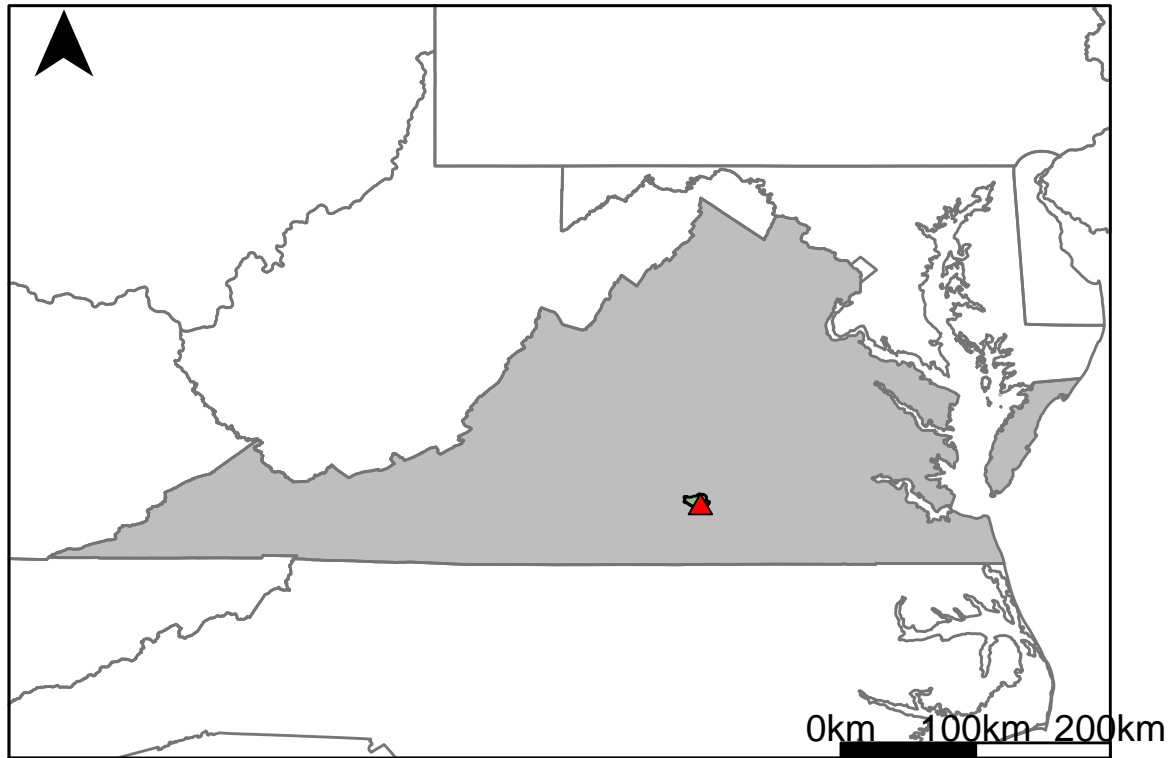


## Appendix E: Meherrin River Gages

### Appendix E.1: USGS Gage 02051000 vs. MN1\_7990\_8100



This river segment follows part of the flow of the North Meherrin River. The gage is located in Lunenburg County, VA (Lat 36°59'50", Long 78°21'00") approximately 62 miles southwest of Richmond, VA. Drainage area is 56 sq. miles. This gage started taking data in 1910 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 -4.02%, with 66.2% of its rolling three month time spans above 20% error.

**Table 1: Monthly Low Flows**

	USGS Gage	Model	Pct. Error
Jan. Low Flow	3.9	2.86	26.7
Feb. Low Flow	10	8.29	17.1
Mar. Low Flow	14	12.1	13.6
Apr. Low Flow	17	18.7	-10
May Low Flow	29	31.7	-9.31
Jun. Low Flow	27.8	29.5	-6.12
Jul. Low Flow	24.7	19.5	21.1
Aug. Low Flow	12.2	11.6	4.92
Sep. Low Flow	6.93	6.41	7.5
Oct. Low Flow	3.2	3.1	3.13
Nov. Low Flow	2.1	2.4	-14.3
Dec. Low Flow	1.52	2.54	-67.1

**Table 2: Monthly Average Flows**

	USGS Gage	Model	Pct. Error
Overall Mean Flow	44.8	46.6	-4.02
Jan. Mean Flow	60.9	62.7	-2.96
Feb. Mean Flow	72.3	82	-13.4
Mar. Mean Flow	85.4	103	-20.6
Apr. Mean Flow	67	71.4	-6.57
May Mean Flow	45	41.7	7.33
Jun. Mean Flow	27.5	26.7	2.91
Jul. Mean Flow	18.5	13.6	26.5
Aug. Mean Flow	22.3	19.2	13.9
Sep. Mean Flow	33.6	40.2	-19.6
Oct. Mean Flow	16.1	22.6	-40.4
Nov. Mean Flow	47.3	36.6	22.6
Dec. Mean Flow	44.6	42.4	4.93

**Table 3: Monthly High Flows**

	USGS Gage	Model	Pct. Error
Jan. High Flow	49.9	29.3	41.3
Feb. High Flow	178	98.5	44.7
Mar. High Flow	242	94.7	60.9
Apr. High Flow	299	184	38.5
May High Flow	243	191	21.4
Jun. High Flow	350	441	-26
Jul. High Flow	241	192	20.3
Aug. High Flow	224	82.3	63.3
Sep. High Flow	86	24.3	71.7
Oct. High Flow	40	31.5	21.2
Nov. High Flow	75	27.1	63.9
Dec. High Flow	22	23.4	-6.36

**Table 4: Period Low Flows**

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	0.00	8.00e-02	-Inf
Med. 1 Day Min	1.00	1.72	-7.20e+01
Min. 3 Day Min	0.00	8.00e-02	3.88e+14
Med. 3 Day Min	1.10	1.77	-6.09e+01
Min. 7 Day Min	1.00e-02	1.00e-01	-8.79e+02
Med. 7 Day Min	1.24	2.05	-6.53e+01
Min. 30 Day Min	6.00e-02	3.20e-01	-4.37e+02
Med. 30 Day Min	2.76	3.71	-3.44e+01
Min. 90 Day Min	1.52	2.08	-3.68e+01
Med. 90 Day Min	9.90	6.93	3.00e+01
7Q10	1.50e-01	2.80e-01	-8.09e+01
Year of 90-Day Min. Flow	2.00e+03	2.00e+03	0.00
Drought Year Mean	1.00e+01	4.66e+01	-3.66e+02
Mean Baseflow	1.55e+01	2.01e+01	-2.97e+01

**Table 5: Period High Flows**

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	3010	3290	-9.3
Med. 1 Day Max	840	1240	-47.6
Max. 3 Day Max	1390	1580	-13.7
Med. 3 Day Max	503	671	-33.4
Max. 7 Day Max	842	952	-13.1
Med. 7 Day Max	258	357	-38.4
Max. 30 Day Max	299	328	-9.7
Med. 30 Day Max	125	145	-16
Max. 90 Day Max	187	220	-17.6
Med. 90 Day Max	84.8	88.5	-4.36

**Table 6: Non-Exceedance Flows**

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	0.36	0.56	-54.2
5% Non-Exceedance	1.6	2.08	-30
50% Non-Exceedance	19	20.9	-10
95% Non-Exceedance	153	143	6.54
99% Non-Exceedance	446	473	-6.05
Sept. 10% Non-Exceedance	1.66	1.62	2.41

**Fig. 1: Hydrograph**

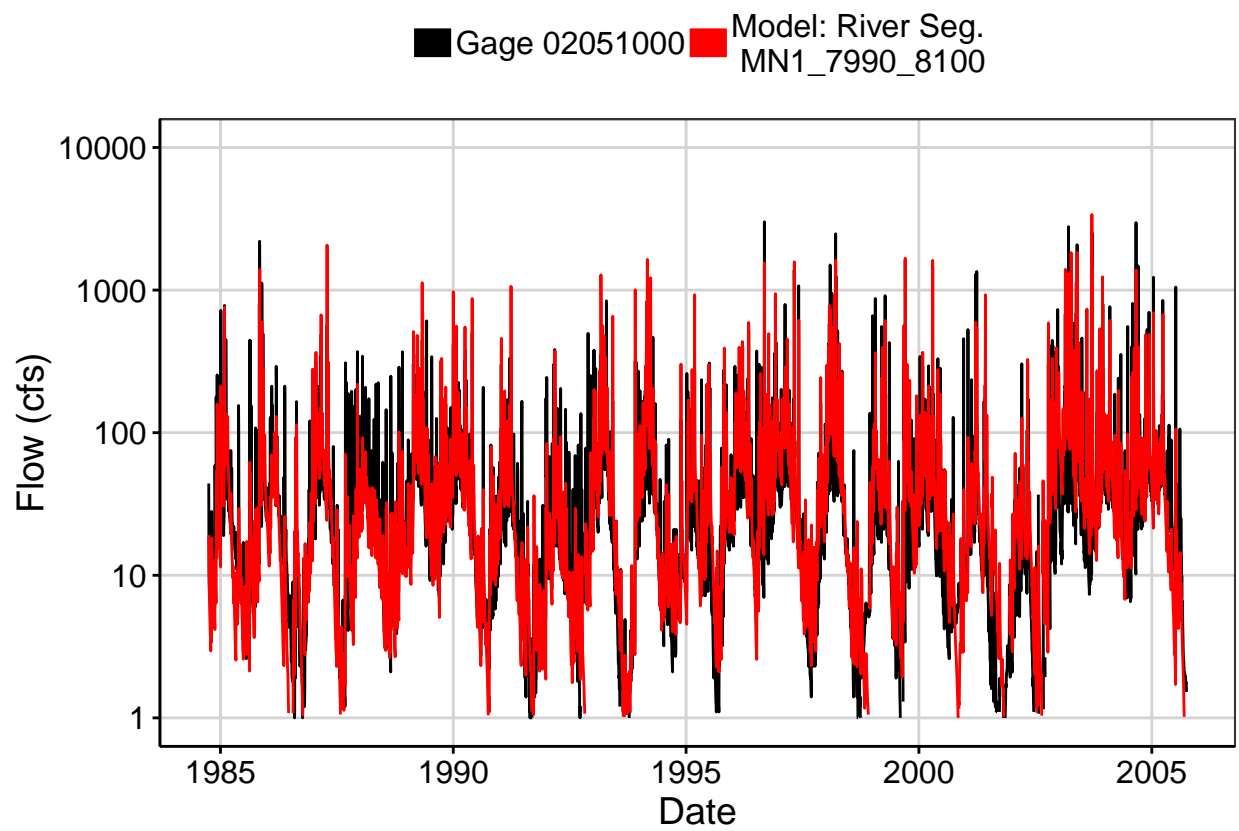


Fig. 2: Zoomed Hydrograph

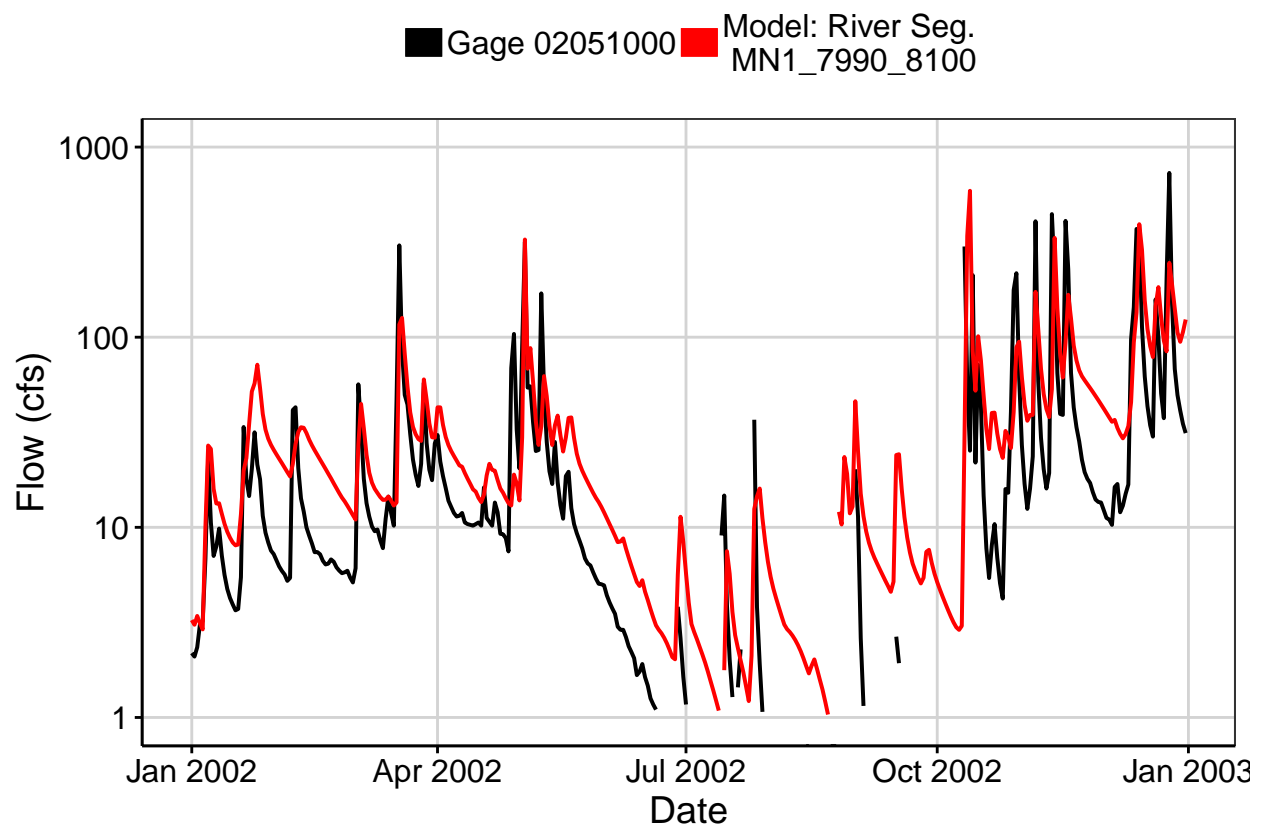


Fig. 3: Flow Exceedance

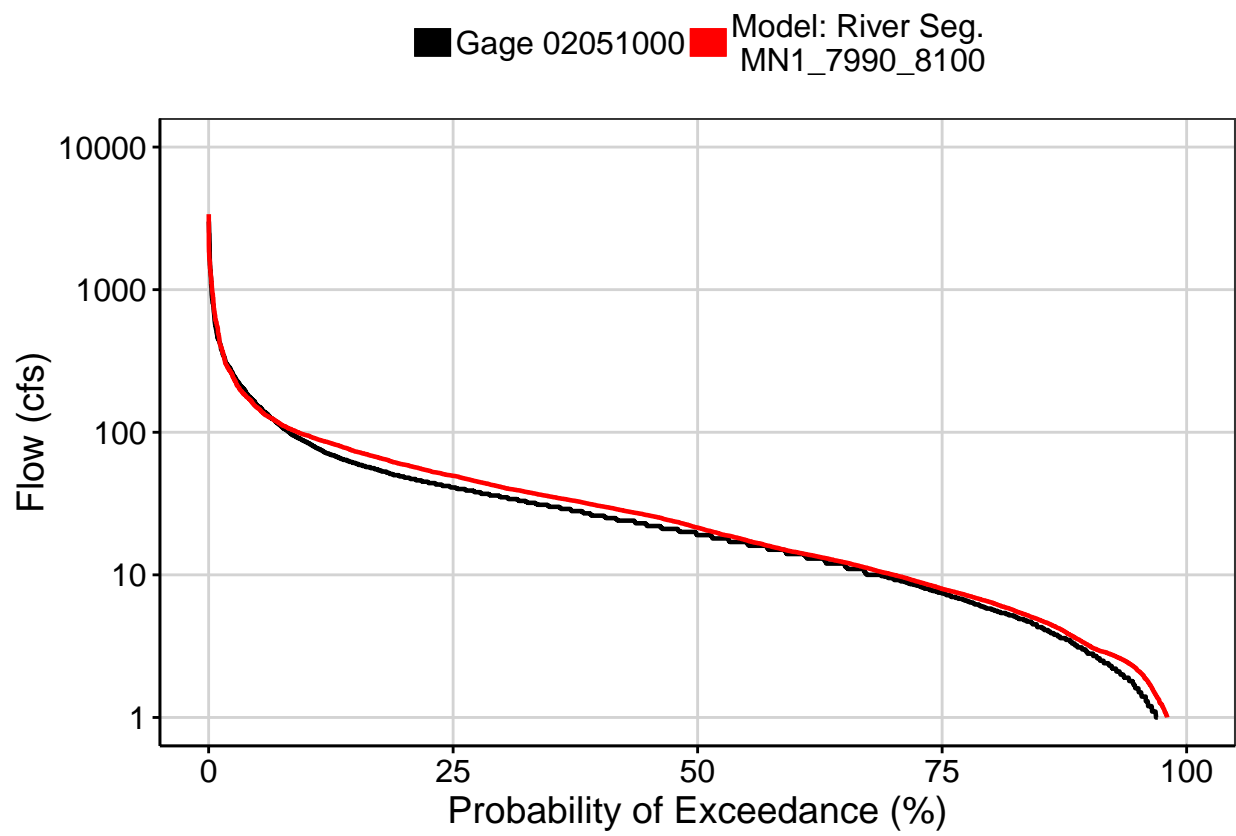


Fig. 4: Baseflow

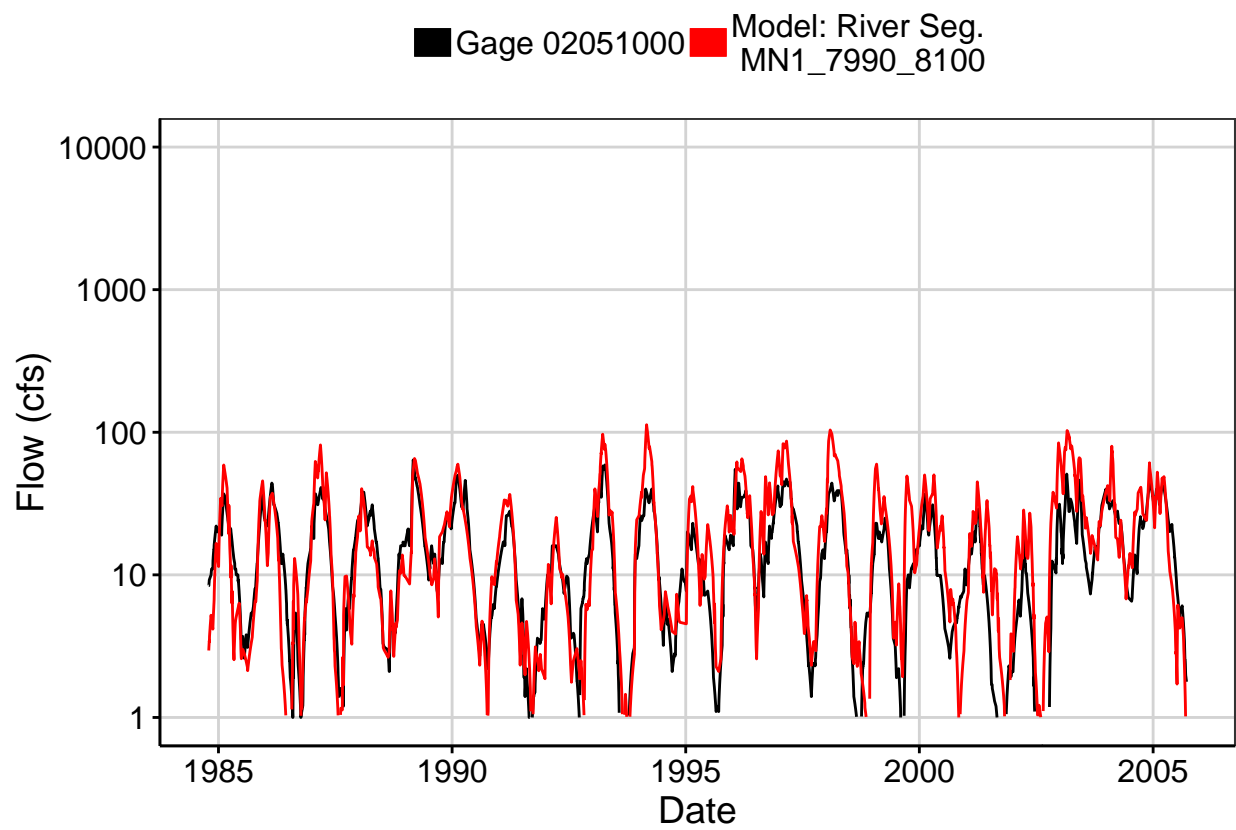


Fig. 5: Combined Baseflow

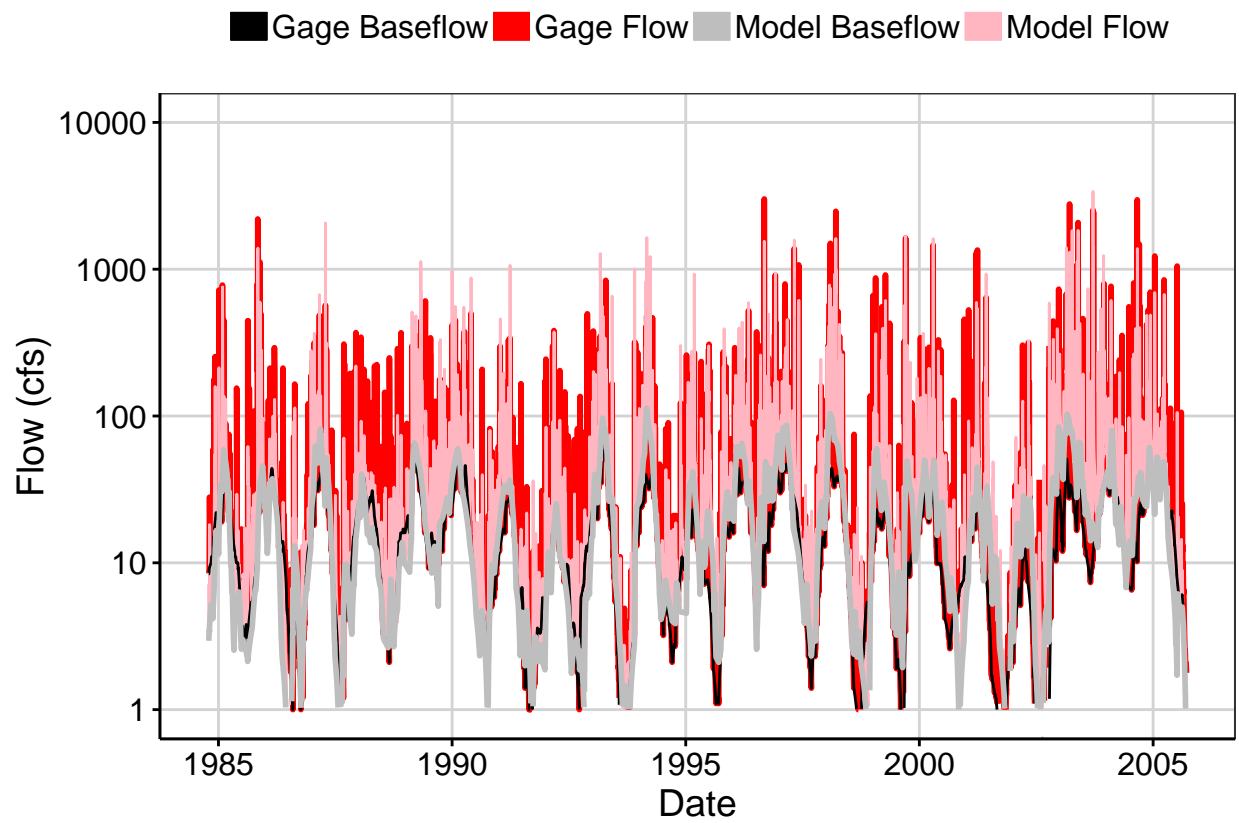




Fig. 6: Largest Error Segment

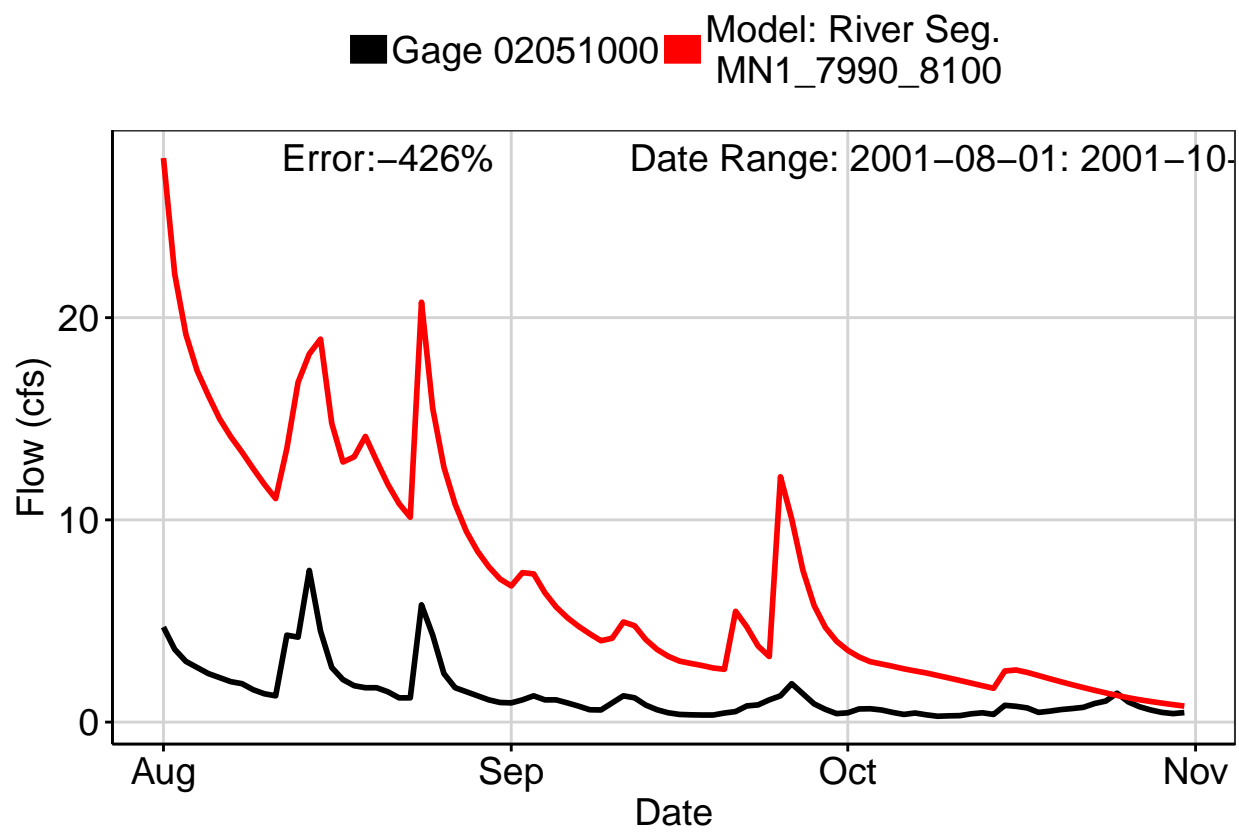


Fig. 7: Second Largest Error Segment

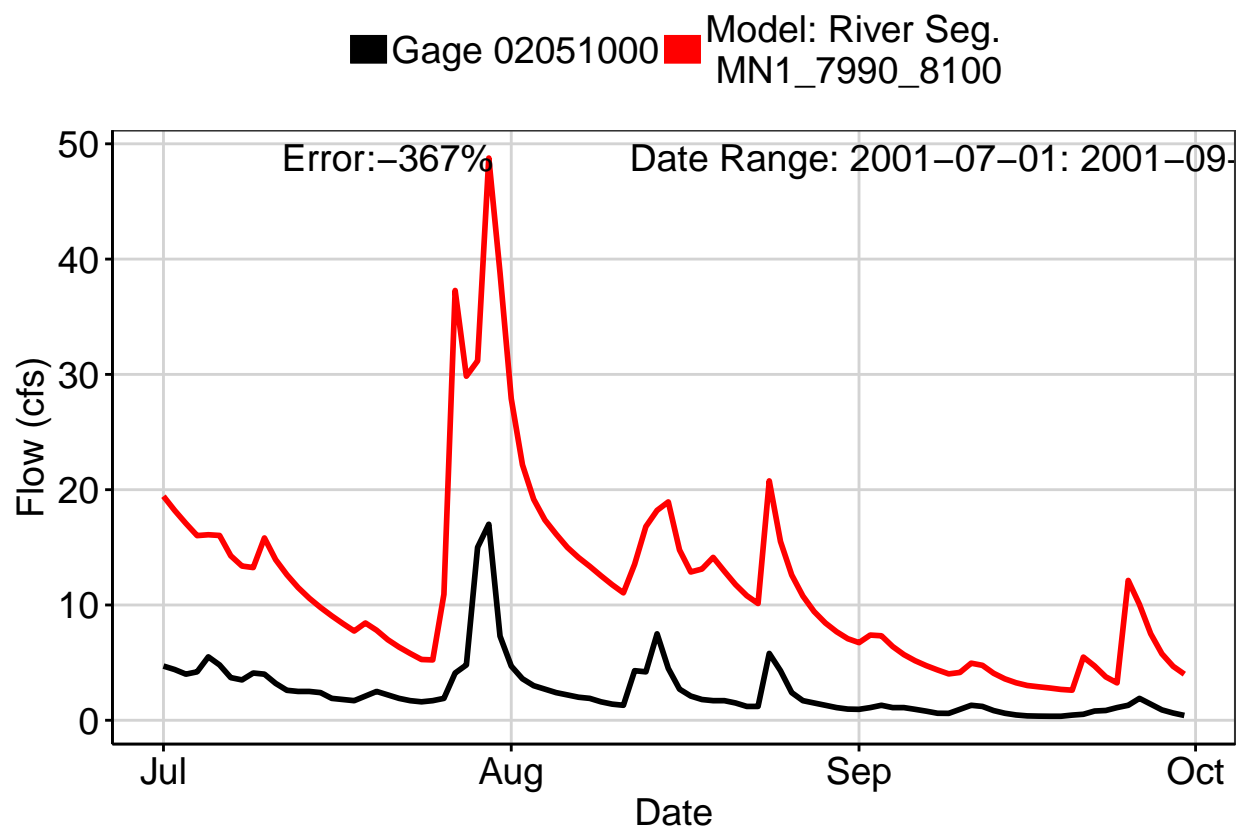


Fig. 8: Third Largest Error Segment

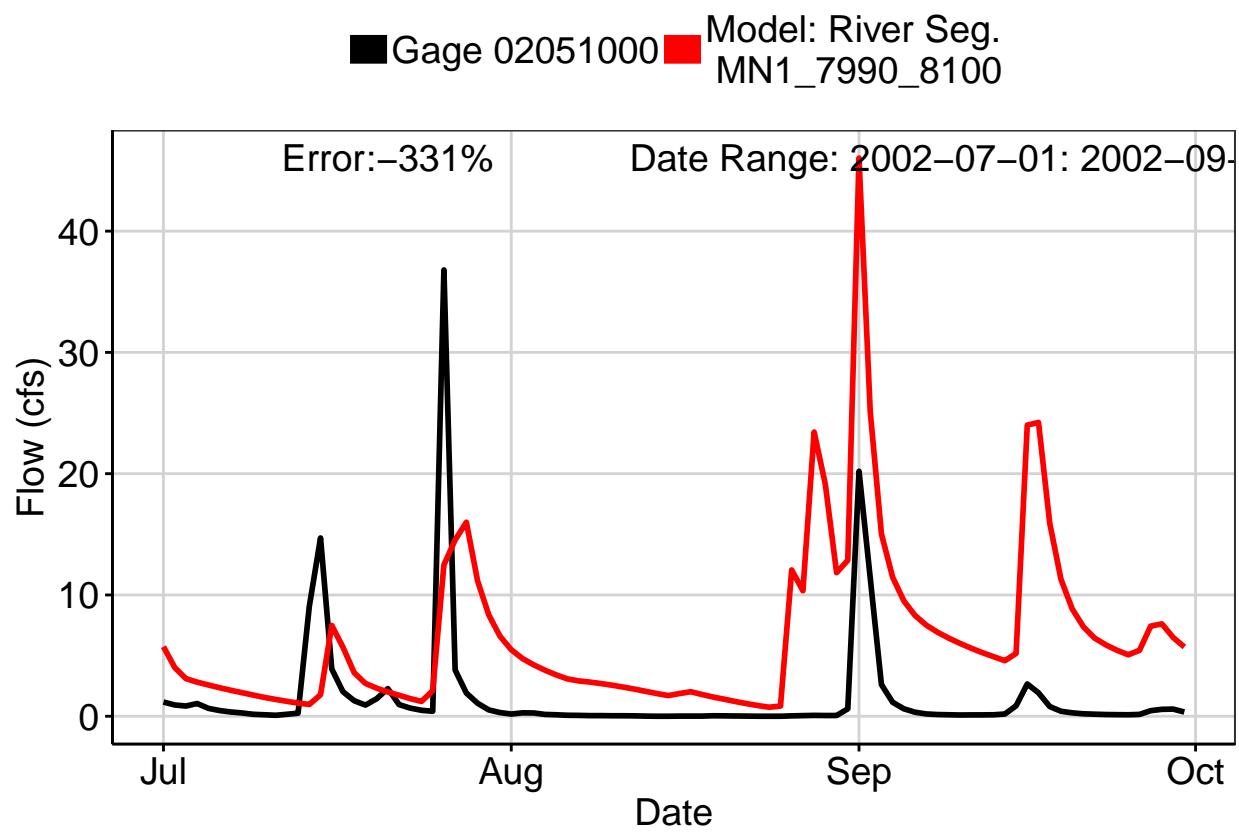


Fig. 9: Residuals Plot

