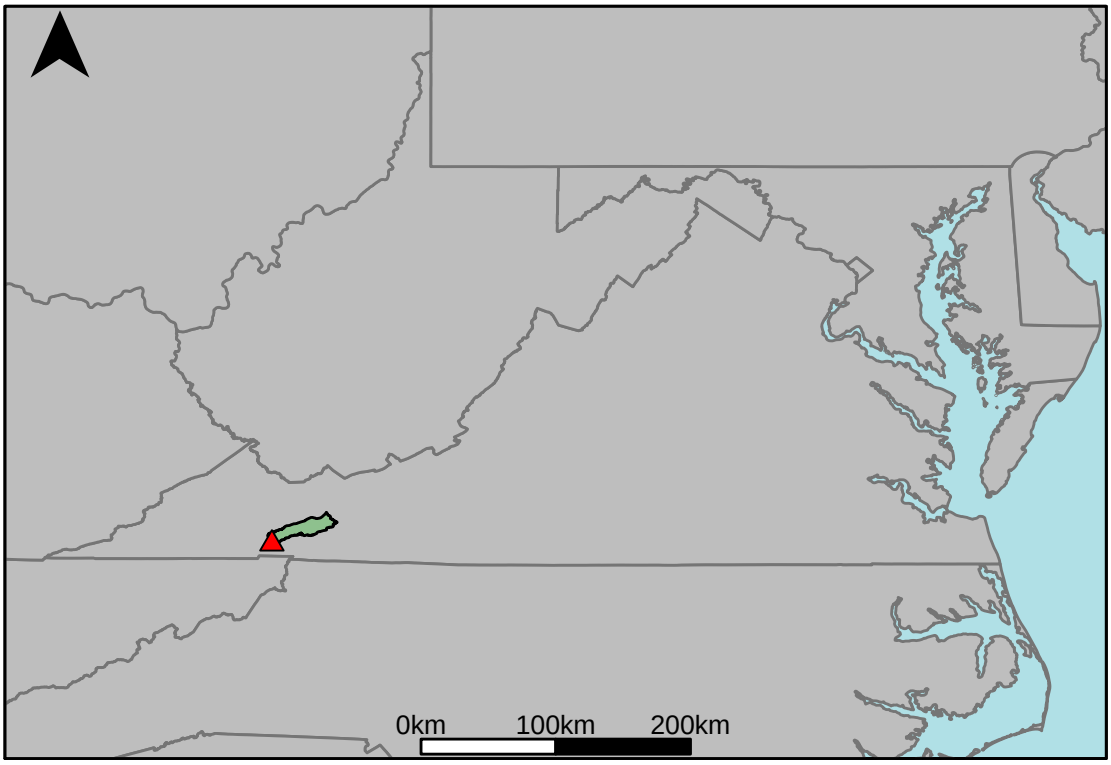
Appendix D.3: USGS Gage 03475000 vs. TU2_8790_9070



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 0.79%, with 32.9% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	62	43.1	-30.5
Feb. Low Flow	62	60.7	-2.1
Mar. Low Flow	94	86.9	-7.55
Apr. Low Flow	117	139	18.8
May Low Flow	196	212	8.16
Jun. Low Flow	218	229	5.05
Jul. Low Flow	198	171	-13.6
Aug. Low Flow	144	126	-12.5
Sep. Low Flow	116	100	-13.8
Oct. Low Flow	83	65.4	-21.2
Nov. Low Flow	80	57.7	-27.9
Dec. Low Flow	67	50.8	-24.2

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	253	251	-0.79
Jan. Mean Flow	321	340	5.92
Feb. Mean Flow	470	476	1.28
Mar. Mean Flow	472	471	-0.21
Apr. Mean Flow	380	363	-4.47
May Mean Flow	296	249	-15.9
Jun. Mean Flow	224	202	-9.82
Jul. Mean Flow	173	145	-16.2
Aug. Mean Flow	134	134	0
Sep. Mean Flow	107	115	7.48
Oct. Mean Flow	99.8	122	22.2
Nov. Mean Flow	144	164	13.9
Dec. Mean Flow	228	241	5.7

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	118	112	-5.08
Feb. High Flow	222	236	6.31
Mar. High Flow	792	364	-54
Apr. High Flow	965	1070	10.9
May High Flow	1430	1050	-26.6
Jun. High Flow	1250	1410	12.8
Jul. High Flow	663	644	-2.87
Aug. High Flow	733	535	-27
Sep. High Flow	399	312	-21.8
Oct. High Flow	281	248	-11.7
Nov. High Flow	228	183	-19.7
Dec. High Flow	168	149	-11.3

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	39	8.1	-79.2
Med. 1 Day Min	56	22.5	-59.8
Min. 3 Day Min	40	8.73	-78.2
Med. 3 Day Min	56.7	23.9	-57.8
Min. 7 Day Min	40.7	9.64	-76.3
Med. 7 Day Min	58.7	26.2	-55.4
Min. 30 Day Min	49.6	13.2	-73.4
Med. 30 Day Min	65.8	41.6	-36.8
Min. 90 Day Min	53.2	37	-30.5
Med. 90 Day Min	84.1	77	-8.44
7Q10	47.1	12.5	-73.5
Year of 90-Day Min. Flow	1988	1985	100
Drought Year Mean	119	105	-11.8
Mean Baseflow	149	154	3.36

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	7040	5900	-16.2
Med. 1 Day Max	2810	2560	-8.9
Max. 3 Day Max	4180	3980	-4.78
Med. 3 Day Max	1880	1740	-7.45
Max. 7 Day Max	2690	2420	-10
Med. 7 Day Max	1220	1070	-12.3
Max. 30 Day Max	1170	1390	18.8
Med. 30 Day Max	653	635	-2.76
Max. 90 Day Max	789	923	17
Med. 90 Day Max	444	534	20.3

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	49	17.7	-63.9
5% Non-Exceedance	60	34.7	-42.2
50% Non-Exceedance	152	165	8.55
95% Non-Exceedance	731	672	-8.07
99% Non-Exceedance	1500	1470	-2
Sept. 10% Non-Exceedance	31.9	56	75.5

Fig. 1: Hydrograph

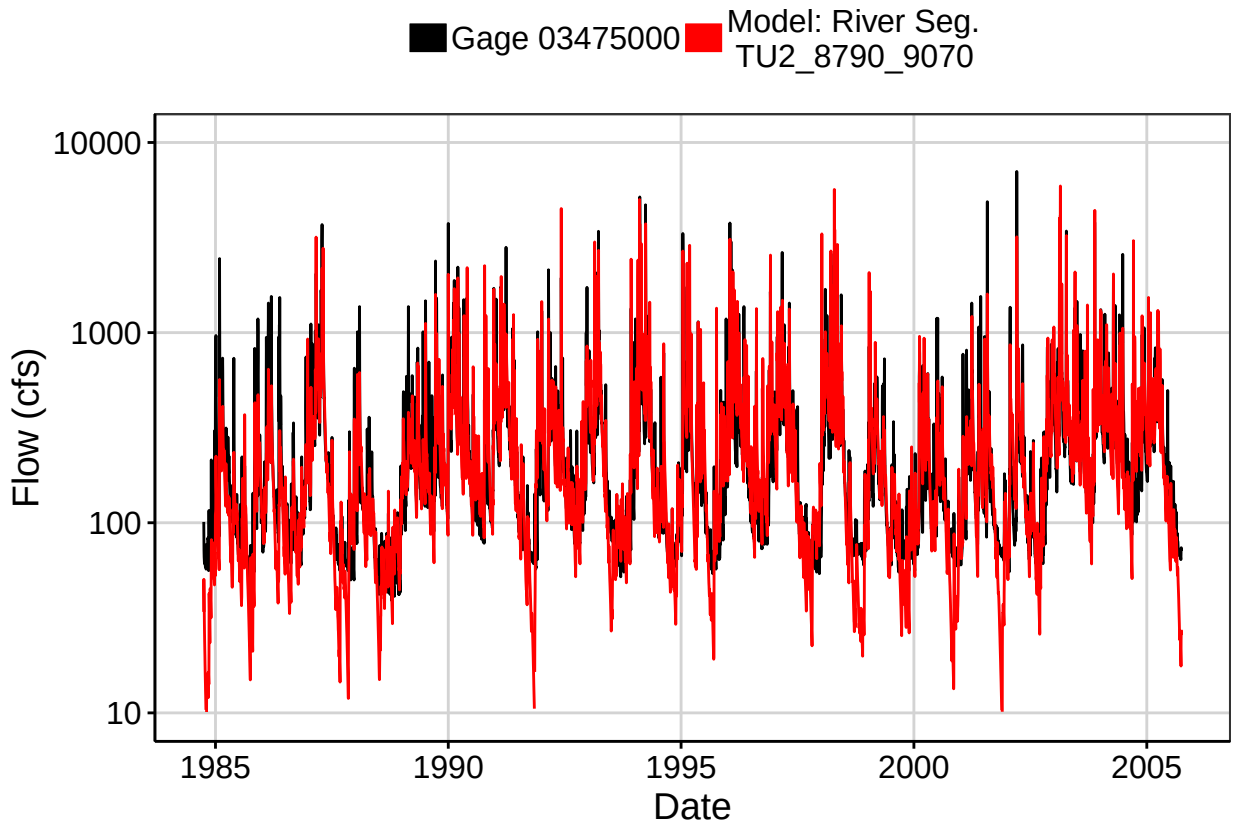


Fig. 2: Zoomed Hydrograph

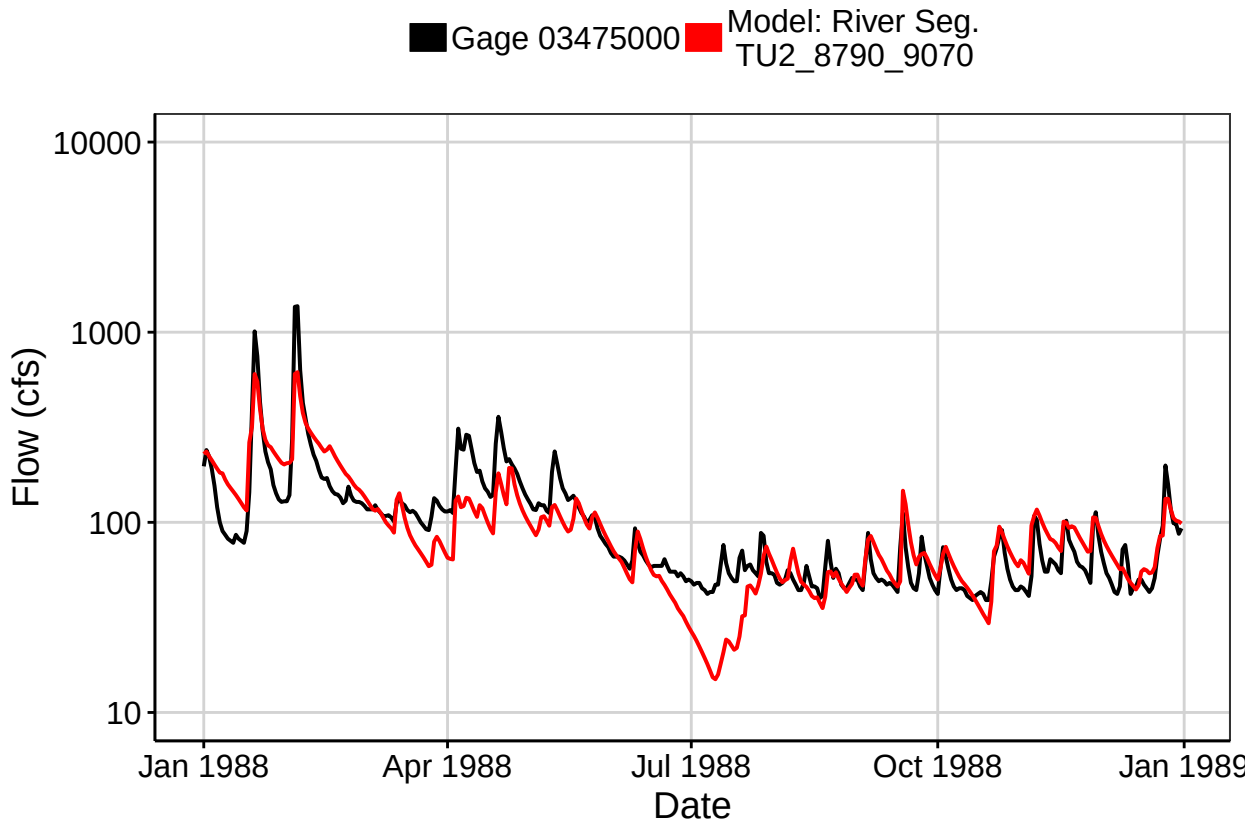


Fig. 3: Flow Exceedance

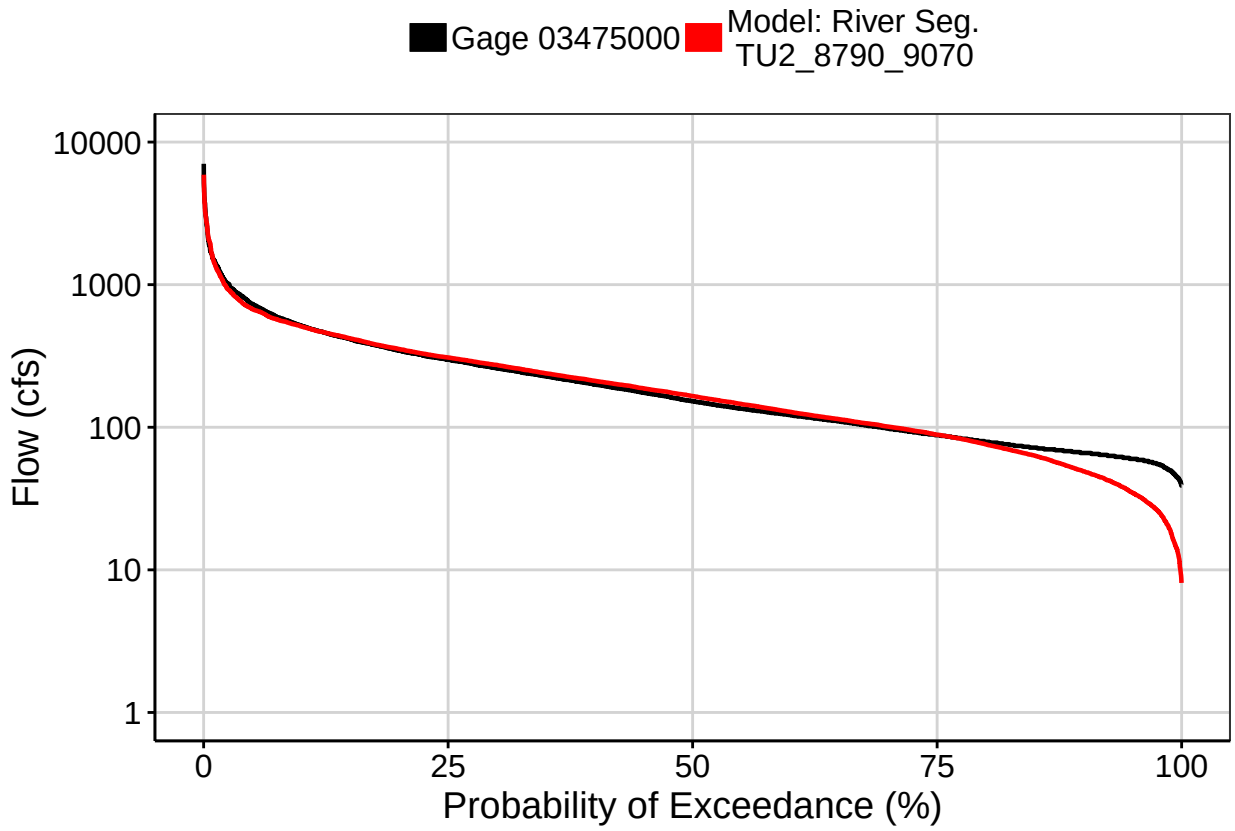


Fig. 4: Baseflow

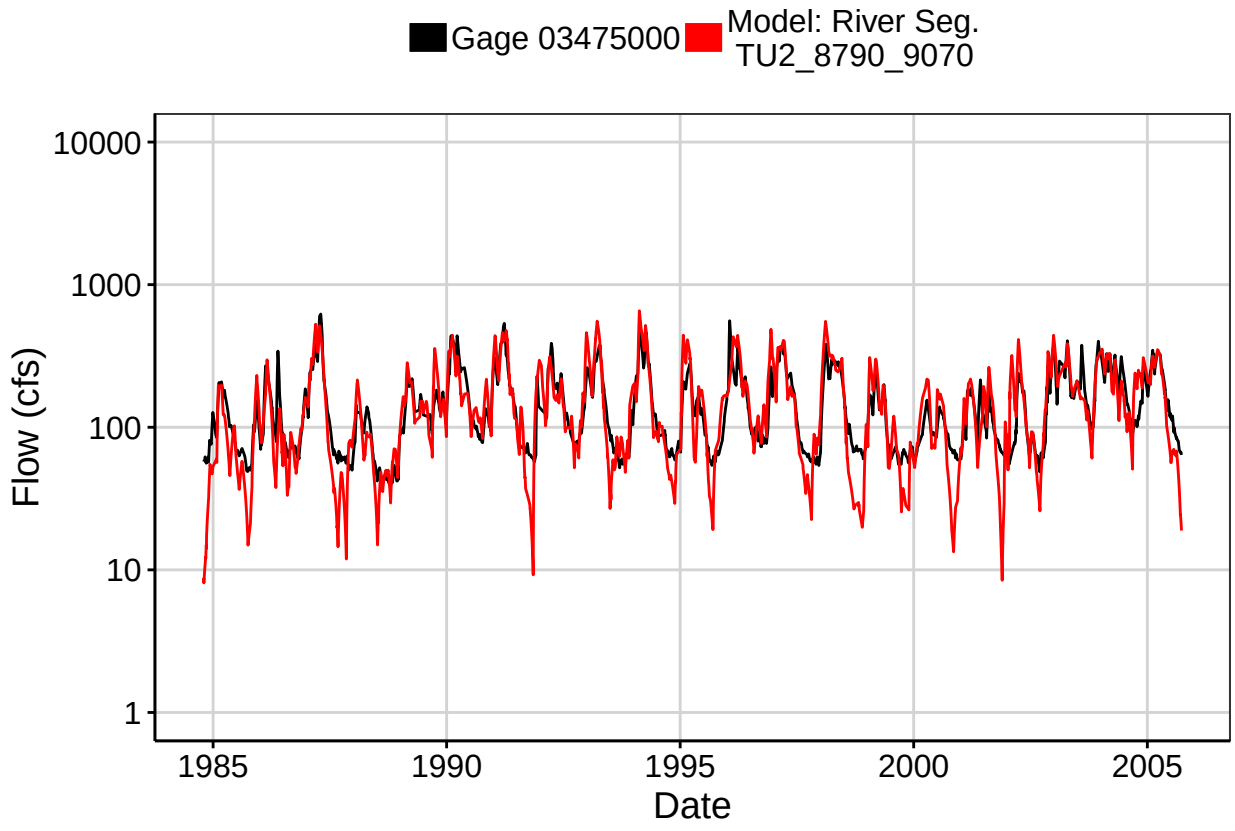


Fig. 5: Combined Baseflow

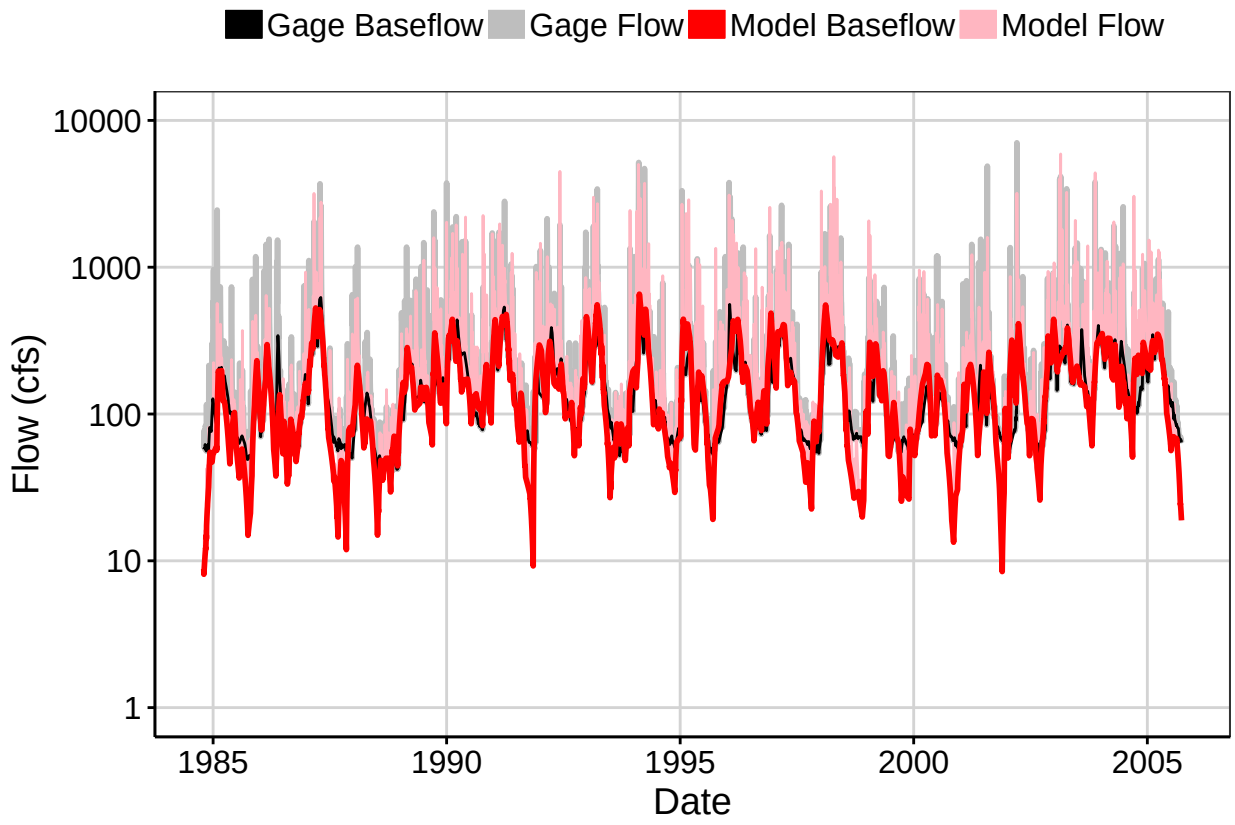


Fig. 6: Largest Error Segment

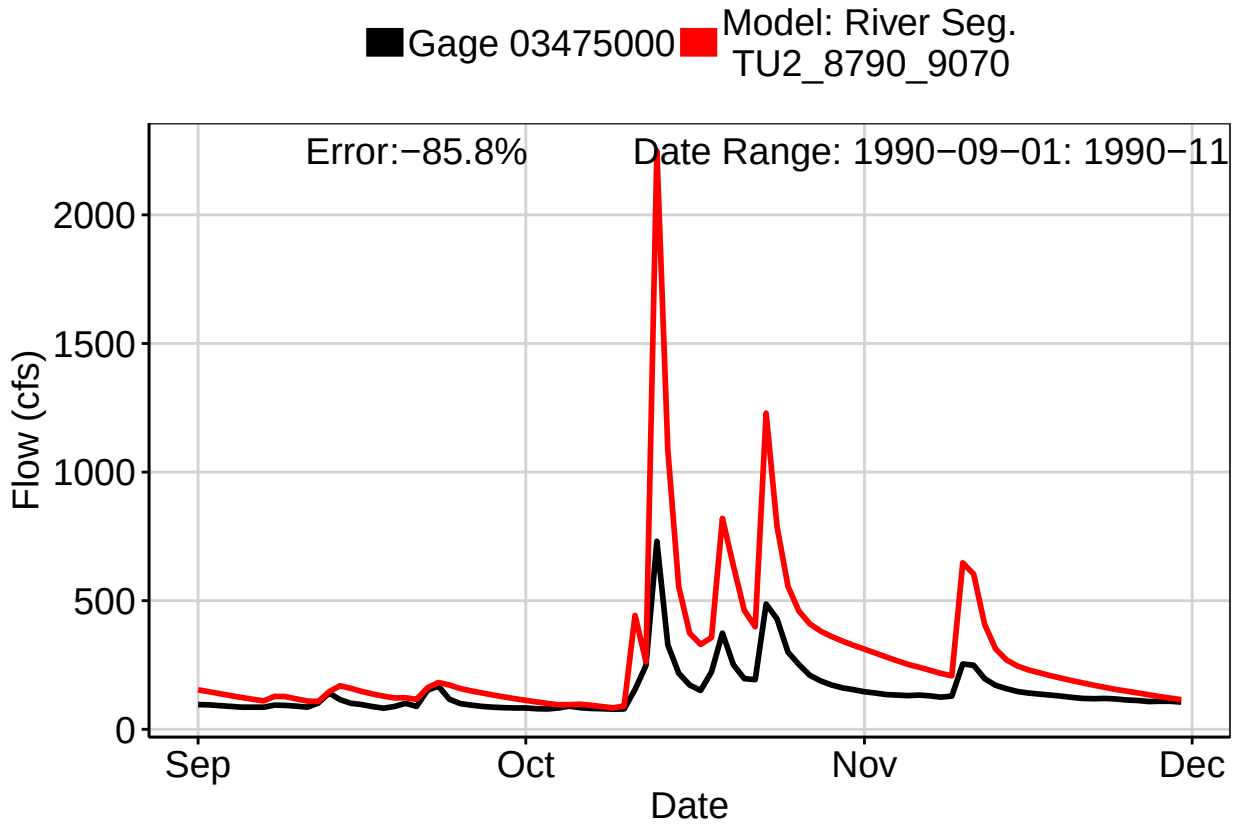


Fig. 7: Second Largest Error Segment

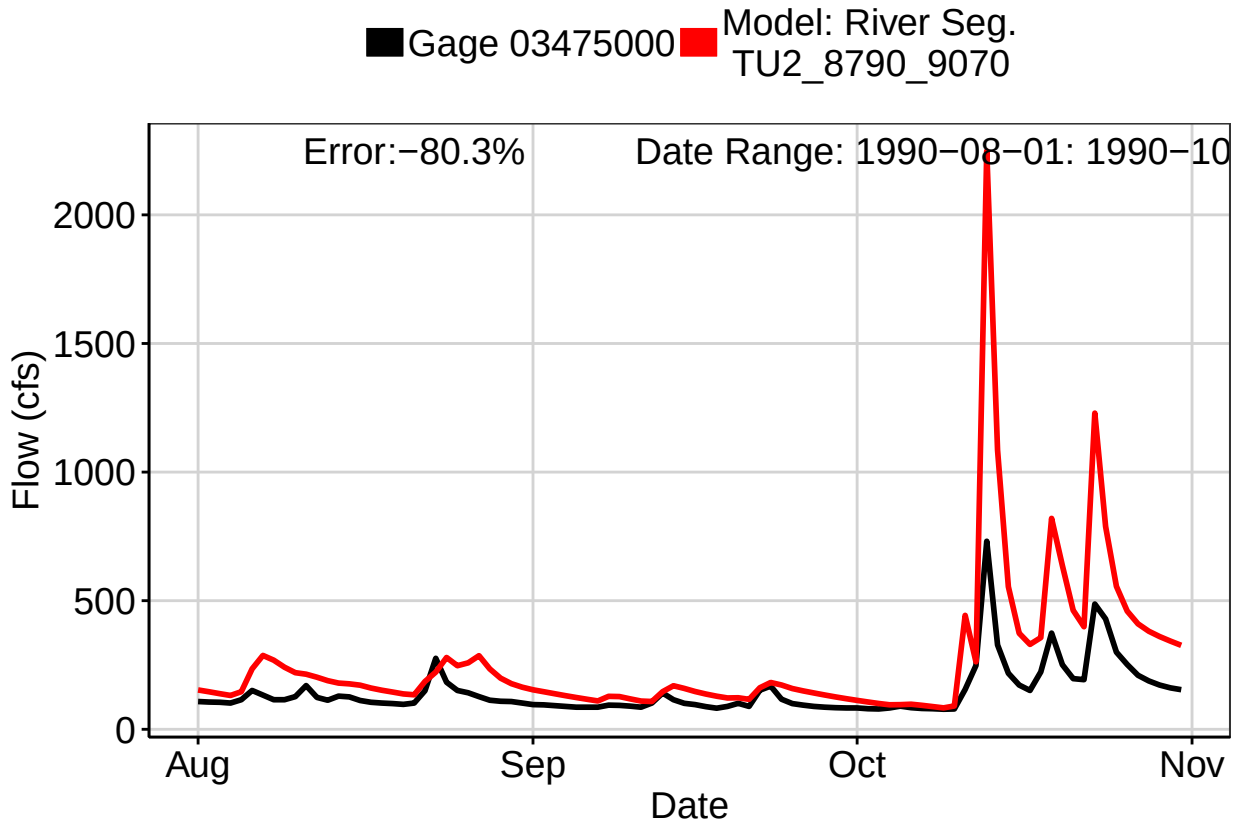


Fig. 8: Third Largest Error Segment

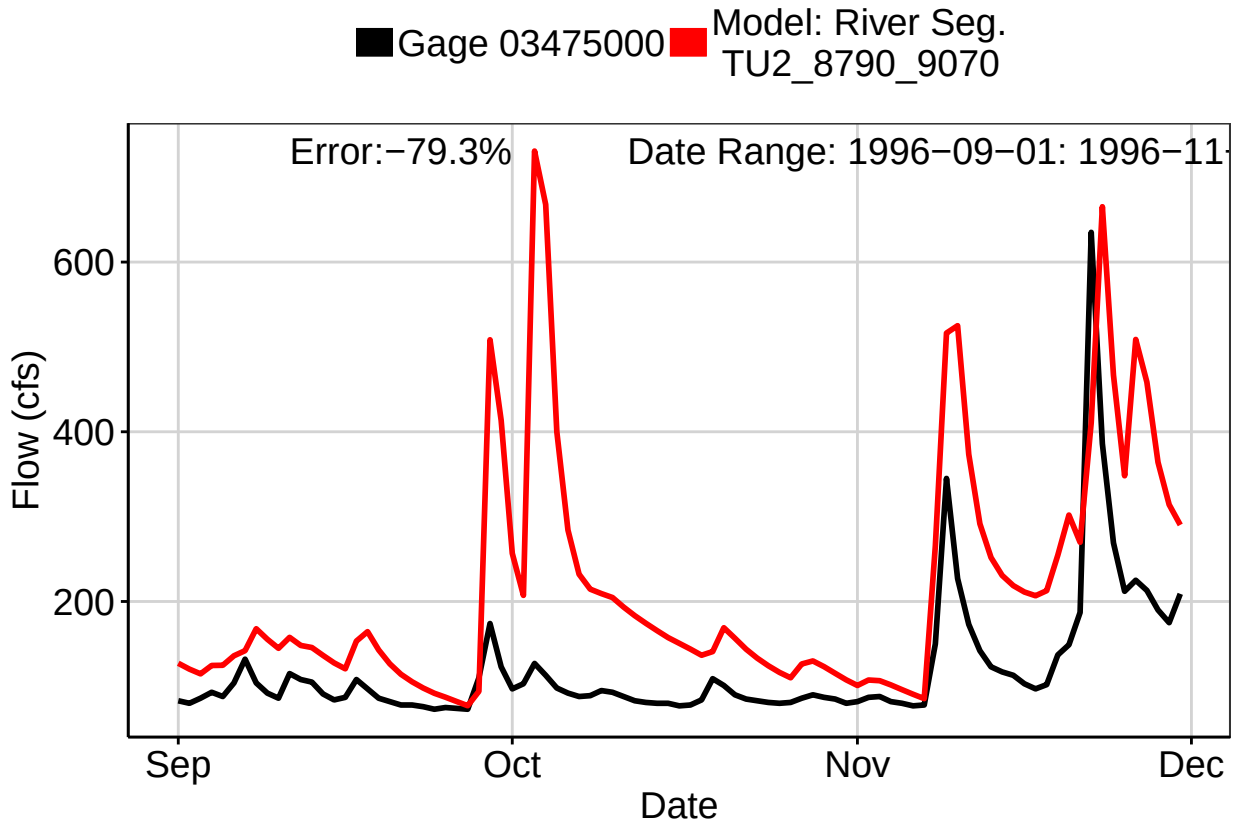


Fig. 9: Residuals Plot