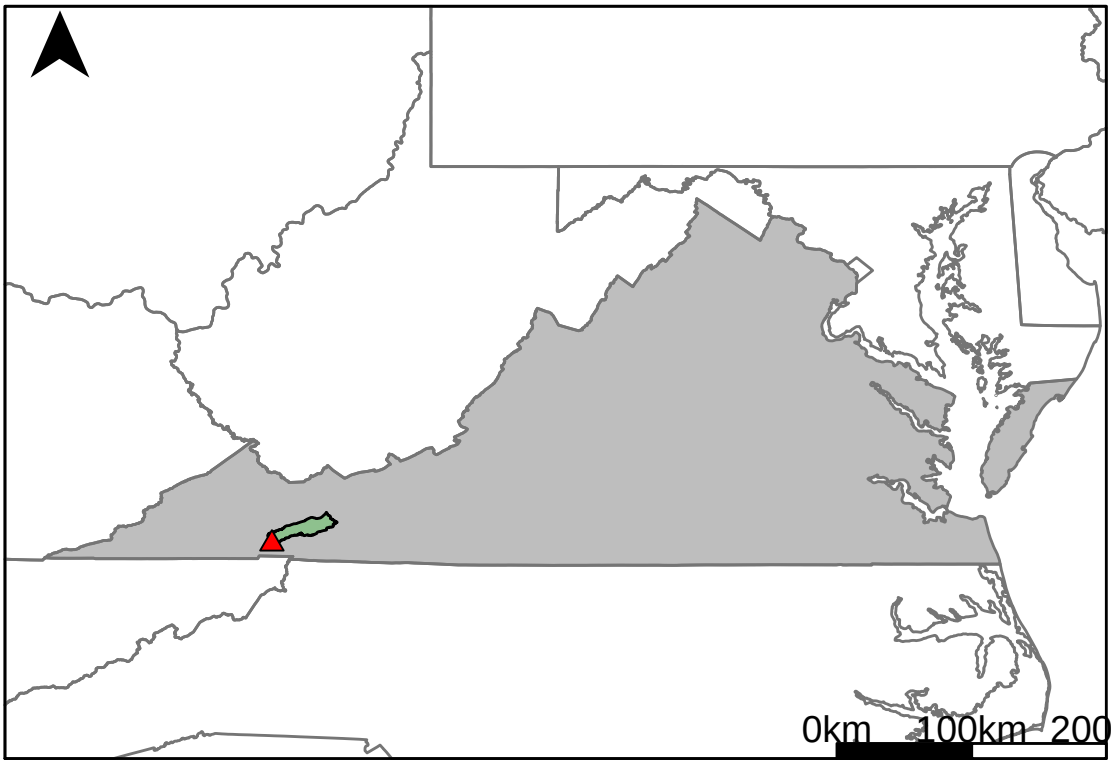
Appendix D.3: USGS Gage 03475000 vs. TU2_8790_9070



This river segment follows part of the flow of the Middle Fork of the Houston River, a tributary of the Tennessee River. The gage is located in Washington County, VA (Lat 3642'47", Long 8149'08") approximately 22 miles northeast of Bristol, VA. Drainage area is 206 sq. miles. This gage started taking data in 1931 and is still taking data. The Edmondson Power Company Dam was located 0.9 miles upstream of this gage but was decommissioned and removed in 1982. The average daily discharge error between the model and gage data for the 20 year timespan was 0%, with 34.2% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	62	43.5	29.8
Feb. Low Flow	62	61.3	1.13
Mar. Low Flow	94	87.8	6.6
Apr. Low Flow	117	140	-19.7
May Low Flow	196	214	-9.18
Jun. Low Flow	218	231	-5.96
Jul. Low Flow	198	172	13.1
Aug. Low Flow	144	127	11.8
Sep. Low Flow	116	101	12.9
Oct. Low Flow	83	66	20.5
Nov. Low Flow	80	58.3	27.1
Dec. Low Flow	67	51.3	23.4

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	253	253	0
Jan. Mean Flow	321	343	-6.85
Feb. Mean Flow	470	481	-2.34
Mar. Mean Flow	472	476	-0.85
Apr. Mean Flow	380	367	3.42
May Mean Flow	296	252	14.9
Jun. Mean Flow	224	204	8.93
Jul. Mean Flow	173	146	15.6
Aug. Mean Flow	134	135	-0.75
Sep. Mean Flow	107	117	-9.35
Oct. Mean Flow	99.8	123	-23.2
Nov. Mean Flow	144	166	-15.3
Dec. Mean Flow	228	243	-6.58

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	118	113	4.24
Feb. High Flow	222	239	-7.66
Mar. High Flow	792	367	53.7
Apr. High Flow	965	1080	-11.9
May High Flow	1430	1060	25.9
Jun. High Flow	1250	1430	-14.4
Jul. High Flow	663	650	1.96
Aug. High Flow	733	540	26.3
Sep. High Flow	399	315	21.1
Oct. High Flow	281	250	11
Nov. High Flow	228	184	19.3
Dec. High Flow	168	151	10.1

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	39	8.17	79.1
Med. 1 Day Min	56	22.7	59.5
Min. 3 Day Min	40	8.82	78
Med. 3 Day Min	56.7	24.1	57.5
Min. 7 Day Min	40.7	9.73	76.1
Med. 7 Day Min	58.7	26.4	55
Min. 30 Day Min	49.6	13.3	73.2
Med. 30 Day Min	65.8	42	36.2
Min. 90 Day Min	53.2	37.3	29.9
Med. 90 Day Min	84.1	77.7	7.61
7Q10	47.1	12.6	73.2
Year of 90-Day Min. Flow	1988	1985	100
Drought Year Mean	119	253	-113
Mean Baseflow	149	155	-4.03

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	7040	5960	15.3
Med. 1 Day Max	2810	2580	8.19
Max. 3 Day Max	4180	4020	3.83
Med. 3 Day Max	1880	1750	6.91
Max. 7 Day Max	2690	2450	8.92
Med. 7 Day Max	1220	1080	11.5
Max. 30 Day Max	1170	1400	-19.7
Med. 30 Day Max	653	641	1.84
Max. 90 Day Max	789	932	-18.1
Med. 90 Day Max	444	539	-21.4

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	49	17.9	63.5
5% Non-Exceedance	60	35.1	41.5
50% Non-Exceedance	152	167	-9.87
95% Non-Exceedance	731	678	7.25
99% Non-Exceedance	1500	1480	1.33
Sept. 10% Non-Exceedance	32.2	32.2	0

Fig. 1: Hydrograph

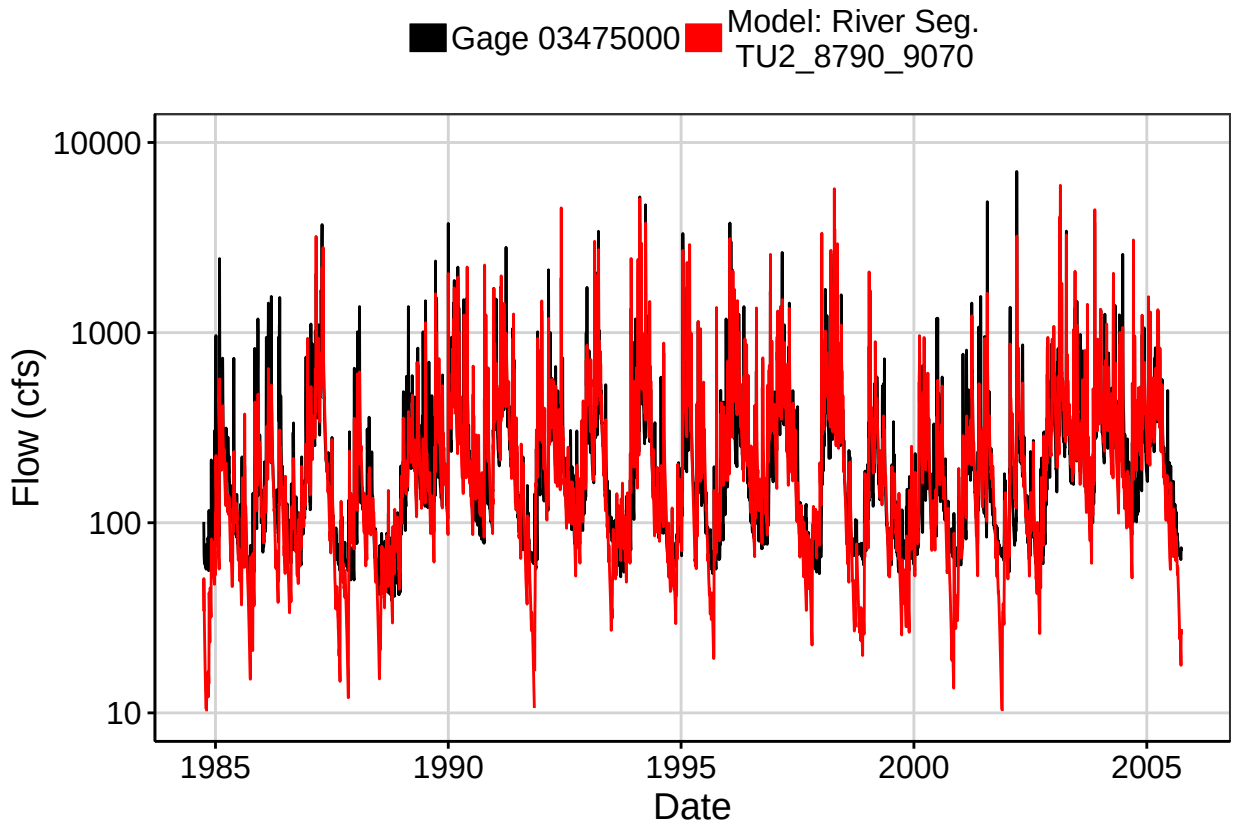


Fig. 2: Zoomed Hydrograph

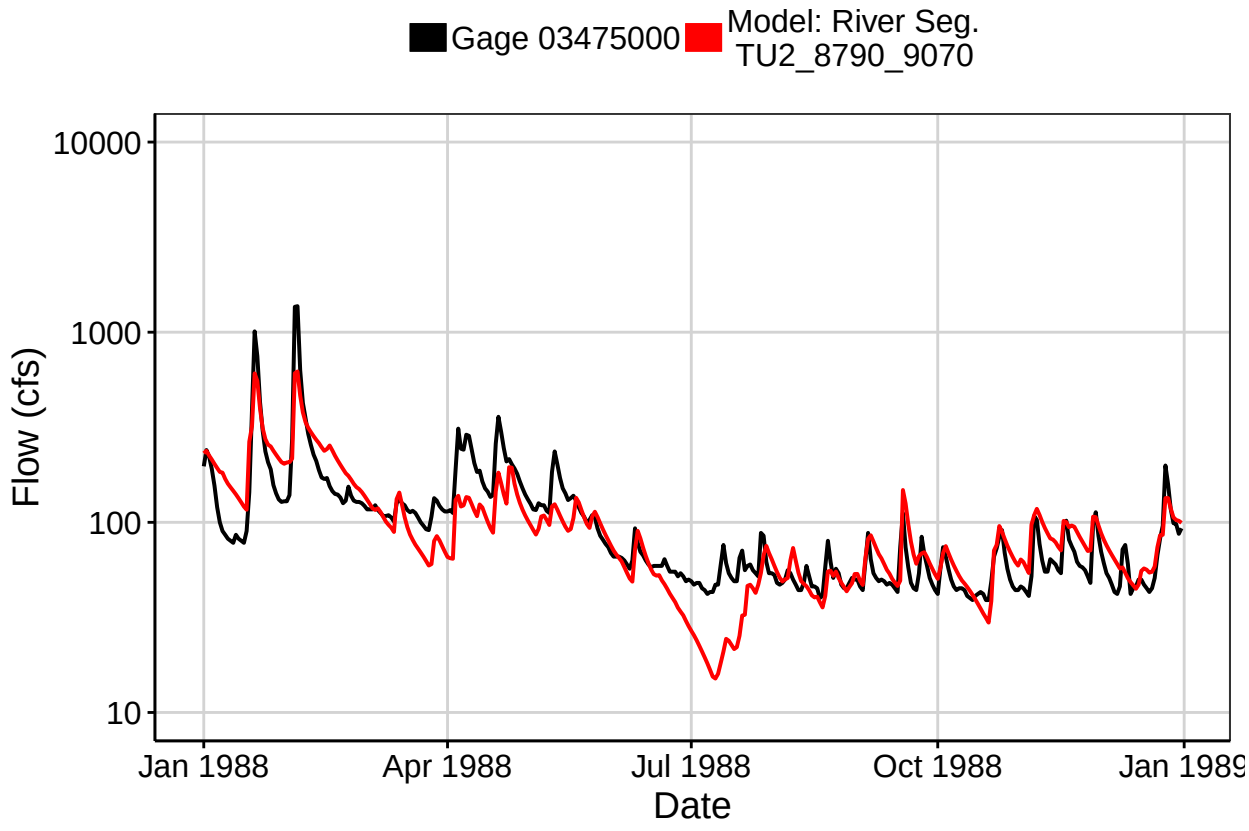


Fig. 3: Flow Exceedance

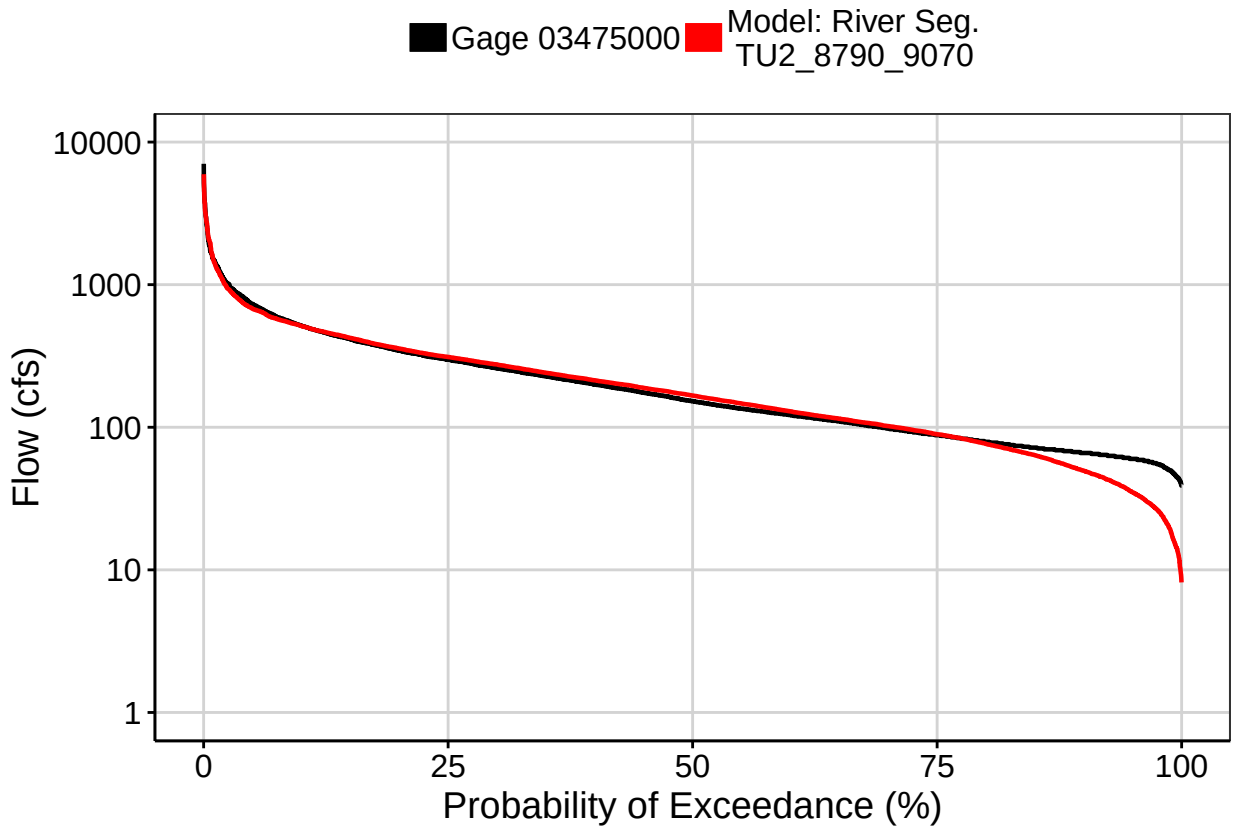


Fig. 4: Baseflow

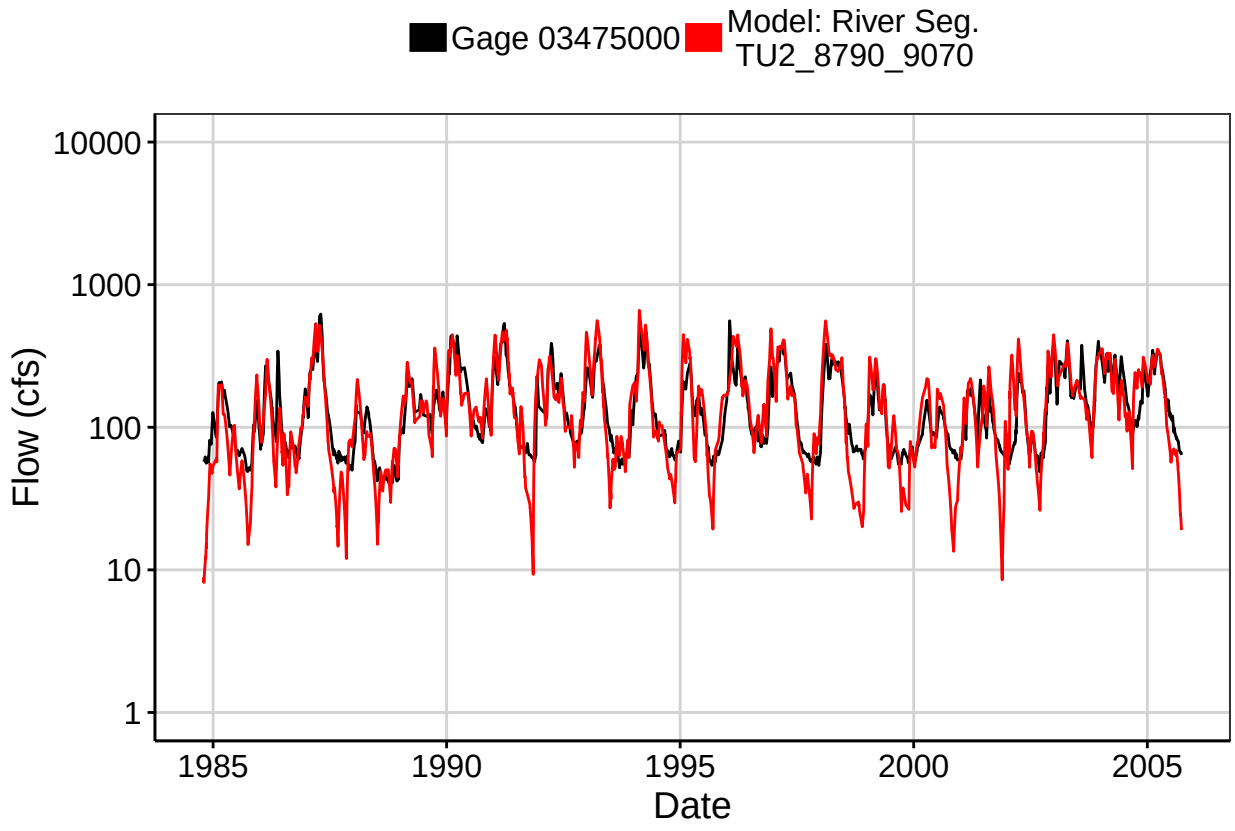


Fig. 5: Combined Baseflow

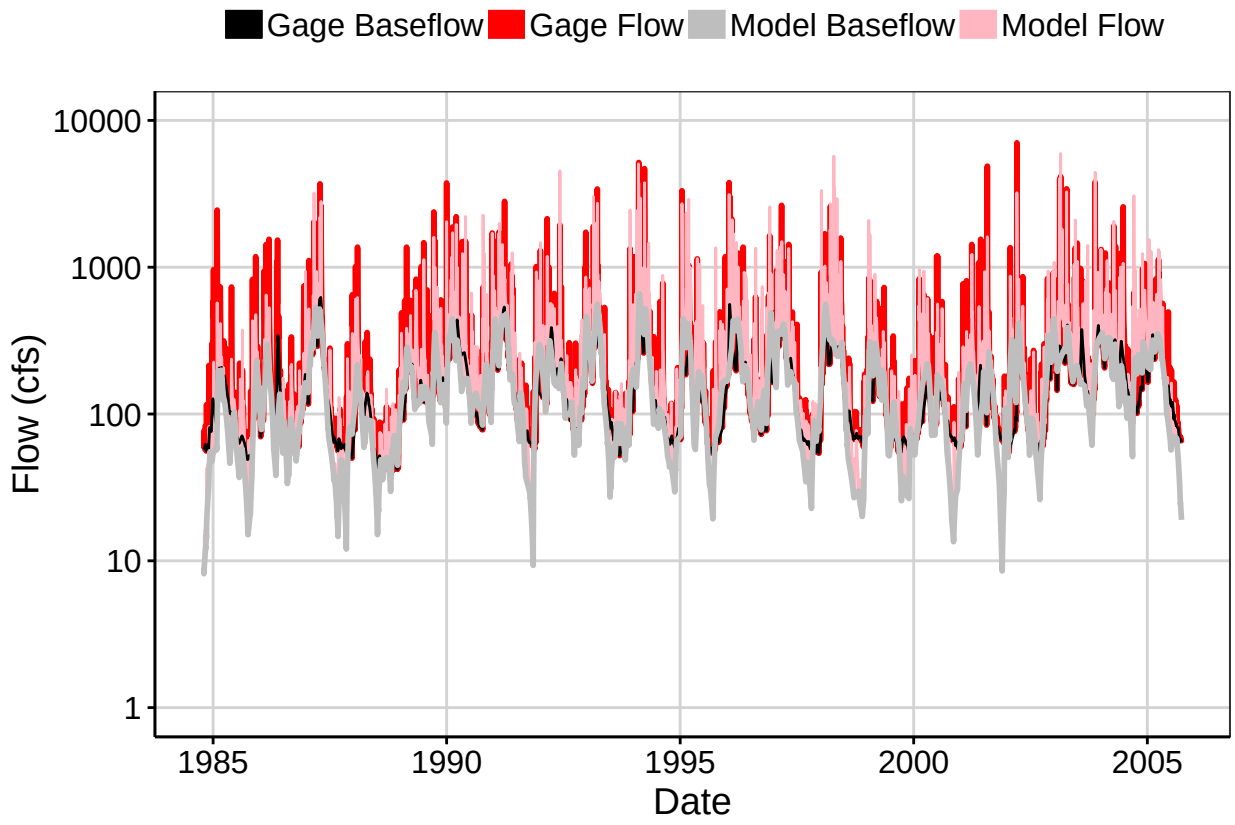


Fig. 6: Largest Error Segment

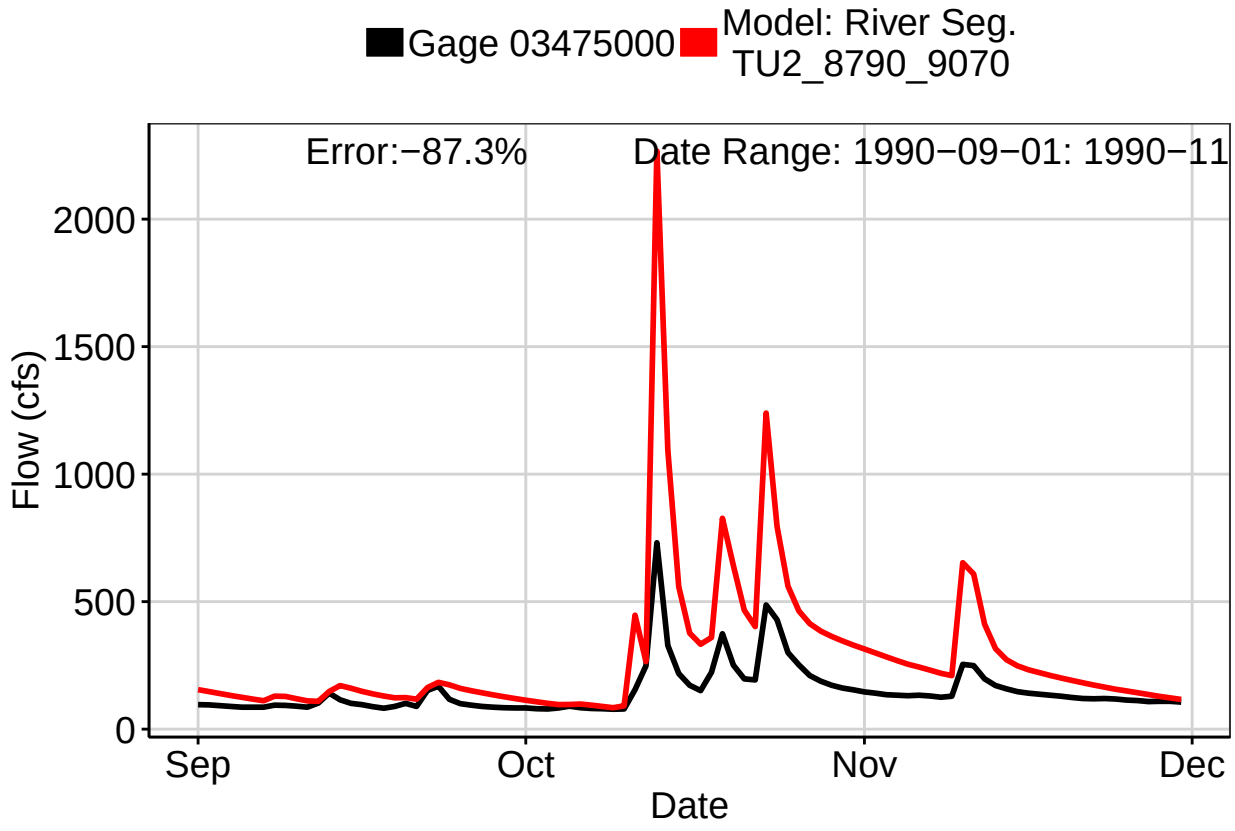


Fig. 7: Second Largest Error Segment

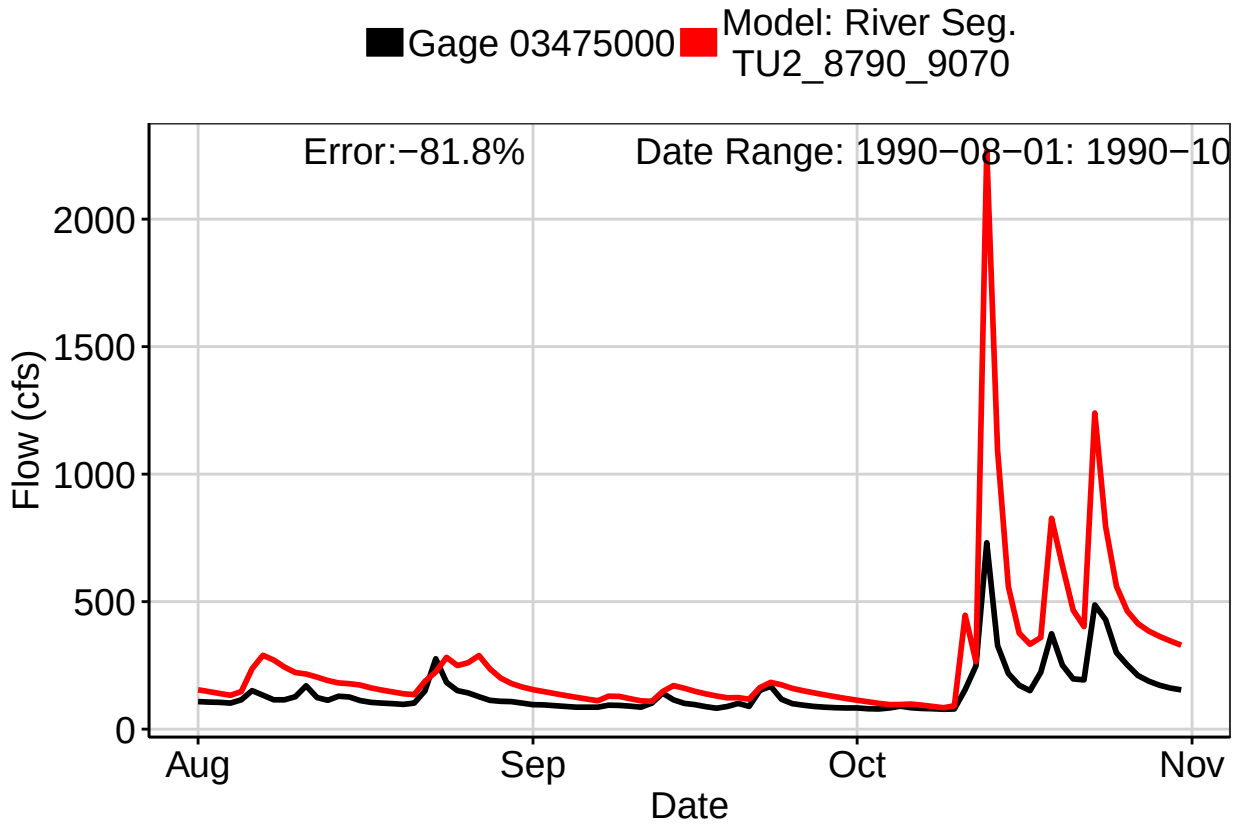


Fig. 8: Third Largest Error Segment

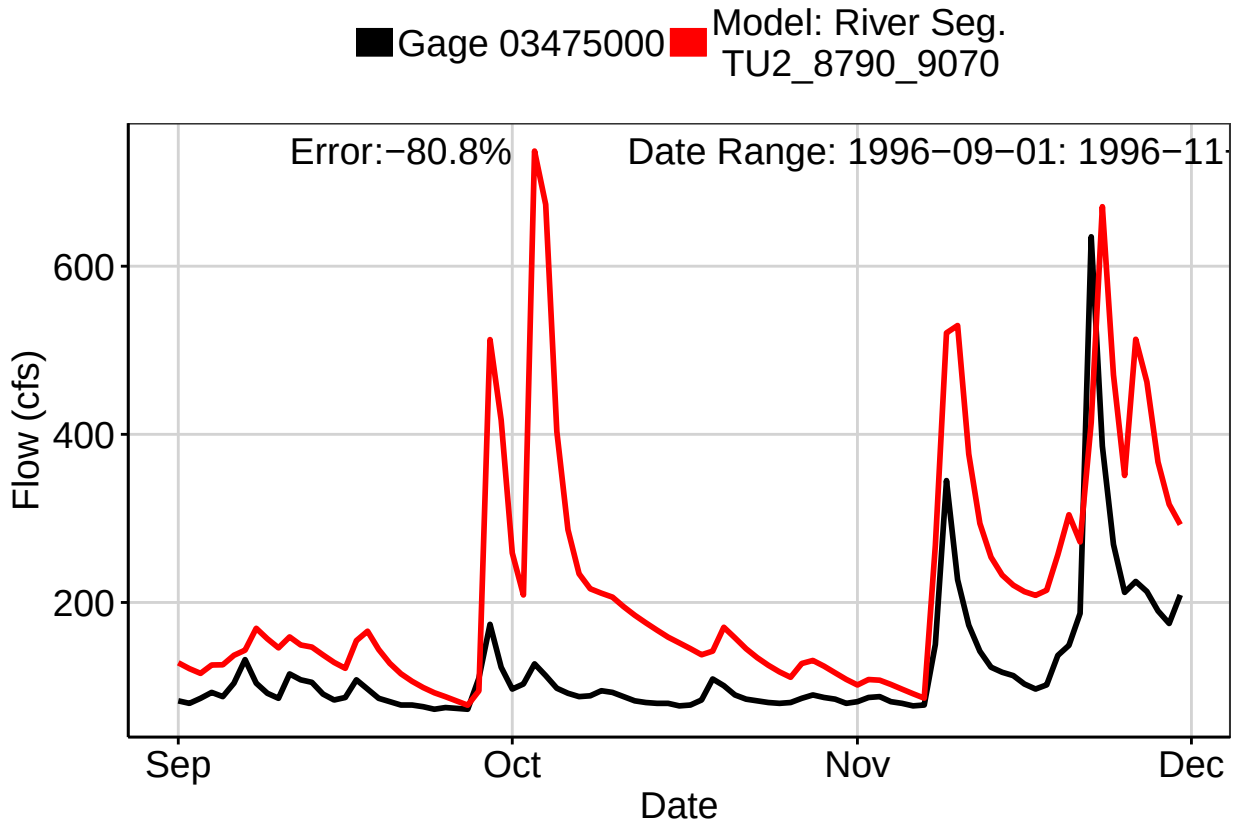


Fig. 9: Residuals Plot