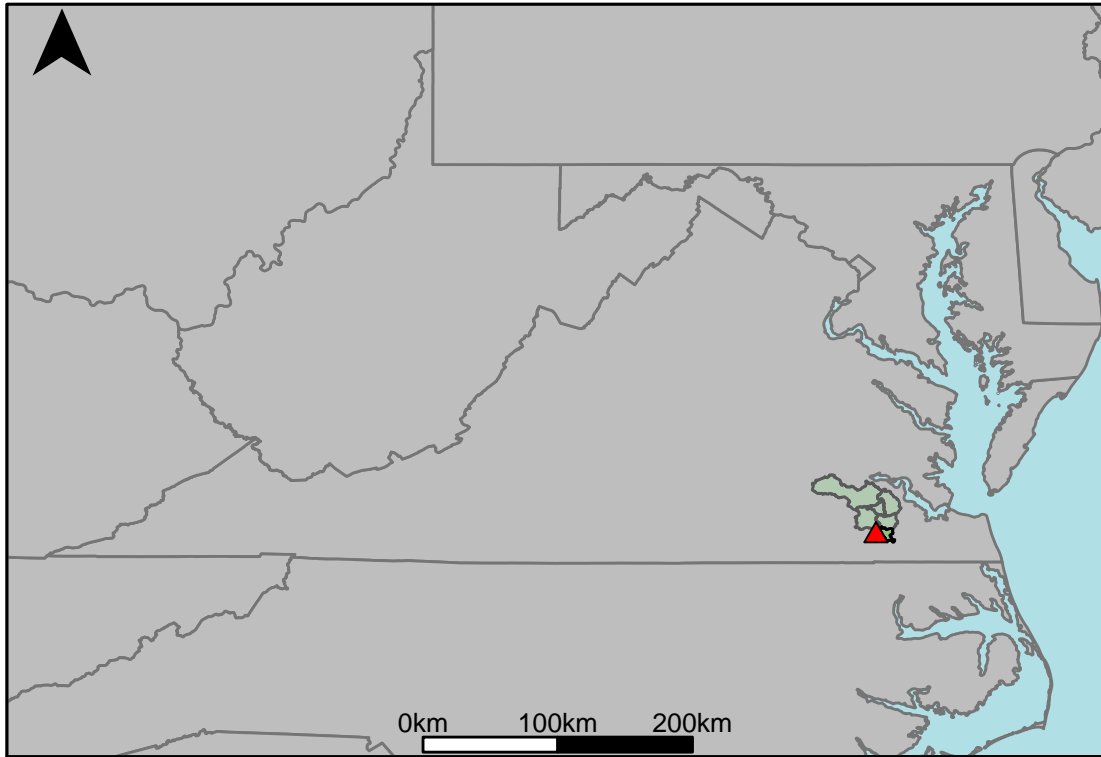


## Appendix B.2: USGS Gage 02049500 vs. MN4\_8080\_8110



This river segment follows part of the flow of the Blackwater River, a tributary of the Meherrin River. The gage is located in Southhampton County, VA (Lat 36°45'45", Long 76°53'55") approximately 17 miles west of Suffolk, VA. Drainage area is 613 sq. miles. This gage started taking data in 1944 and is still taking data. Water is diverted from this area to the City of Norfolk by a pumping station upstream of the gage. It is also believed that in extreme low flow conditions, water can be lost to storage, especially between Zuni and Franklin. The average daily discharge error between the model and gage data for the 20 year timespan was -0.31%, with 51.2% of its rolling three month time spans above 20% error.

**Table 1: Monthly Low Flows**

	USGS Gage	Model	Pct. Error
Jan. Low Flow	4.92	22.4	355
Feb. Low Flow	19	159	737
Mar. Low Flow	118	155	31.4
Apr. Low Flow	346	340	-1.73
May Low Flow	519	514	-0.96
Jun. Low Flow	534	451	-15.5
Jul. Low Flow	369	241	-34.7
Aug. Low Flow	62.5	175	180
Sep. Low Flow	11	53.3	385
Oct. Low Flow	2.8	23.3	732
Nov. Low Flow	5.3	37.8	613
Dec. Low Flow	3.34	23.9	616

**Table 2: Monthly Average Flows**

	USGS Gage	Model	Pct. Error
Overall Mean Flow	648	650	0.31
Jan. Mean Flow	882	896	1.59
Feb. Mean Flow	1140	1100	-3.51
Mar. Mean Flow	1210	1180	-2.48
Apr. Mean Flow	1030	887	-13.9
May Mean Flow	485	519	7.01
Jun. Mean Flow	330	328	-0.61
Jul. Mean Flow	207	245	18.4
Aug. Mean Flow	476	464	-2.52
Sep. Mean Flow	750	797	6.27
Oct. Mean Flow	330	400	21.2
Nov. Mean Flow	368	413	12.2
Dec. Mean Flow	615	611	-0.65

**Table 3: Monthly High Flows**

	USGS Gage	Model	Pct. Error
Jan. High Flow	114	307	169
Feb. High Flow	481	814	69.2
Mar. High Flow	813	932	14.6
Apr. High Flow	1300	1460	12.3
May High Flow	1600	1900	18.8
Jun. High Flow	1600	1630	1.88
Jul. High Flow	1760	1900	7.95
Aug. High Flow	855	940	9.94
Sep. High Flow	745	619	-16.9
Oct. High Flow	431	318	-26.2
Nov. High Flow	812	590	-27.3
Dec. High Flow	371	446	20.2

**Table 4: Period Low Flows**

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	0	0	NaN
Med. 1 Day Min	0.77	5.17	571
Min. 3 Day Min	0.17	0	-100
Med. 3 Day Min	1.11	7.38	565
Min. 7 Day Min	0.26	0.05	-80.8
Med. 7 Day Min	1.59	12.4	680
Min. 30 Day Min	0.88	3.92	344
Med. 30 Day Min	3.51	34.6	886
Min. 90 Day Min	5.85	30.3	418
Med. 90 Day Min	65.6	131	99.7
7Q10	0.44	0.41	-6.64
Year of 90-Day Min. Flow	2002	2002	0
Drought Year Mean	174	227	30.5
Mean Baseflow	323	318	-1.55

**Table 5: Period High Flows**

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	22000	26200	19.1
Med. 1 Day Max	4320	5300	22.7
Max. 3 Day Max	20800	25000	20.2
Med. 3 Day Max	4150	4660	12.3
Max. 7 Day Max	17500	20400	16.6
Med. 7 Day Max	3140	3280	4.46
Max. 30 Day Max	5920	6660	12.5
Med. 30 Day Max	1730	1780	2.89
Max. 90 Day Max	2560	2530	-1.17
Med. 90 Day Max	1330	1230	-7.52

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	0.62	4.22	581
5% Non-Exceedance	2	15	650
50% Non-Exceedance	369	384	4.07
95% Non-Exceedance	2320	2090	-9.91
99% Non-Exceedance	4160	4240	1.92
Sept. 10% Non-Exceedance	16.7	1.99	-88.1

Fig. 1: Hydrograph

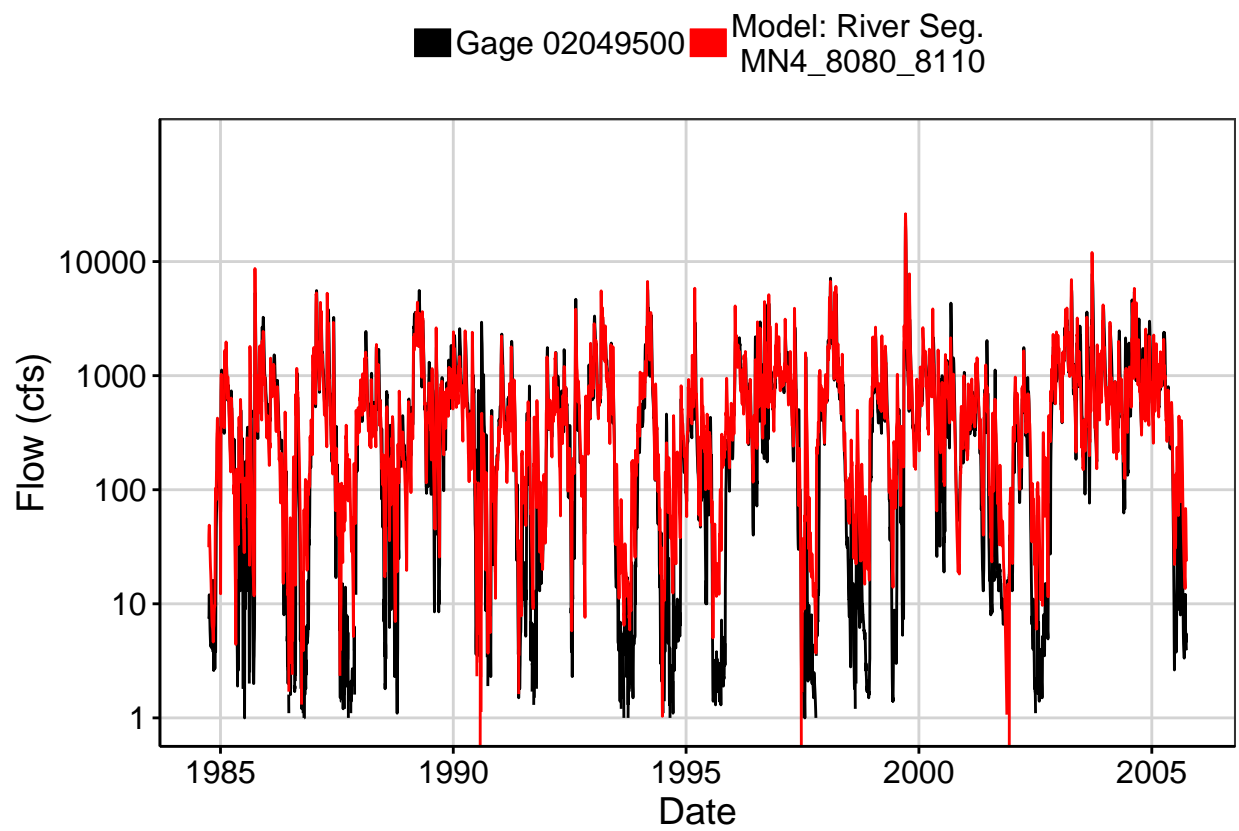


Fig. 2: Zoomed Hydrograph

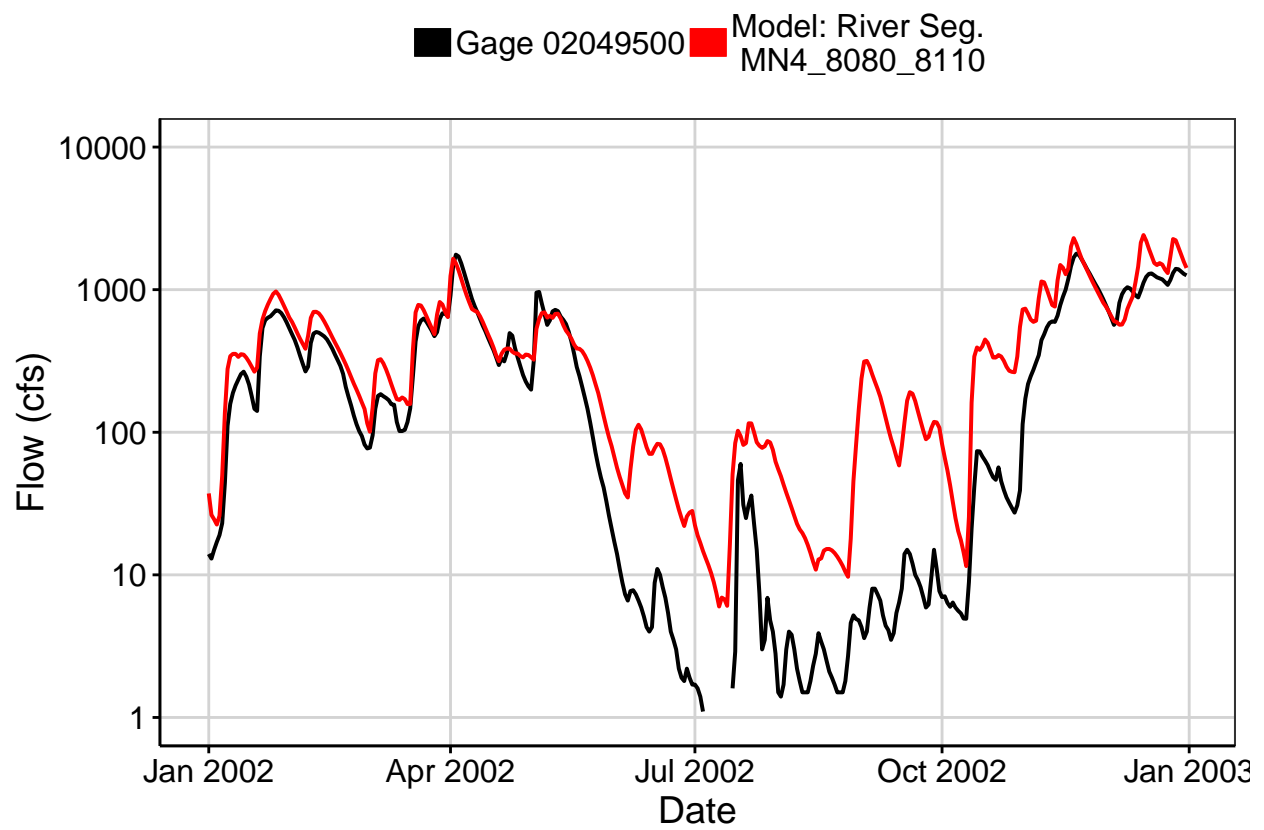


Fig. 3: Flow Exceedance

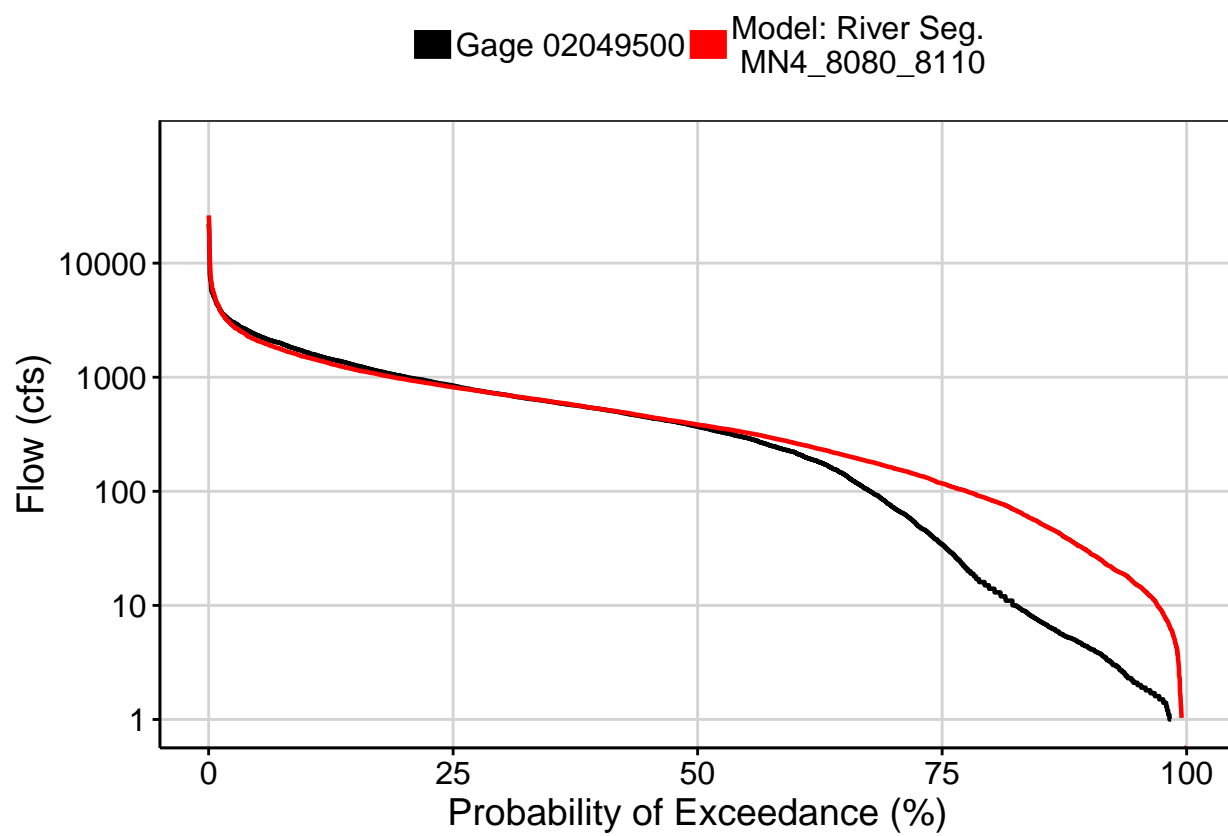


Fig. 4: Baseflow

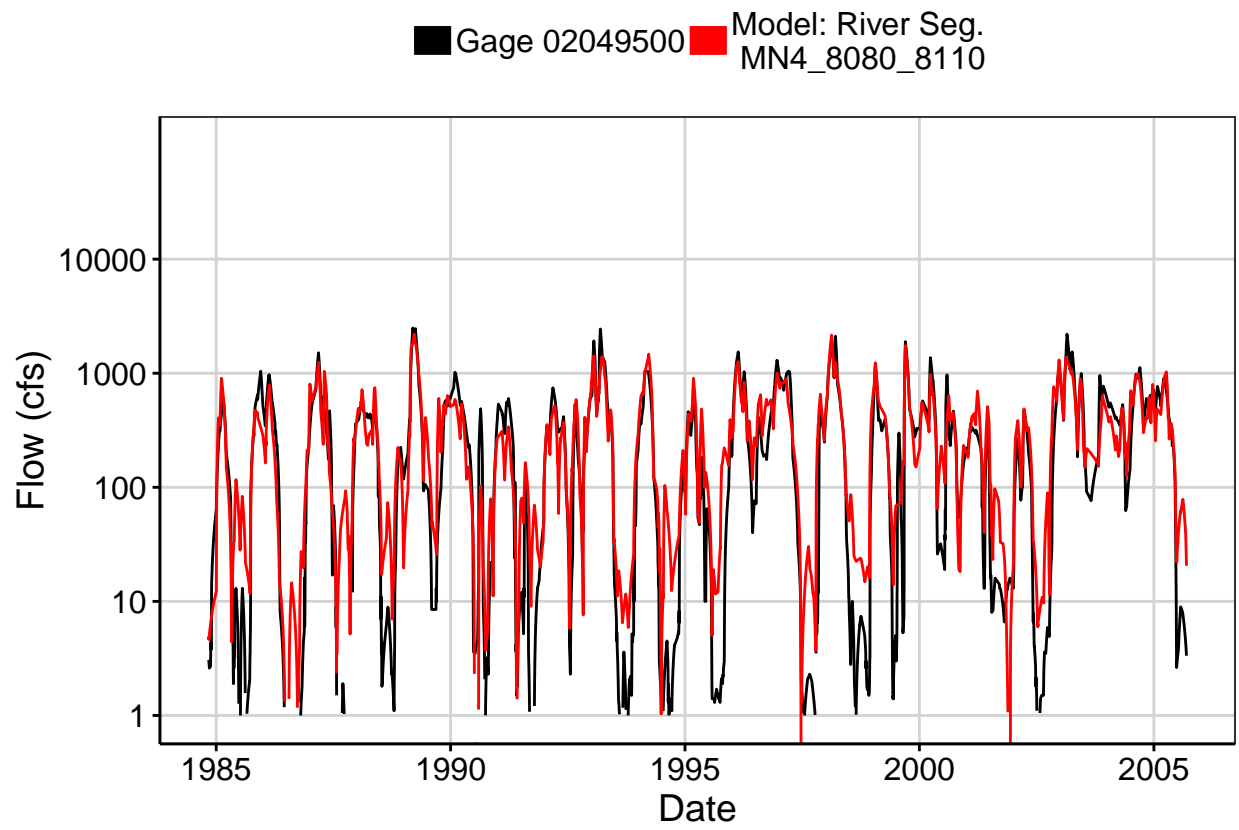


Fig. 5: Combined Baseflow

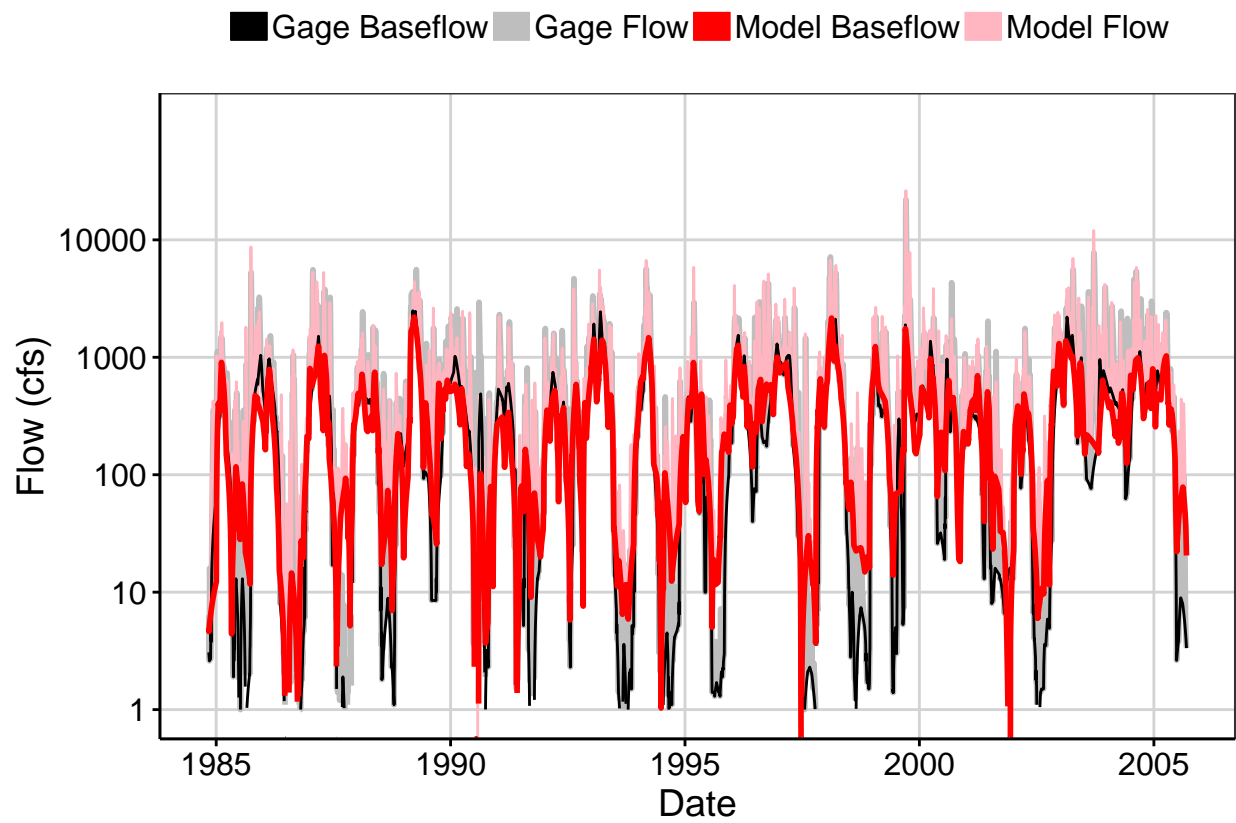




Fig. 6: Largest Error Segment

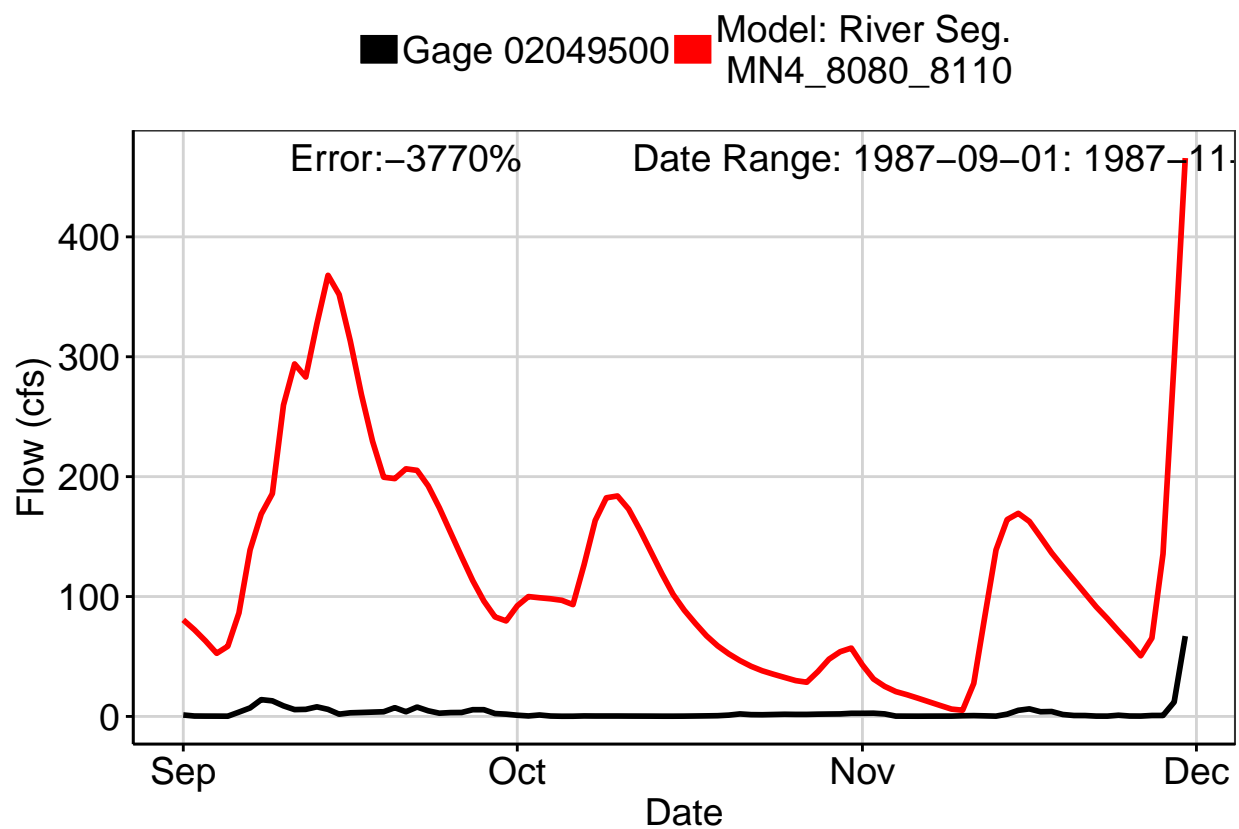


Fig. 7: Second Largest Error Segment

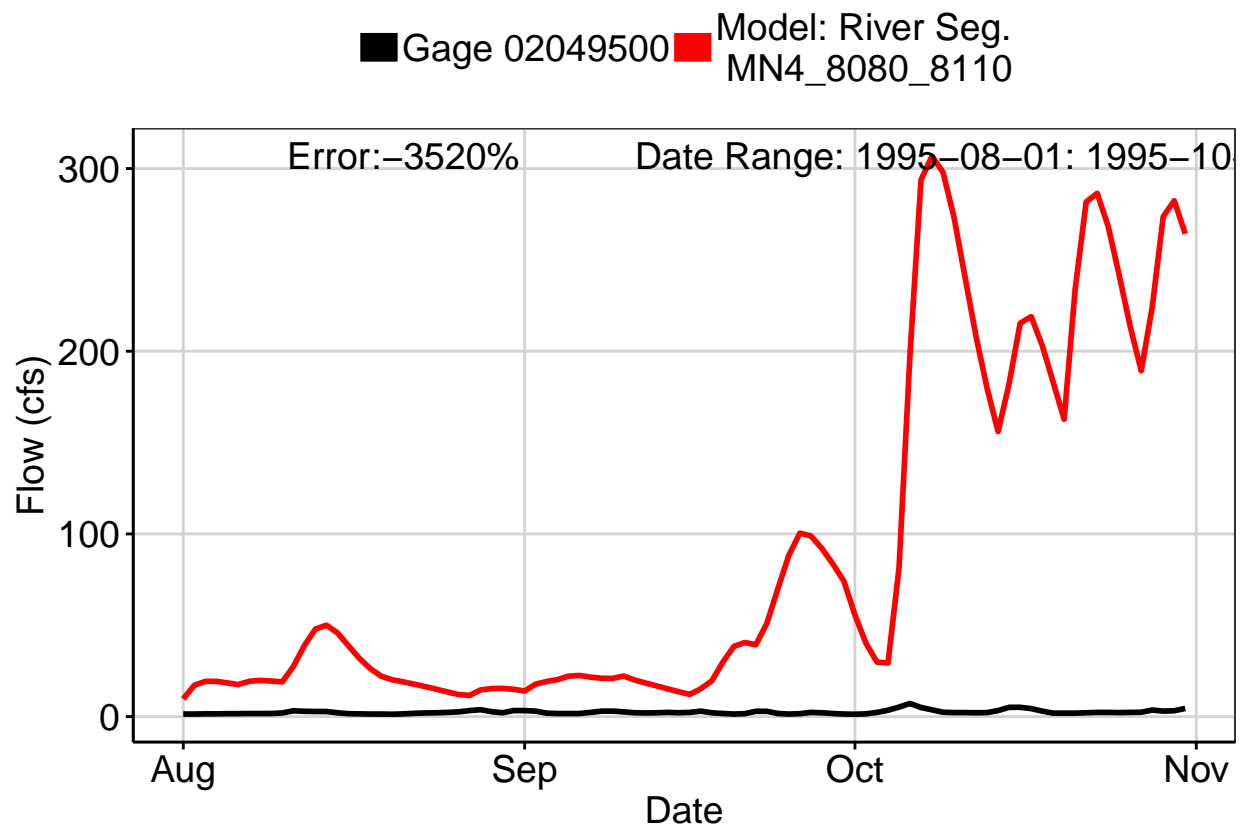


Fig. 8: Third Largest Error Segment

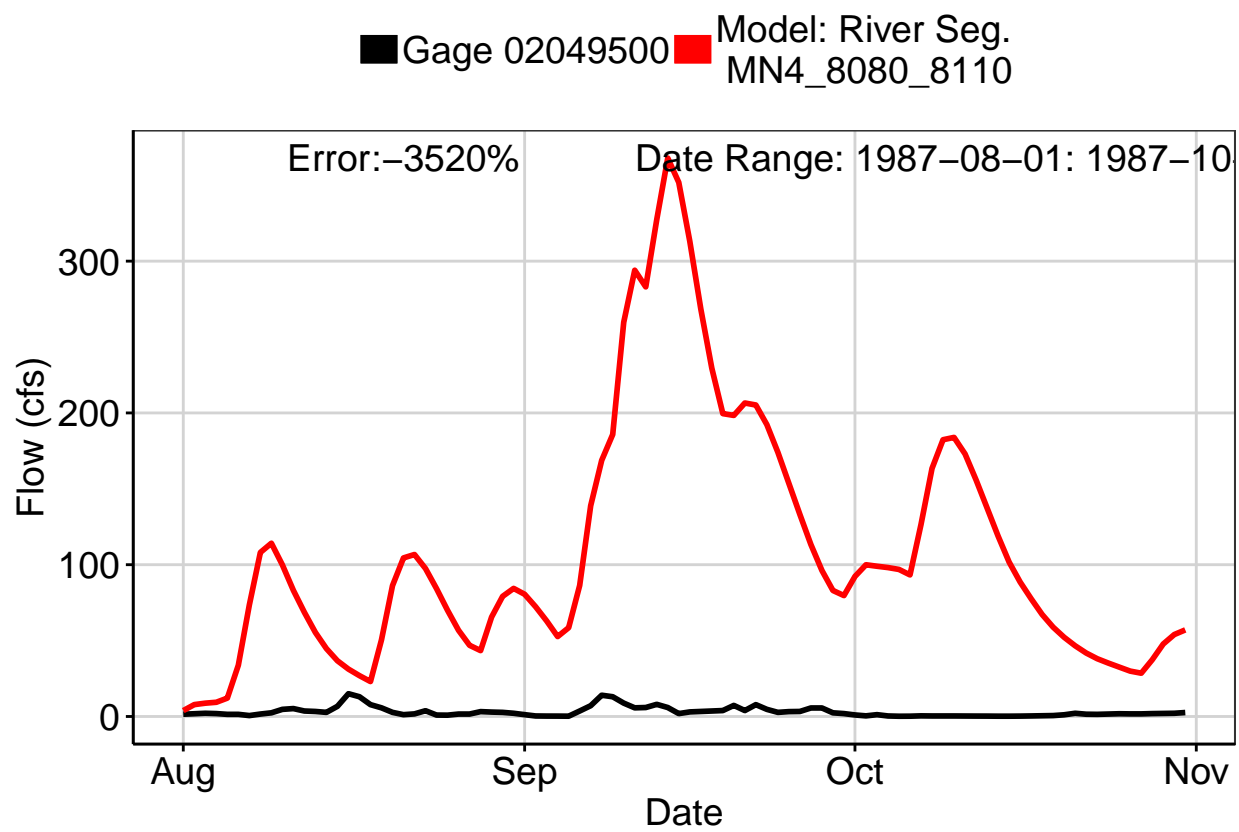


Fig. 9: Residuals Plot

