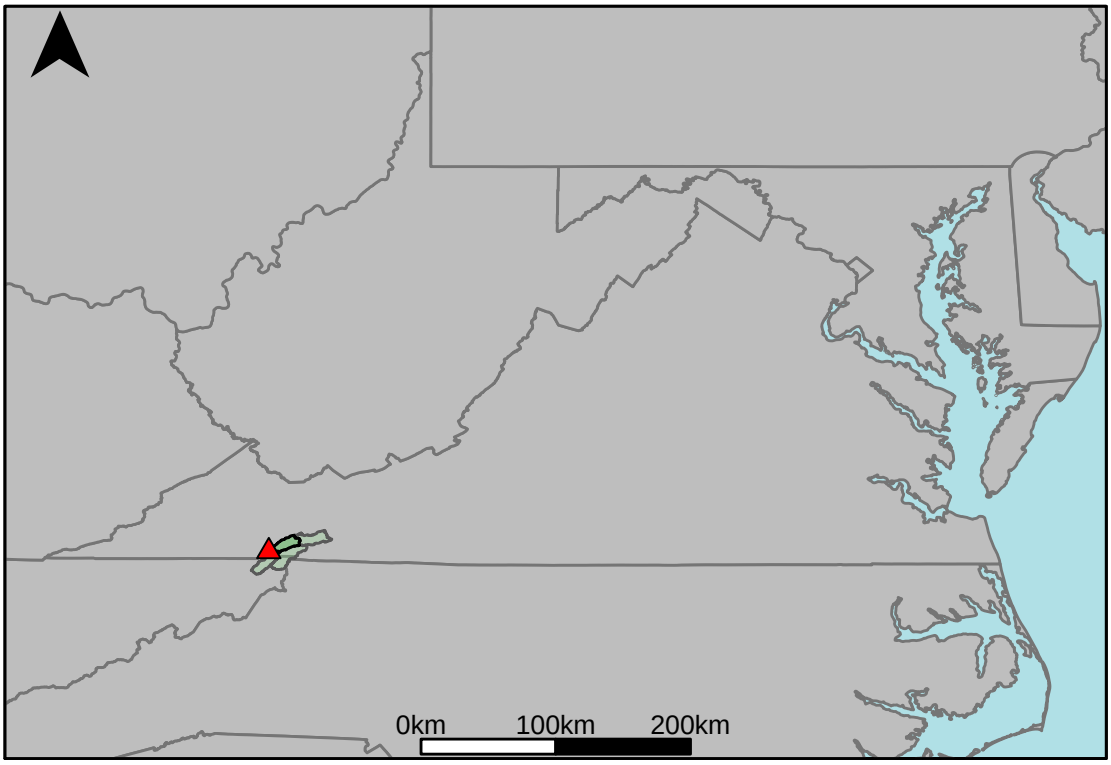
Appendix D.2: USGS Gage 03473000 vs. TU3_9040_9180+TU2_9200_9180



This river segment follows part of the flow of the South Fork of the Holston River, a tributary of the Tennessee River. The gage is located in Washington County, VA (Lat 3639'06", Long 8150'39") approximately 20 miles northeast of Bristol, VA. Drainage area is 303 sq. miles. This gage started taking data in 1931 and is still taking data. There may be some diurnal fluctuations during low flows due to a number of small dams upstream, as years have gone on many dams have been removed but the total number is unknown. The average daily discharge error between the model and gage data for the 20 year timespan was 1.71%, with 37.5% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	97	87.6	-9.69
Feb. Low Flow	111	150	35.1
Mar. Low Flow	183	195	6.56
Apr. Low Flow	210	268	27.6
May Low Flow	339	295	-13
Jun. Low Flow	373	404	8.31
Jul. Low Flow	378	292	-22.8
Aug. Low Flow	289	203	-29.8
Sep. Low Flow	182	179	-1.65
Oct. Low Flow	131	118	-9.92
Nov. Low Flow	122	116	-4.92
Dec. Low Flow	100	91.2	-8.8

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	469	461	-1.71
Jan. Mean Flow	616	607	-1.46
Feb. Mean Flow	826	827	0.12
Mar. Mean Flow	806	847	5.09
Apr. Mean Flow	730	636	-12.9
May Mean Flow	599	457	-23.7
Jun. Mean Flow	407	366	-10.1
Jul. Mean Flow	300	268	-10.7
Aug. Mean Flow	225	262	16.4
Sep. Mean Flow	202	229	13.4
Oct. Mean Flow	176	240	36.4
Nov. Mean Flow	306	345	12.7
Dec. Mean Flow	459	472	2.83

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	205	237	15.6
Feb. High Flow	526	592	12.5
Mar. High Flow	1450	949	-34.6
Apr. High Flow	1650	1930	17
May High Flow	2640	2110	-20.1
Jun. High Flow	2080	2650	27.4
Jul. High Flow	1420	1170	-17.6
Aug. High Flow	1530	1060	-30.7
Sep. High Flow	802	584	-27.2
Oct. High Flow	596	464	-22.1
Nov. High Flow	362	305	-15.7
Dec. High Flow	285	321	12.6

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	65	14.1	-78.3
Med. 1 Day Min	83	50	-39.8
Min. 3 Day Min	65	14.5	-77.7
Med. 3 Day Min	84	53.1	-36.8
Min. 7 Day Min	66.9	16.1	-75.9
Med. 7 Day Min	88.6	59.2	-33.2
Min. 30 Day Min	86.3	33.5	-61.2
Med. 30 Day Min	101	70.4	-30.3
Min. 90 Day Min	96.2	96	-0.21
Med. 90 Day Min	174	155	-10.9
7Q10	71.5	25.2	-64.8
Year of 90-Day Min. Flow	1988	1988	0
Drought Year Mean	245	221	-9.8
Mean Baseflow	266	275	3.38

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	10400	8810	-15.3
Med. 1 Day Max	4840	3740	-22.7
Max. 3 Day Max	6920	6390	-7.66
Med. 3 Day Max	3430	2740	-20.1
Max. 7 Day Max	4480	3800	-15.2
Med. 7 Day Max	2200	1790	-18.6
Max. 30 Day Max	2000	2280	14
Med. 30 Day Max	1160	1130	-2.59
Max. 90 Day Max	1330	1520	14.3
Med. 90 Day Max	891	822	-7.74

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	79	39	-50.6
5% Non-Exceedance	93	71.6	-23
50% Non-Exceedance	312	312	0
95% Non-Exceedance	1310	1250	-4.58
99% Non-Exceedance	2670	2570	-3.75
Sept. 10% Non-Exceedance	63.8	83	30.1

Fig. 1: Hydrograph

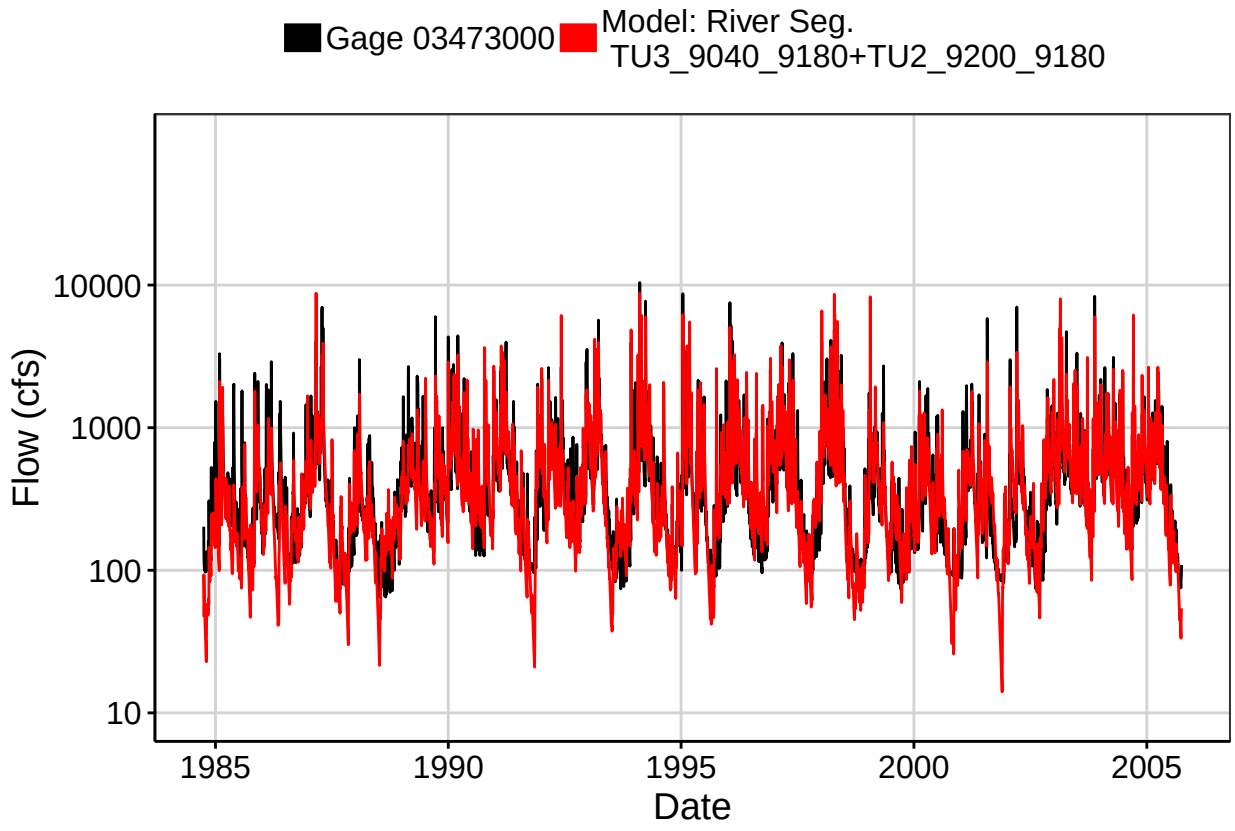


Fig. 2: Zoomed Hydrograph

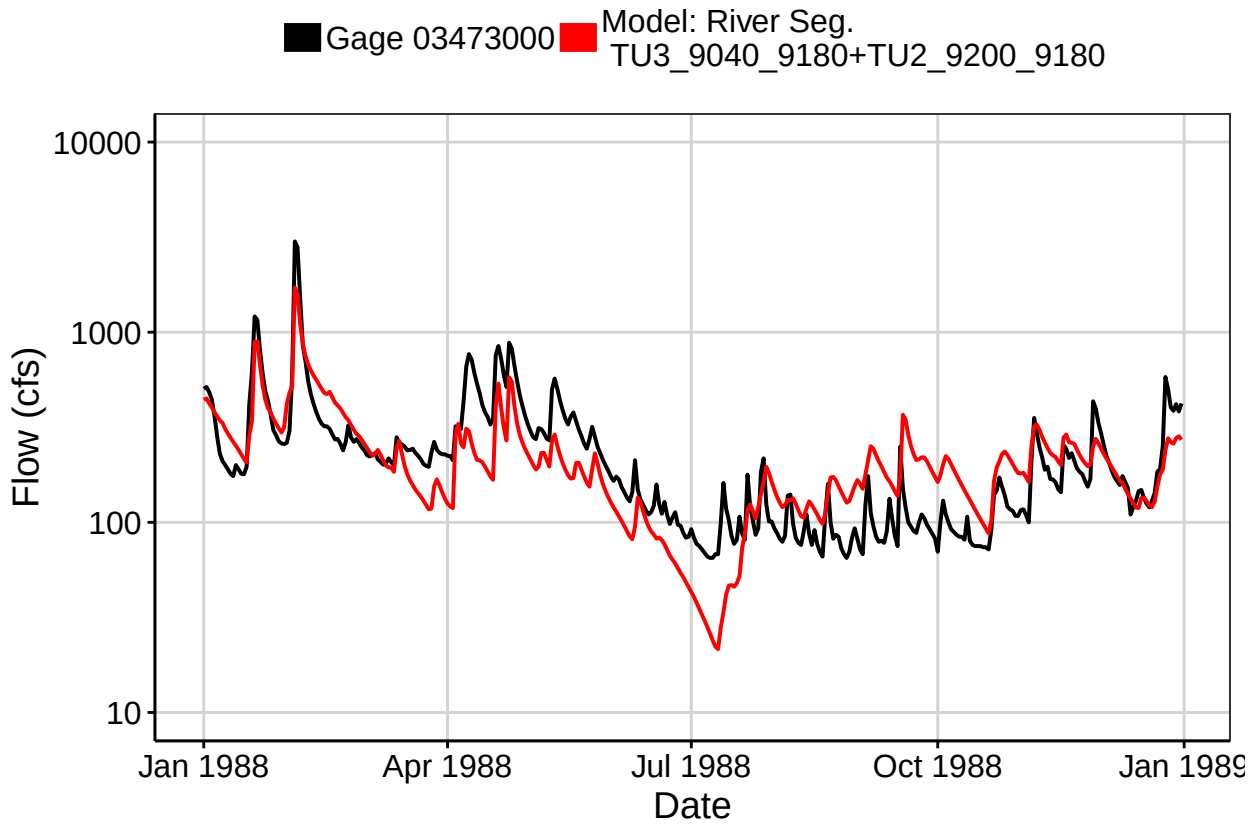


Fig. 3: Flow Exceedance

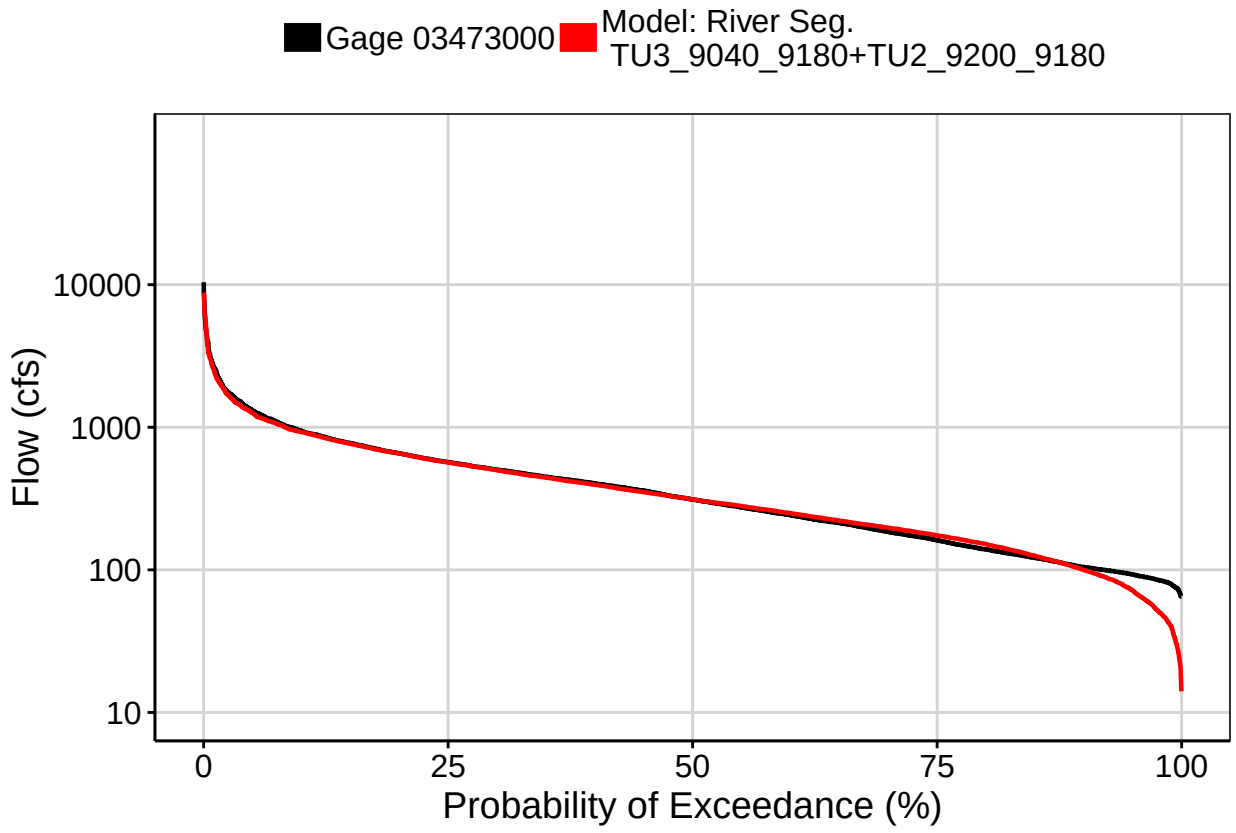


Fig. 4: Baseflow

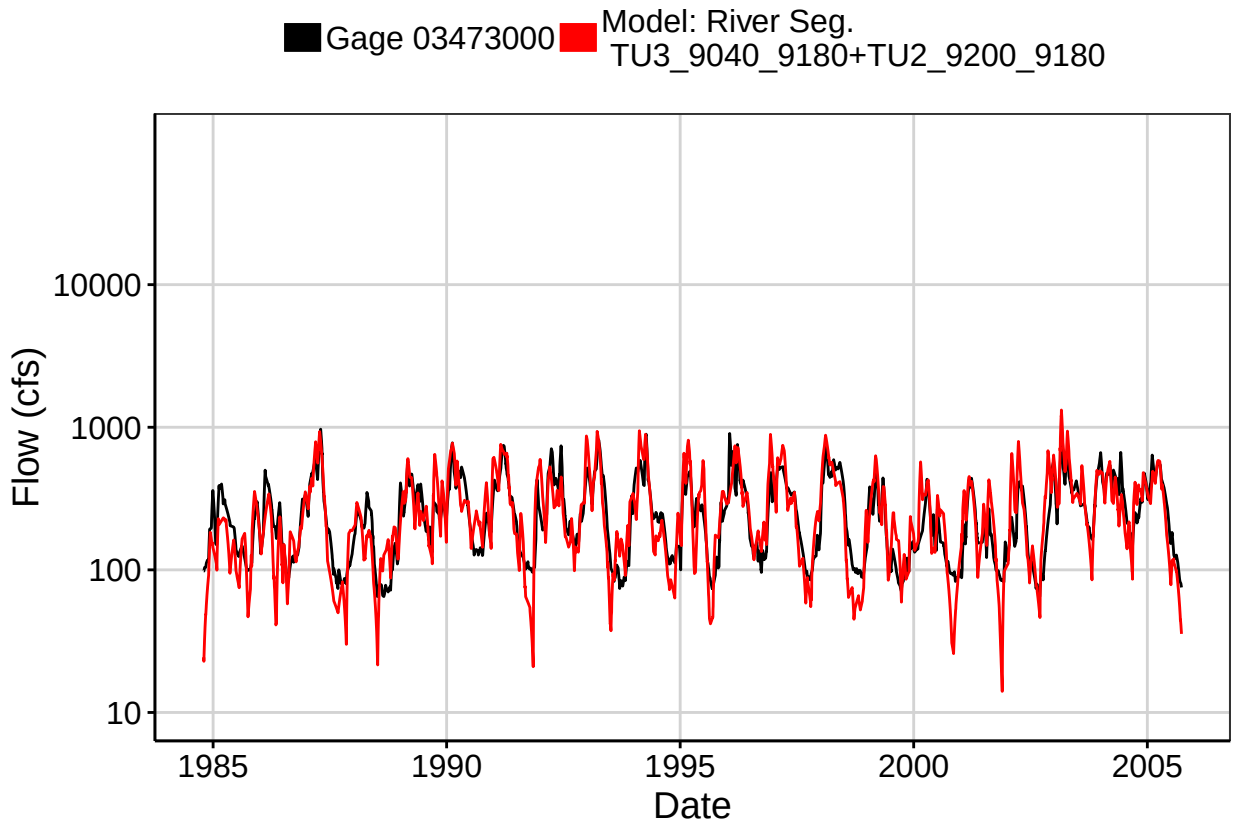


Fig. 5: Combined Baseflow

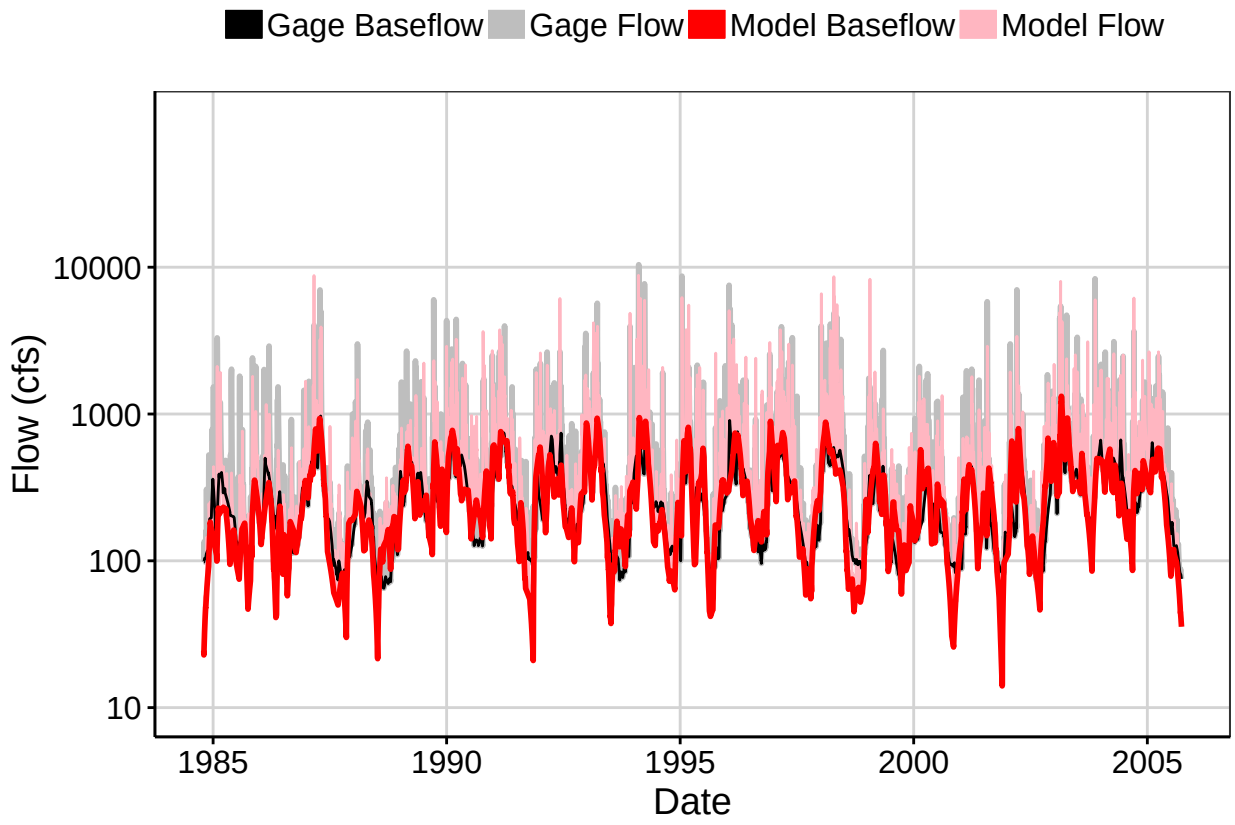


Fig. 6: Largest Error Segment

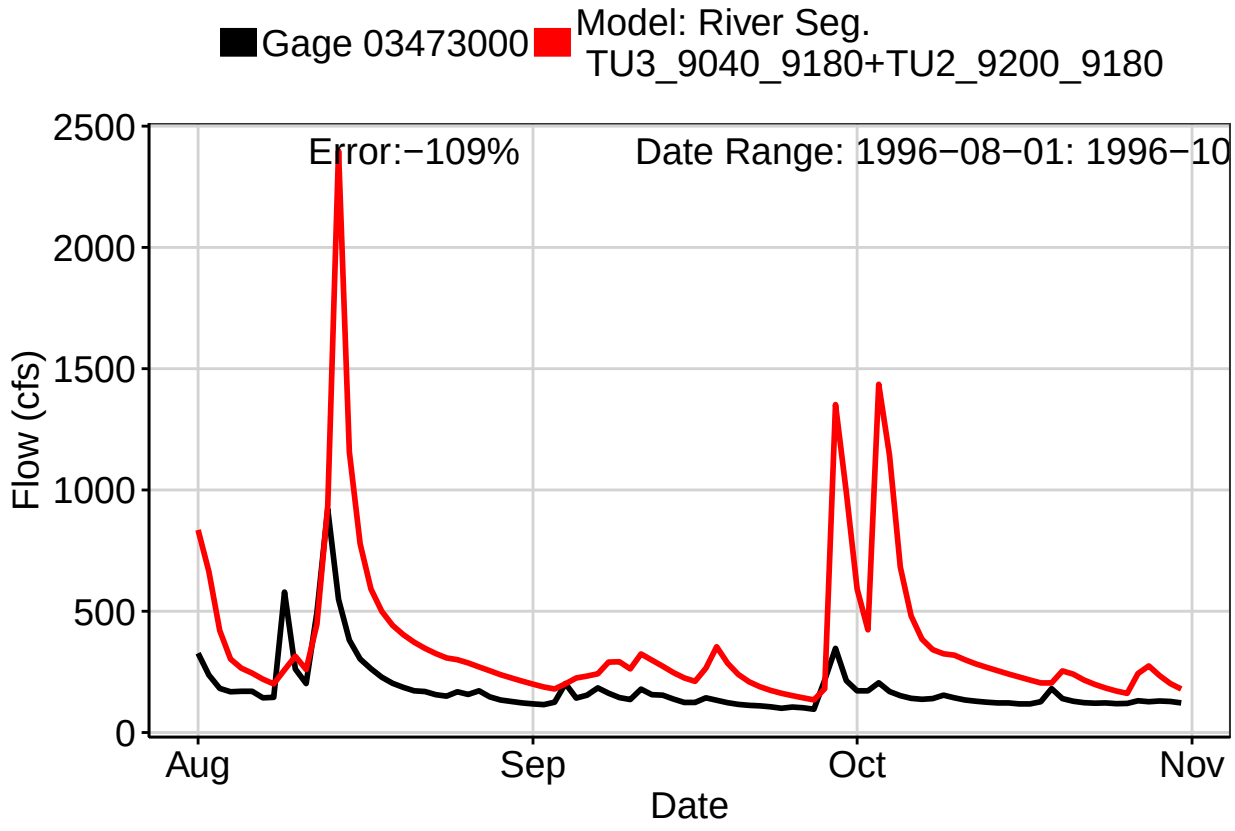


Fig. 7: Second Largest Error Segment

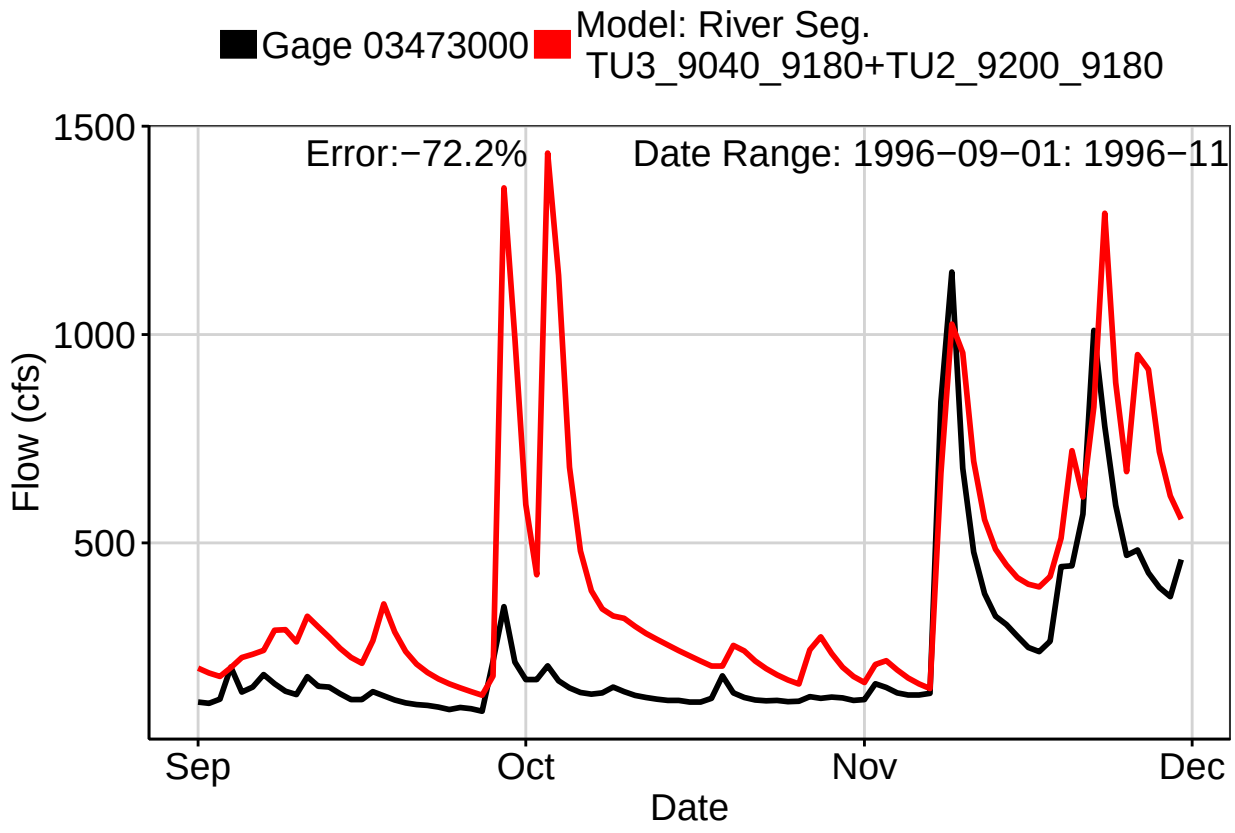


Fig. 8: Third Largest Error Segment

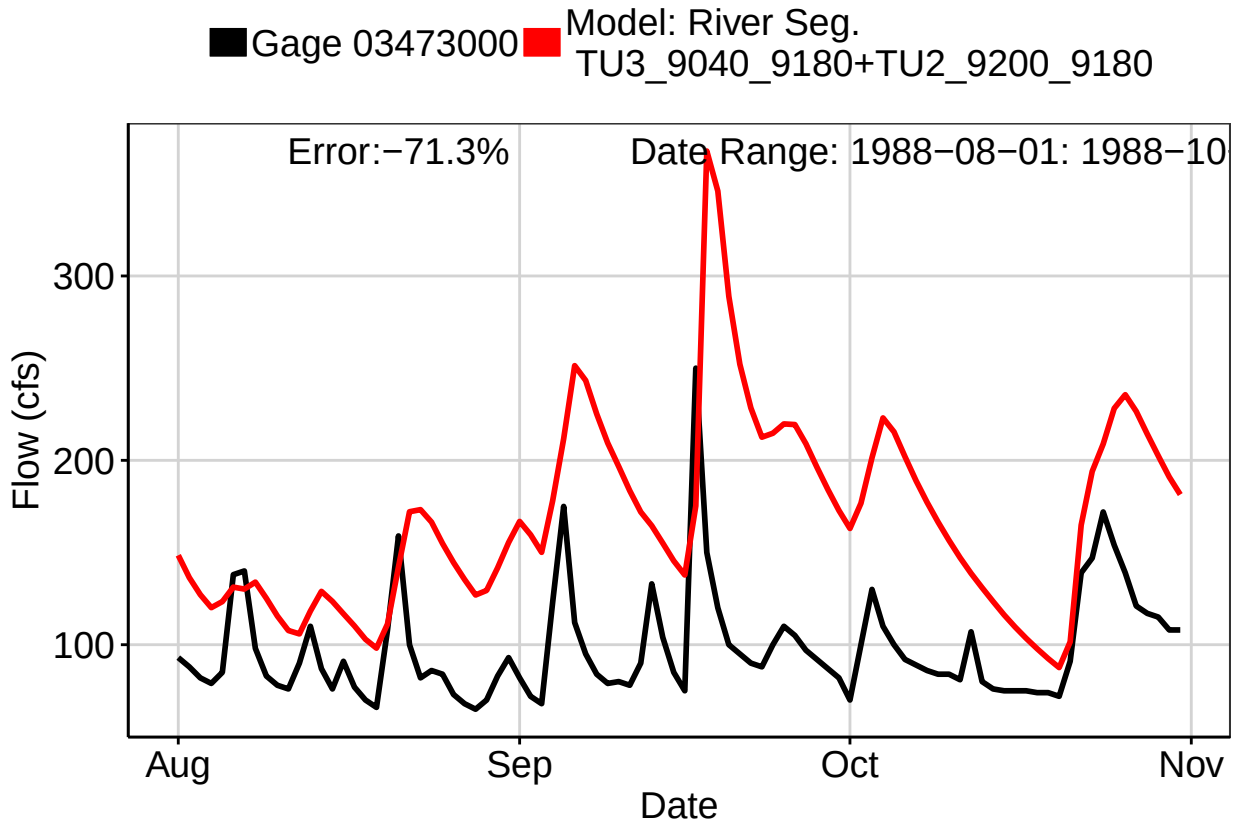


Fig. 9: Residuals Plot