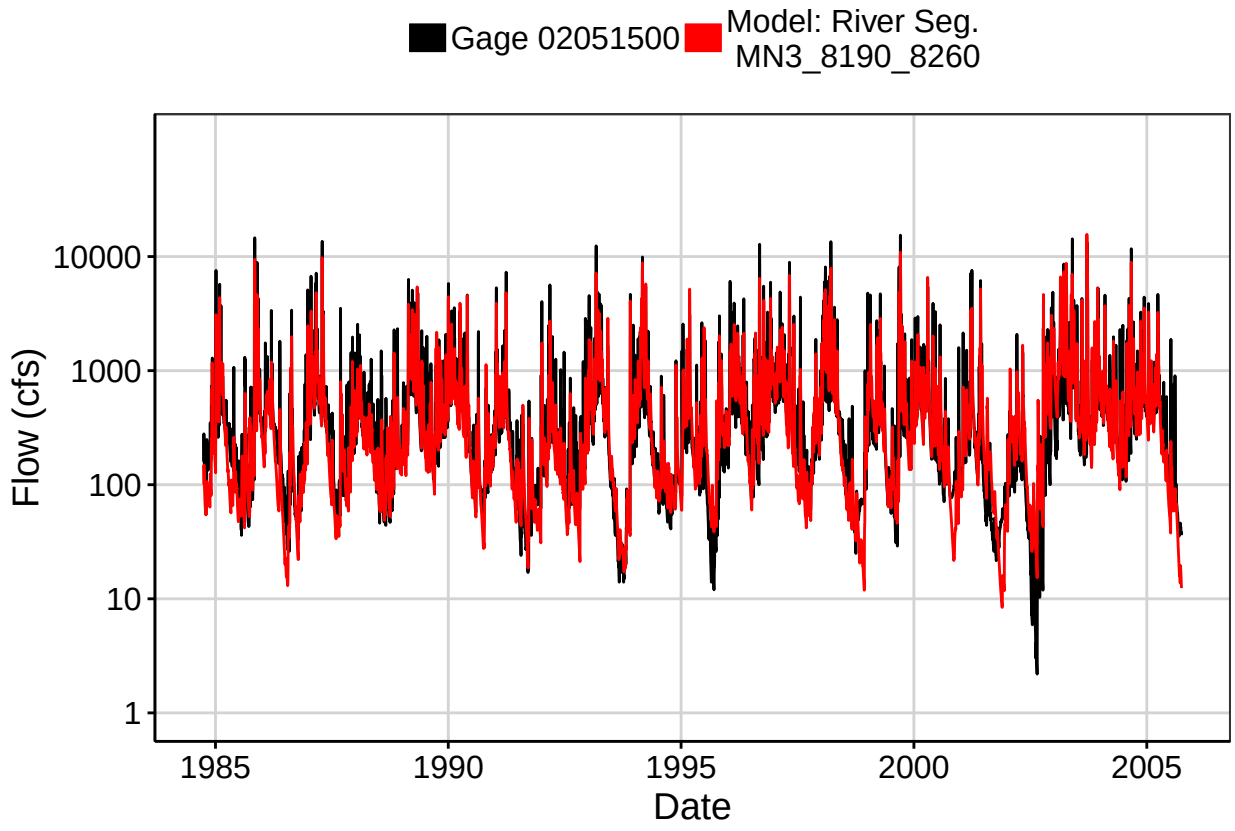


Fig. 2: Zoomed Hydrograph

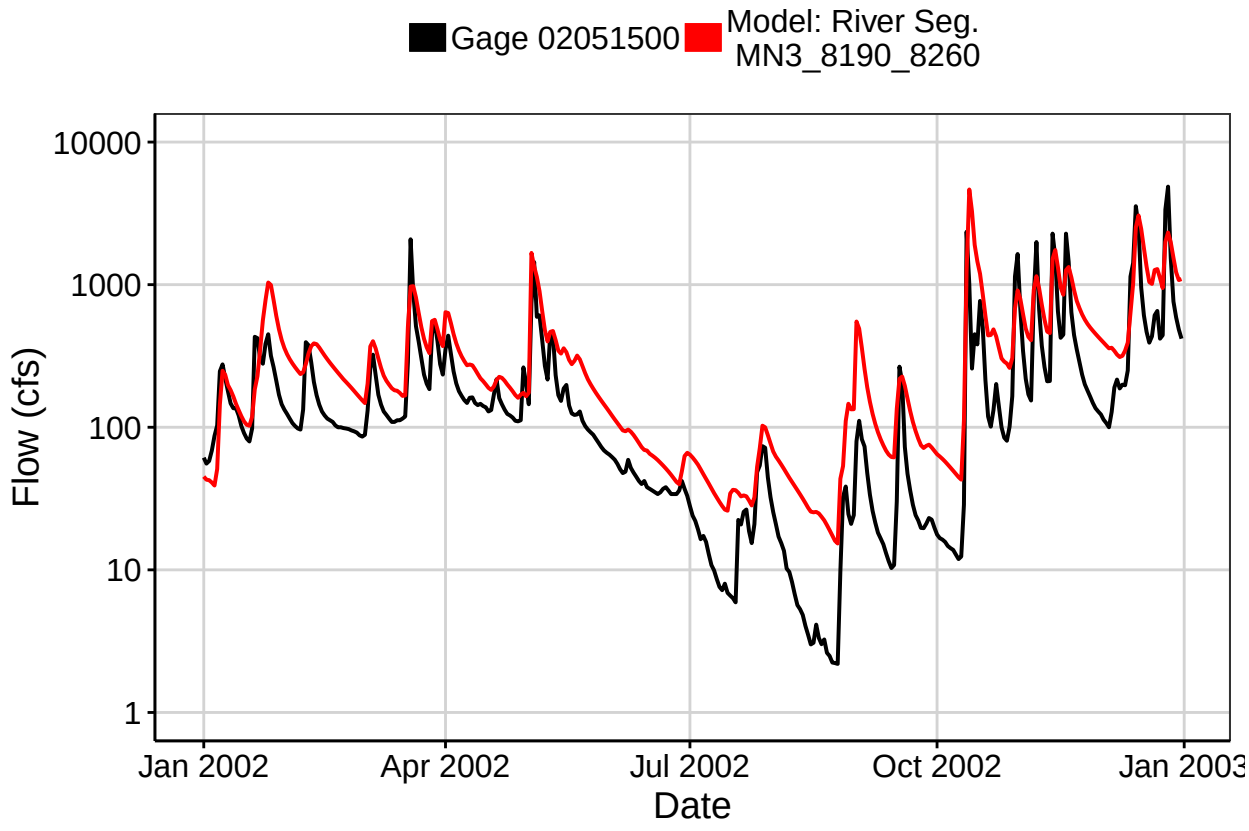


Fig. 3: Flow Exceedance

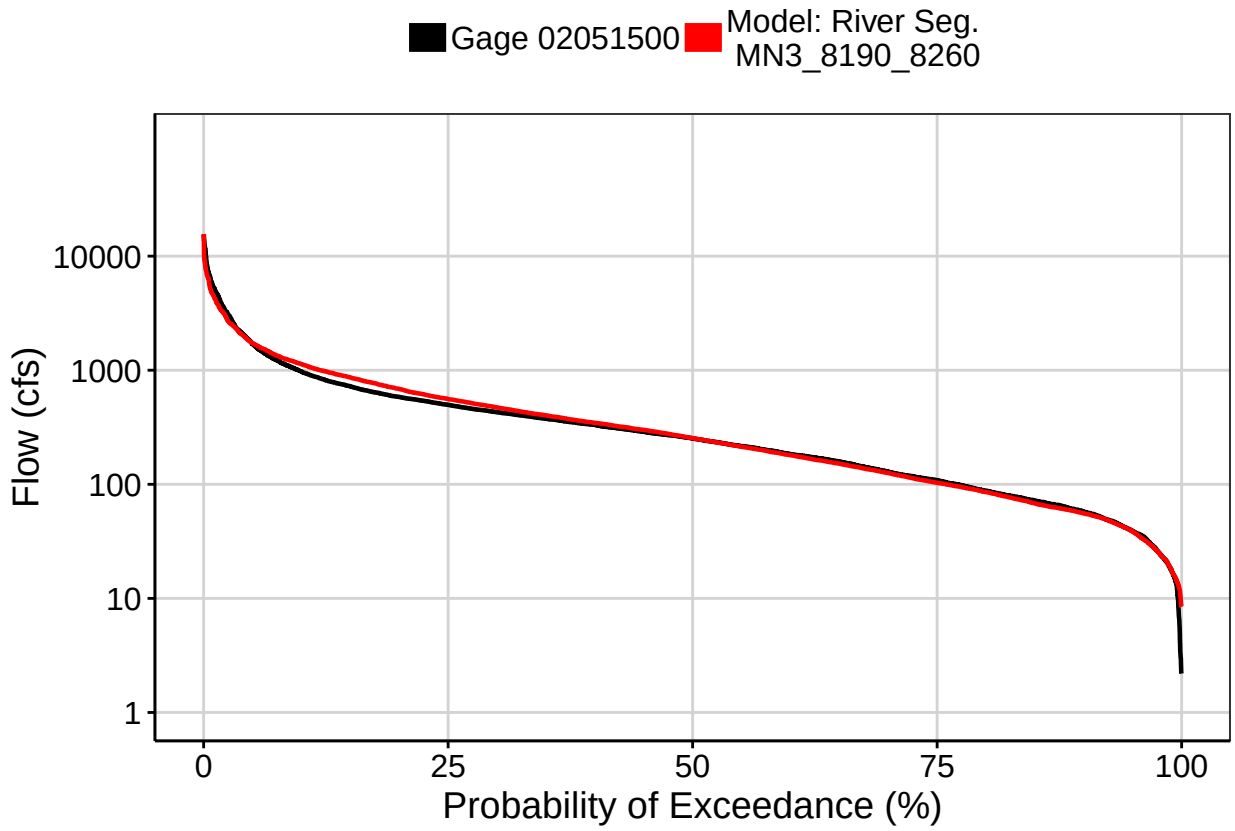


Fig. 4: Baseflow

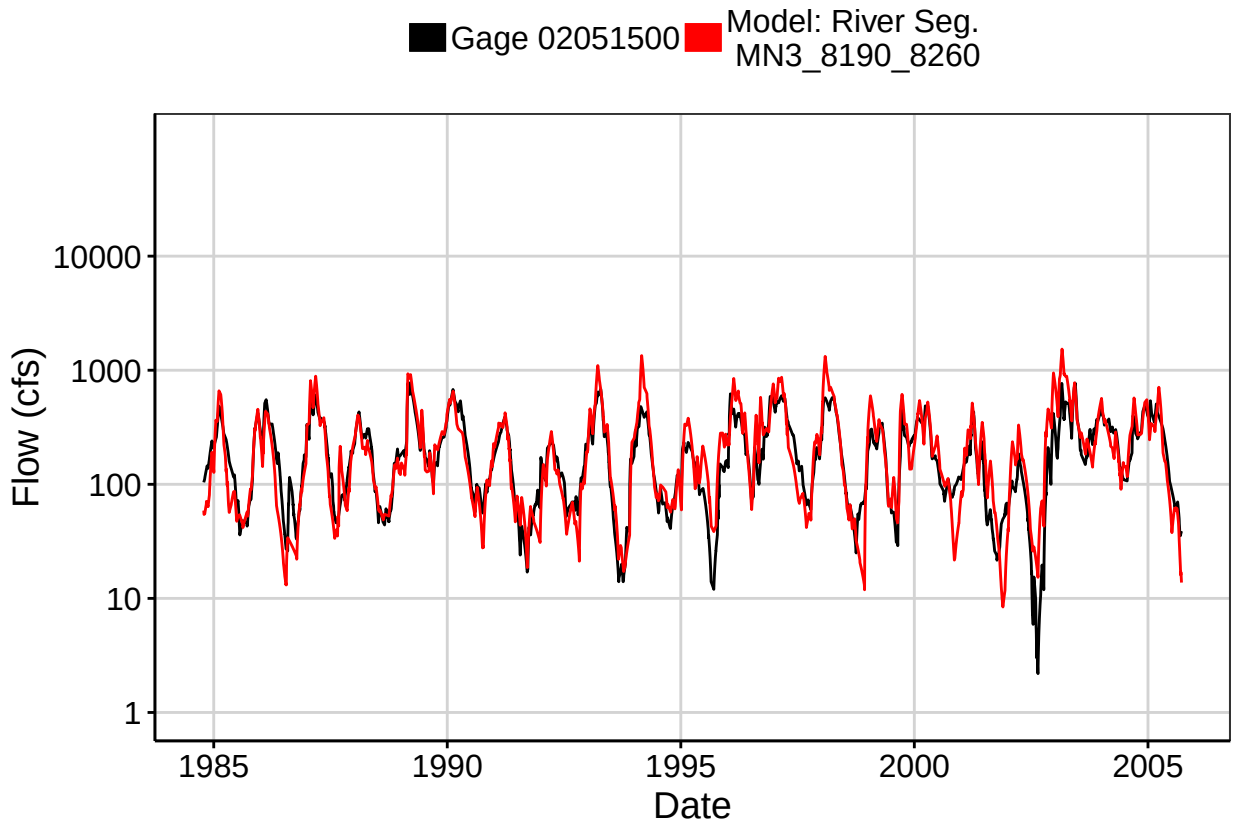


Fig. 5: Combined Baseflow

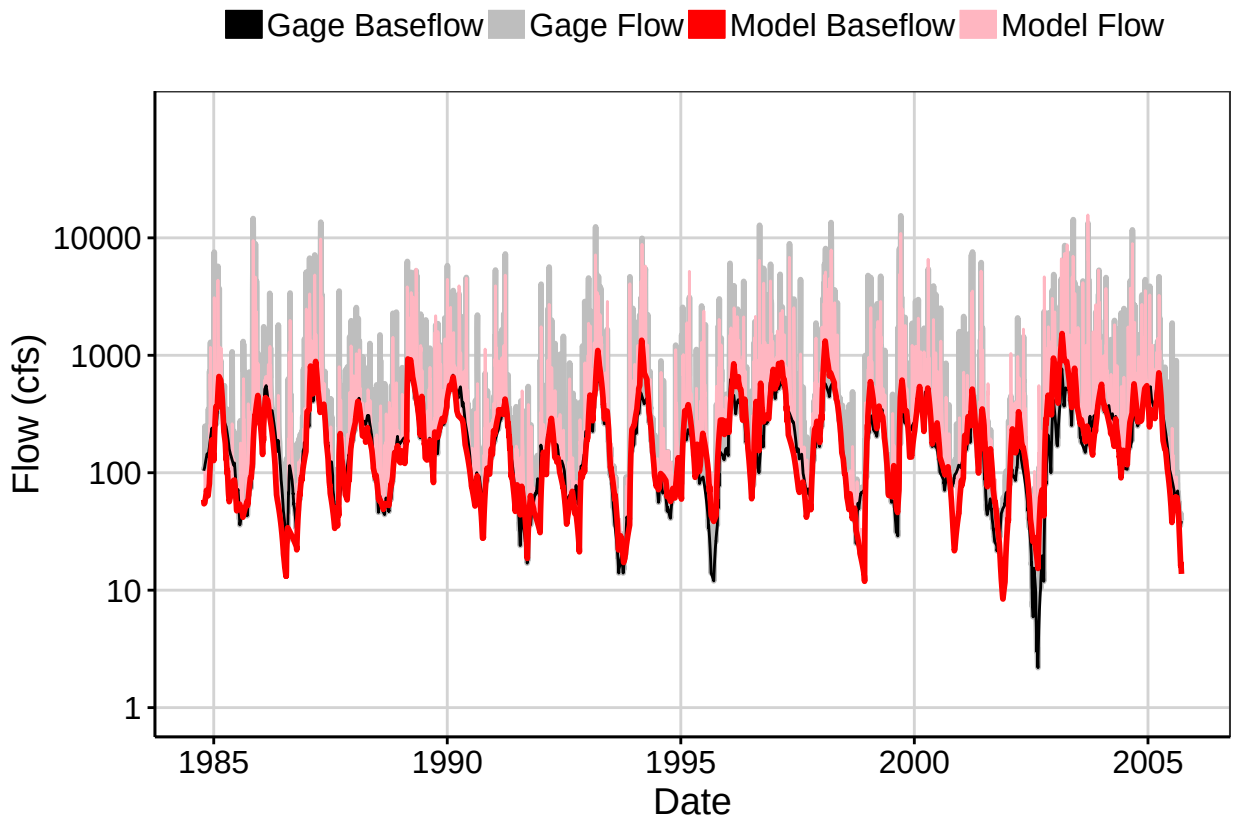


Fig. 6: Largest Error Segment

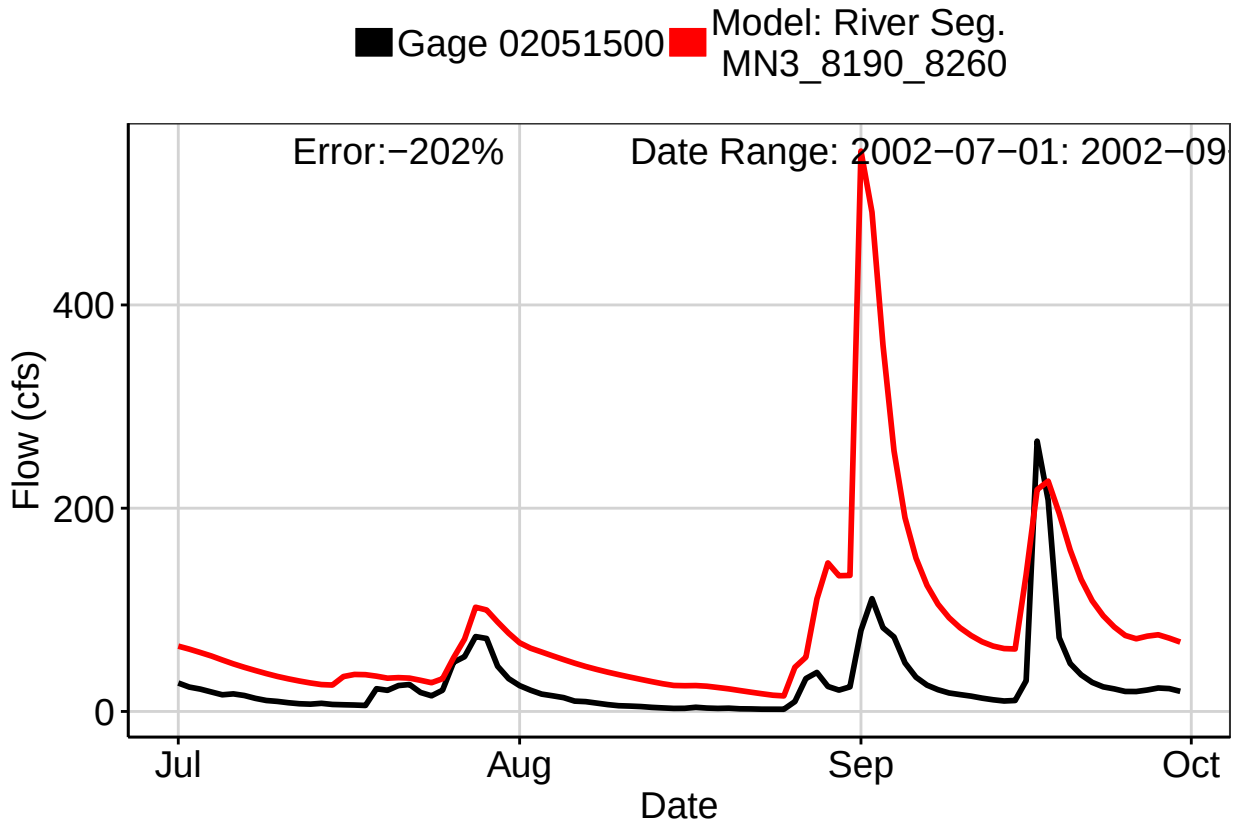


Fig. 7: Second Largest Error Segment

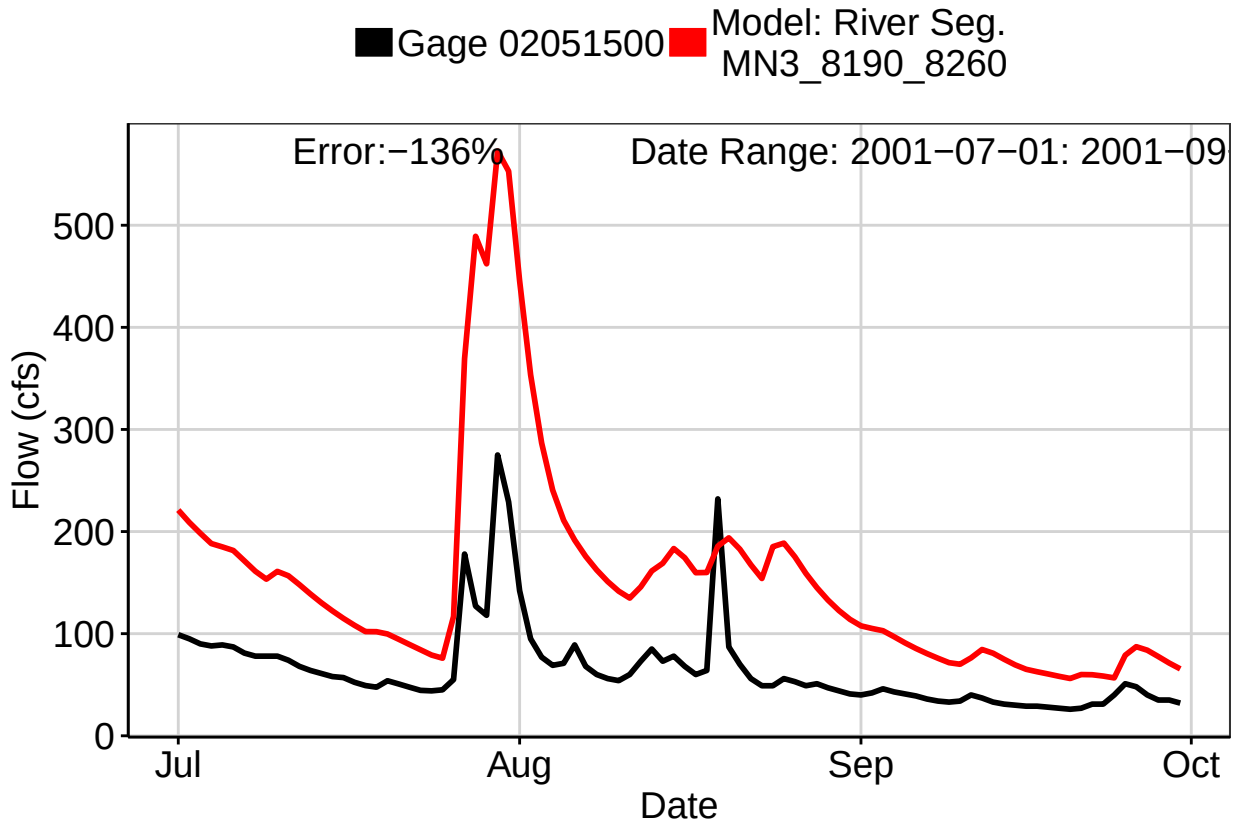


Fig. 8: Third Largest Error Segment

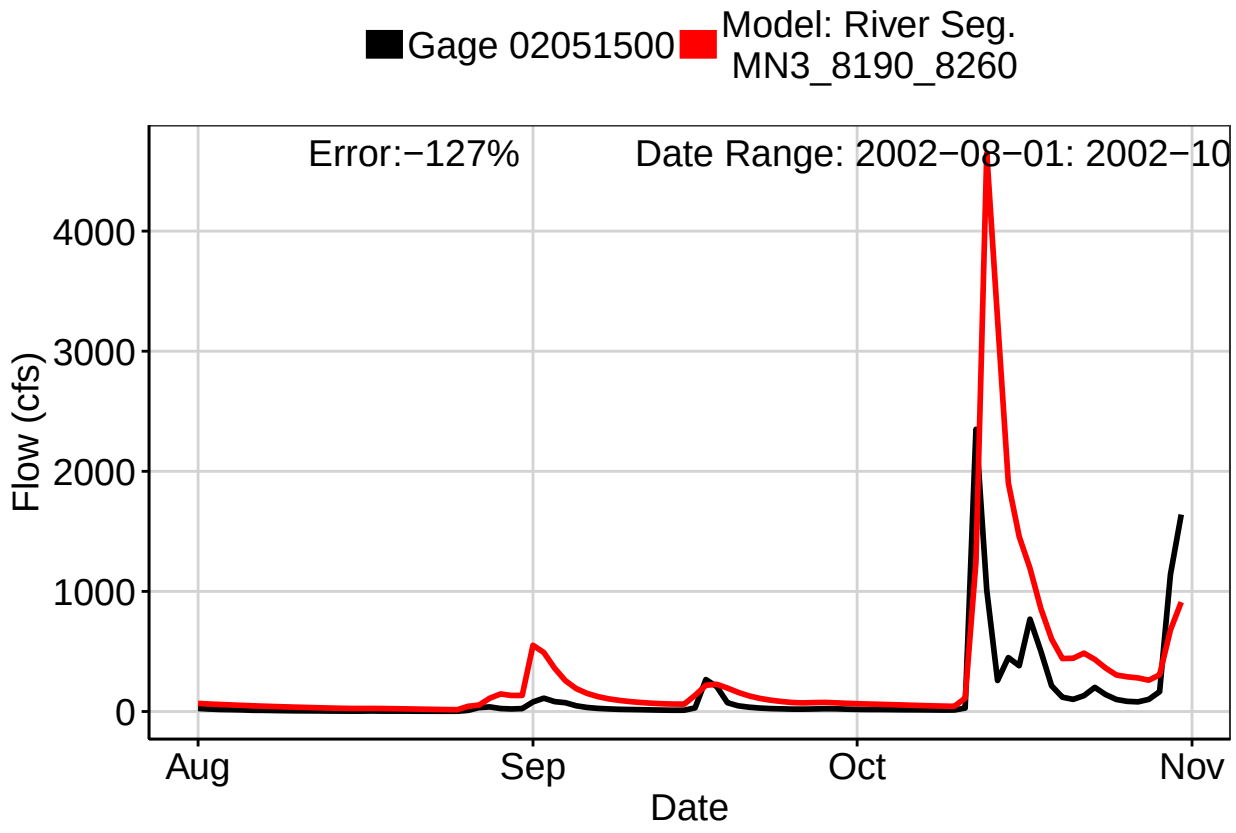


Fig. 9: Residuals Plot