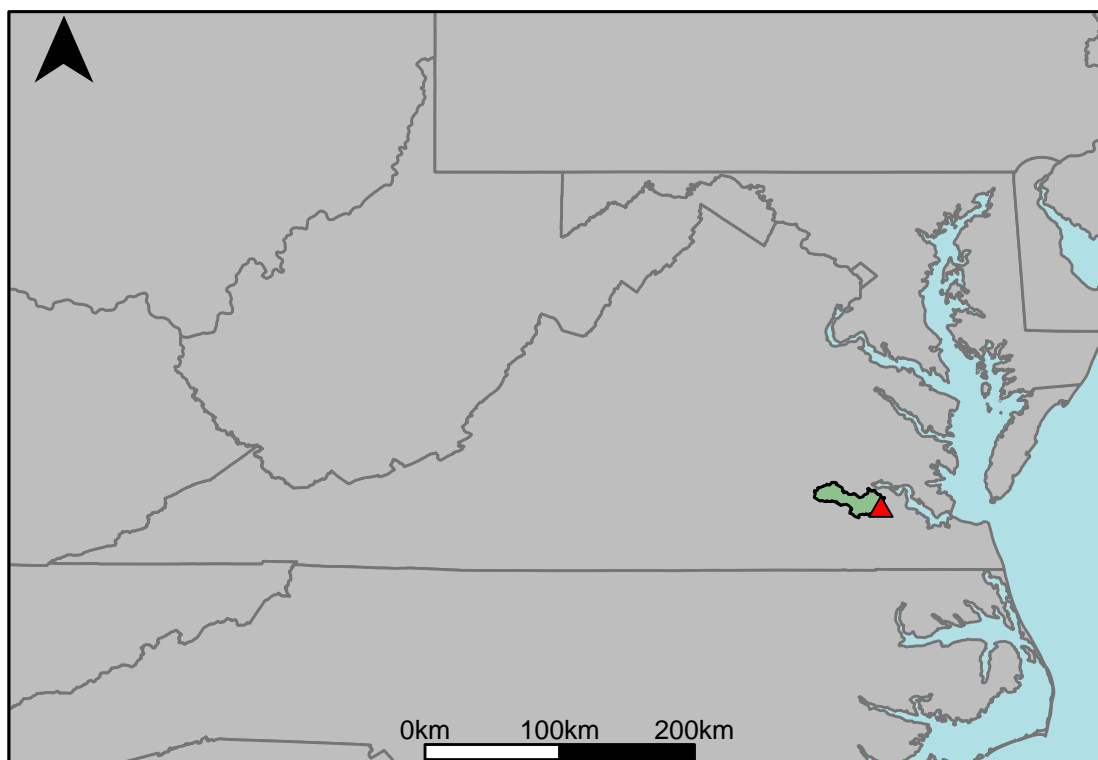


# Appendix B: Blackwater River Gages

## Appendix B.1: USGS Gage 02047500

vs. MN3\_7540\_7680



This river segment follows part of the flow of the Blackwater River, a tributary of the Meherrin River. The gage is located in Surry County, VA (Lat 37°01'30", Long 76°52'30") approximately 32 miles southeast of Petersburg, VA. Drainage area is 290 sq. miles. This gage started taking data in 1941 and is still taking data but there is a gap from 1987-01-09 to 1988-07-27. The average daily discharge error between the model and gage data for the 20 year timespan was 0.64%, with 56.2% of its rolling three month time spans above 20% error.

**Table 1: Monthly Low Flows**

	USGS Gage	Model	Pct. Error
Jan. Low Flow	8.98	13.3	48.1
Feb. Low Flow	44	75.5	71.6
Mar. Low Flow	90.5	90.6	0.11
Apr. Low Flow	150	166	10.7
May Low Flow	191	218	14.1
Jun. Low Flow	202	201	-0.5
Jul. Low Flow	150	103	-31.3
Aug. Low Flow	49	48.3	-1.43
Sep. Low Flow	8.43	14.5	72
Oct. Low Flow	0.66	14.7	2110
Nov. Low Flow	2.33	17.1	634
Dec. Low Flow	0.02	13.4	66900

**Table 2: Monthly Average Flows**

	USGS Gage	Model	Pct. Error
Overall Mean Flow	314	312	-0.64
Jan. Mean Flow	421	420	-0.24
Feb. Mean Flow	523	512	-2.1
Mar. Mean Flow	630	592	-6.03
Apr. Mean Flow	498	421	-15.5
May Mean Flow	242	240	-0.83
Jun. Mean Flow	122	143	17.2
Jul. Mean Flow	114	117	2.63
Aug. Mean Flow	207	239	15.5
Sep. Mean Flow	391	391	0
Oct. Mean Flow	162	187	15.4
Nov. Mean Flow	198	210	6.06
Dec. Mean Flow	301	304	1

**Table 3: Monthly High Flows**

	USGS Gage	Model	Pct. Error
Jan. High Flow	110	201	82.7
Feb. High Flow	266	426	60.2
Mar. High Flow	546	470	-13.9
Apr. High Flow	672	893	32.9
May High Flow	899	892	-0.78
Jun. High Flow	960	982	2.29
Jul. High Flow	1040	988	-5
Aug. High Flow	549	490	-10.7
Sep. High Flow	344	223	-35.2
Oct. High Flow	337	149	-55.8
Nov. High Flow	331	301	-9.06
Dec. High Flow	110	243	121

**Table 4: Period Low Flows**

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	0.00	2.70e-01	Inf
Med. 1 Day Min	0.00	3.41	Inf
Min. 3 Day Min	0.00	3.10e-01	-1.73e+16
Med. 3 Day Min	0.00	3.76	8.12e+18
Min. 7 Day Min	0.00	4.30e-01	-2.85e+15
Med. 7 Day Min	0.00	4.03	1.87e+17
Min. 30 Day Min	0.00	2.84	-8.90e+15
Med. 30 Day Min	1.74	1.04e+01	4.98e+02
Min. 90 Day Min	1.07	1.40e+01	1.21e+03
Med. 90 Day Min	4.02e+01	5.60e+01	3.93e+01
7Q10	0.00	1.35	2.80e+16
Year of 90-Day Min. Flow	2.00e+03	1.99e+03	1.00e+02
Drought Year Mean	5.51e+01	1.02e+02	8.51e+01
Mean Baseflow	1.42e+02	1.44e+02	1.41

**Table 5: Period High Flows**

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	11400	13900	21.9
Med. 1 Day Max	2350	2460	4.68
Max. 3 Day Max	10700	12600	17.8
Med. 3 Day Max	2210	2090	-5.43
Max. 7 Day Max	7710	9150	18.7
Med. 7 Day Max	1930	1650	-14.5
Max. 30 Day Max	2350	2750	17
Med. 30 Day Max	823	725	-11.9
Max. 90 Day Max	1410	1230	-12.8
Med. 90 Day Max	582	508	-12.7

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	0	3.03	Inf
5% Non-Exceedance	0	6.86	Inf
50% Non-Exceedance	154	180	16.9
95% Non-Exceedance	1150	1030	-10.4
99% Non-Exceedance	2150	2020	-6.05
Sept. 10% Non-Exceedance	6.89	0	-100

Fig. 1: Hydrograph

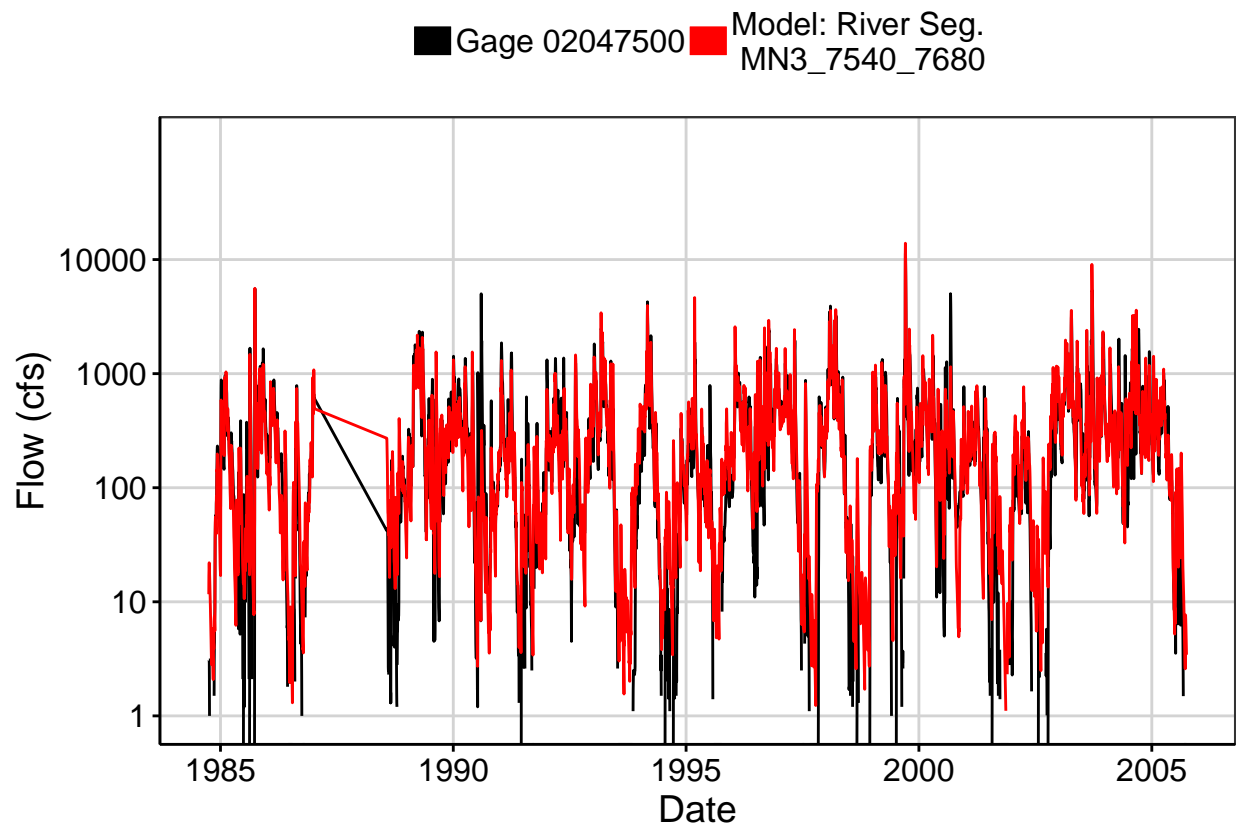


Fig. 2: Zoomed Hydrograph

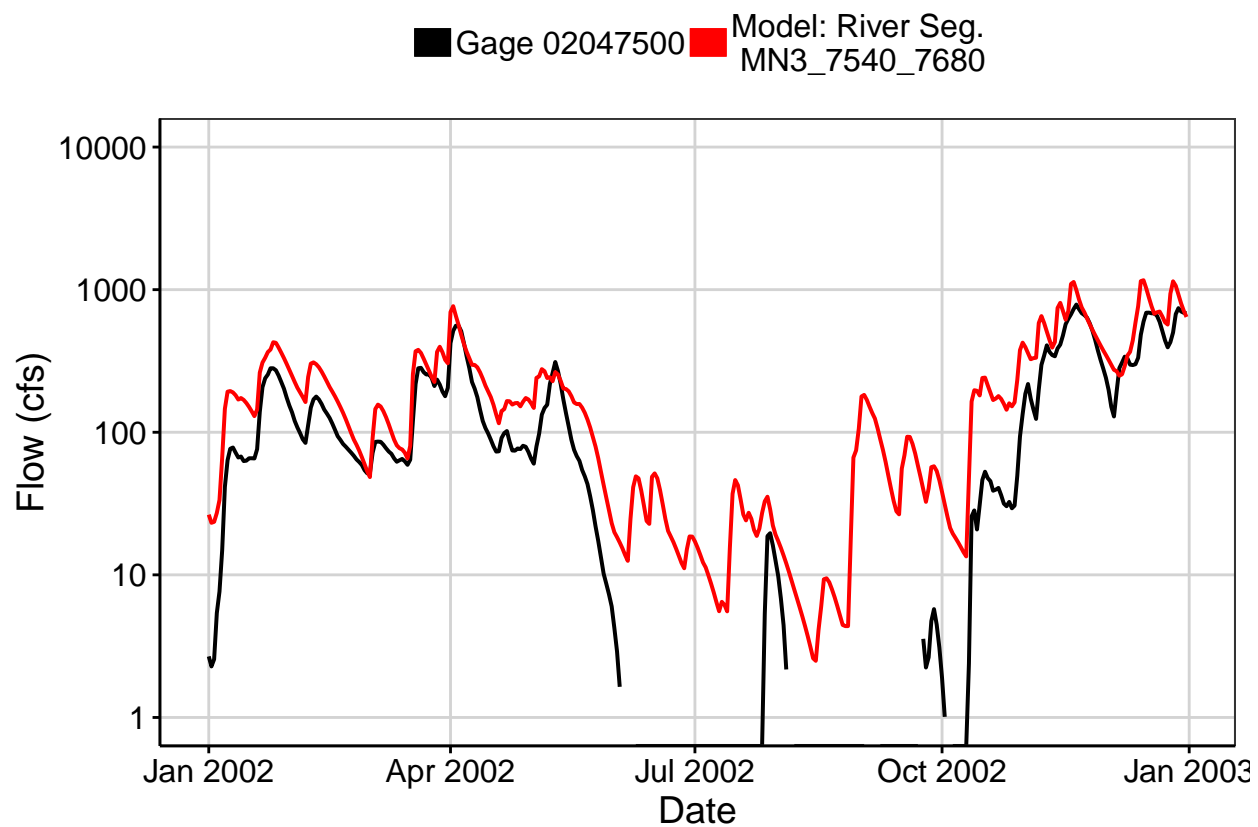


Fig. 3: Flow Exceedance

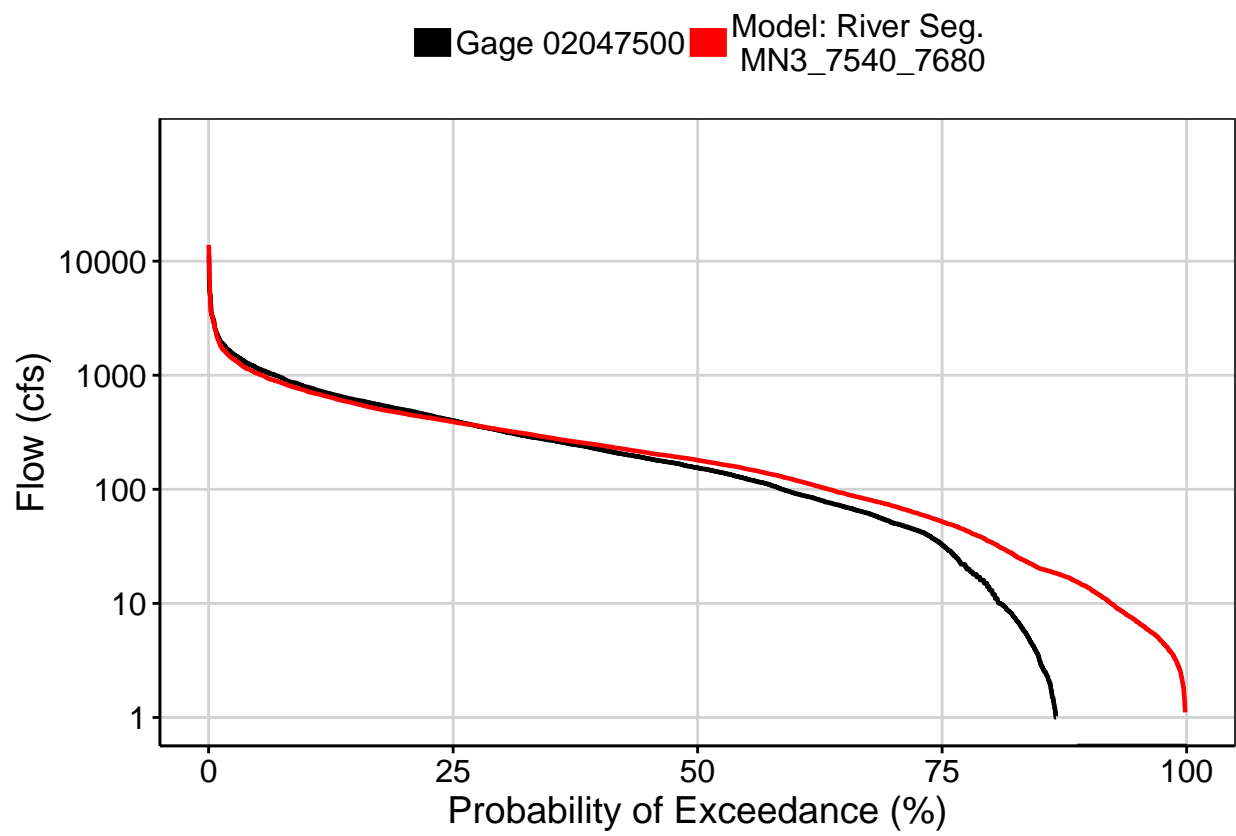


Fig. 4: Baseflow

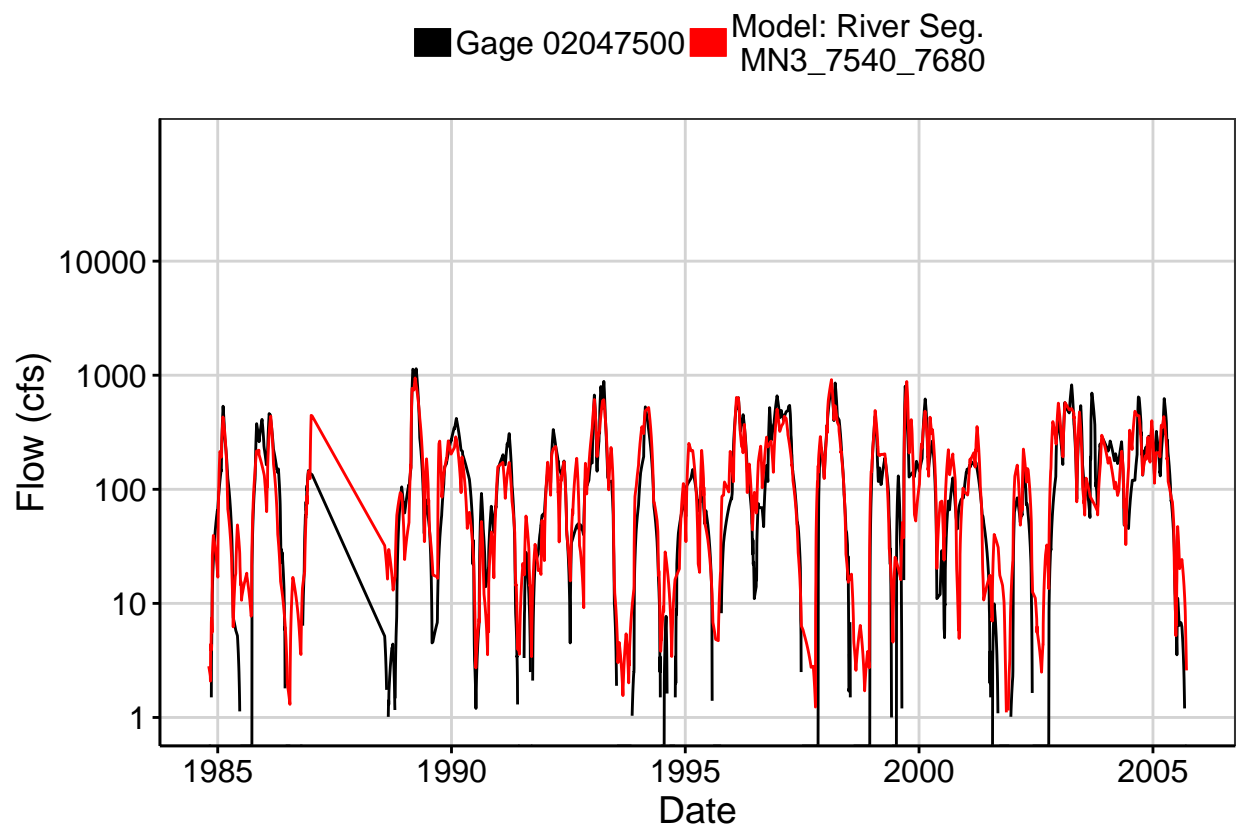


Fig. 5: Combined Baseflow

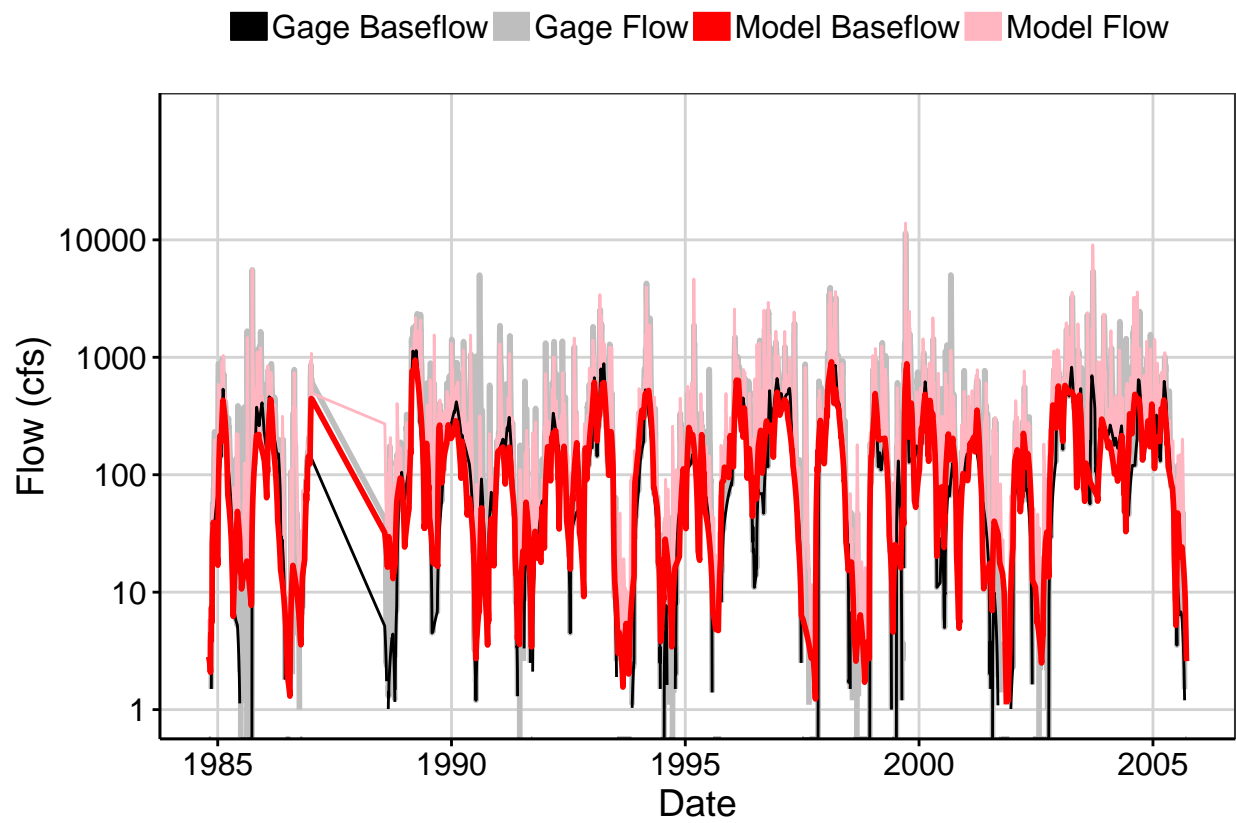




Fig. 6: Largest Error Segment

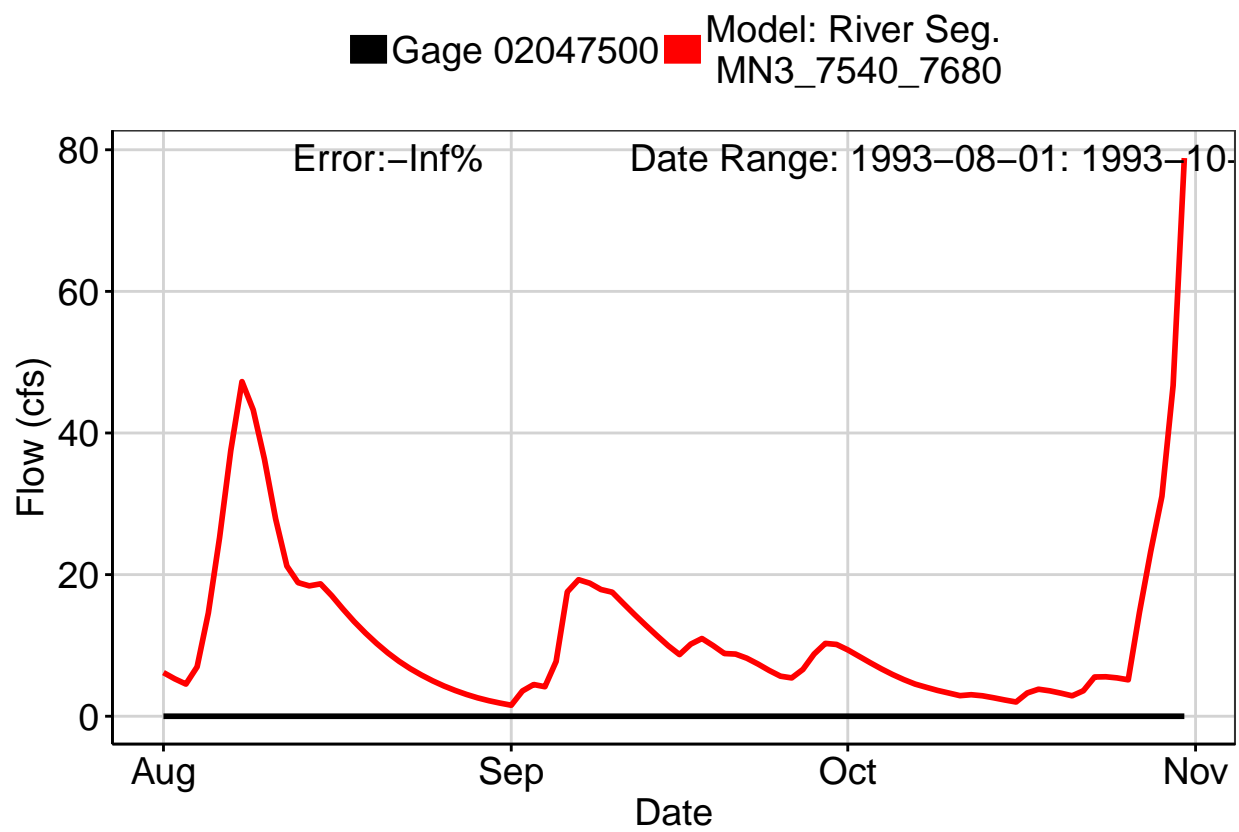


Fig. 7: Second Largest Error Segment

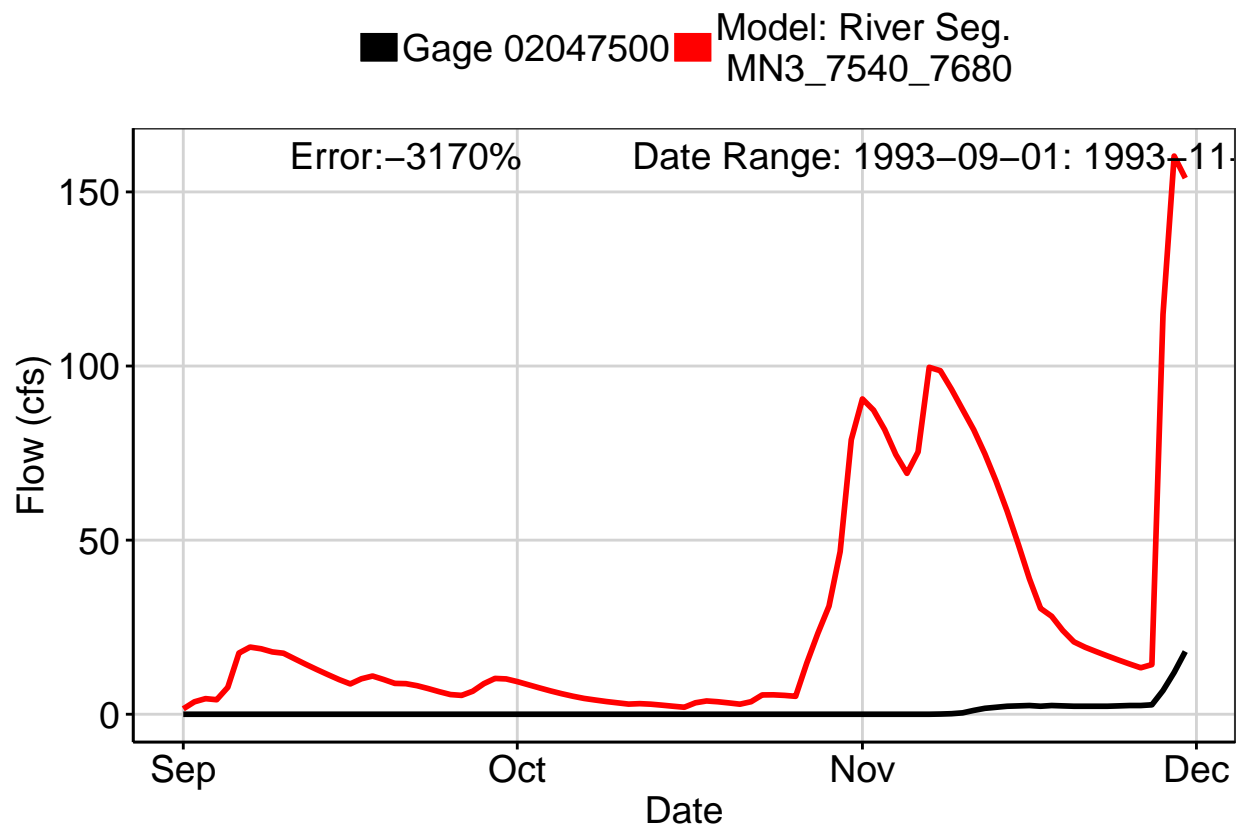


Fig. 8: Third Largest Error Segment

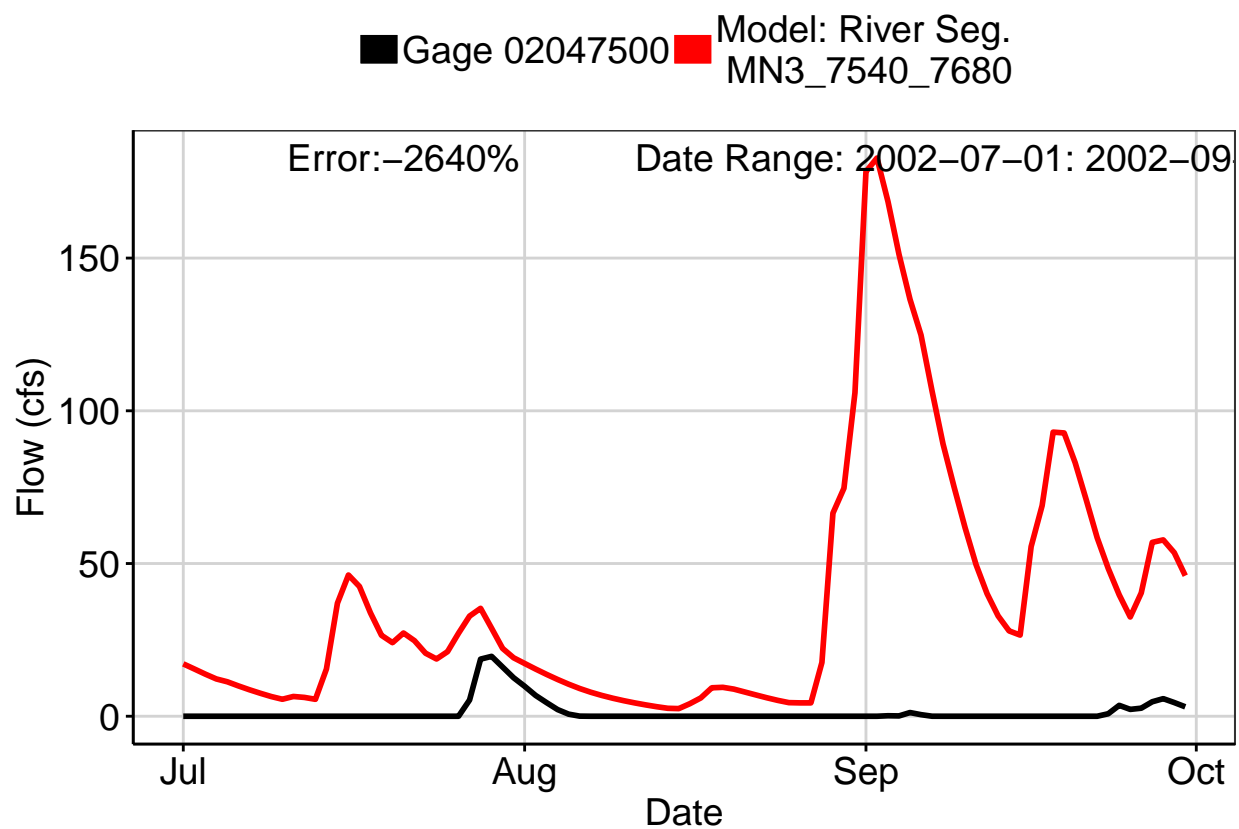


Fig. 9: Residuals Plot

