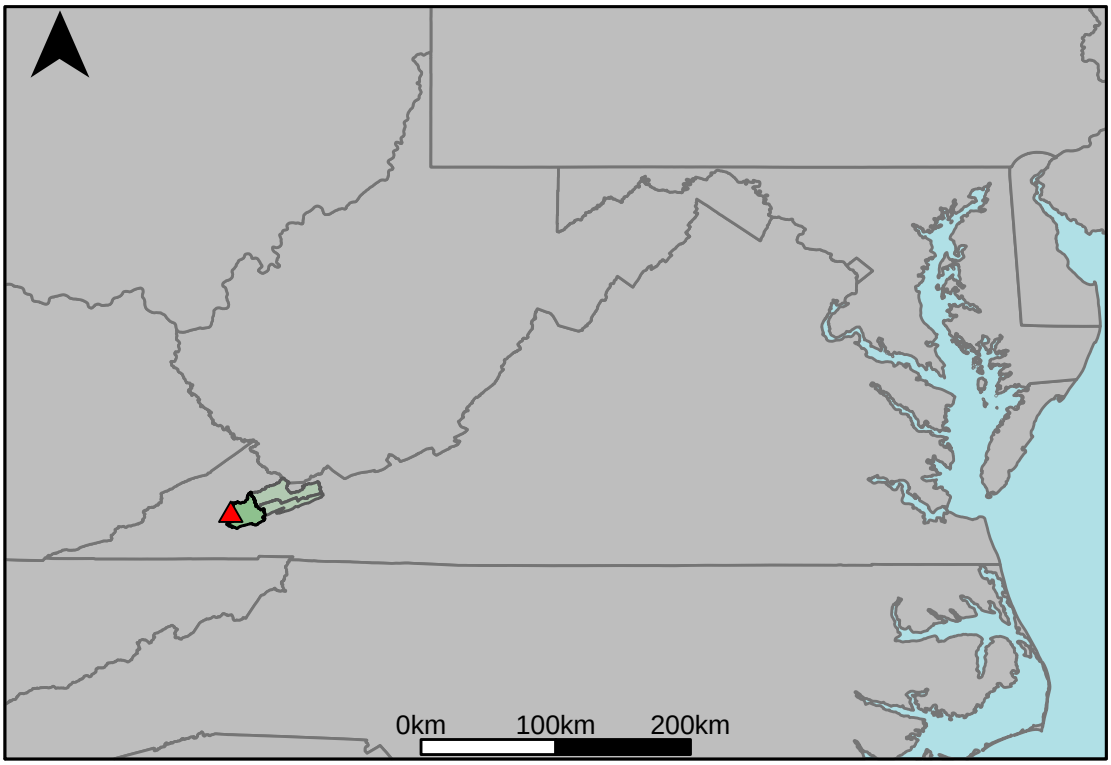
Appendix I: Tennessee River Gages
Appendix I.1: USGS Gage 03524000 vs. TU4_8680_8810



This river segment follows part of the flow of the Clinch River, a tributary of the Tennessee River. The gage is located in Russell County, VA (Lat 3656'41", Long 8209'18") approximately 24 miles north of Bristol, VA. Drainage area is 533 sq. miles. This gage started taking data in 1920 and is still taking data. There are no known anthropogenic alterations in this area that would affect the flow conditions. The average daily discharge error between the model and gage data for the 20 year timespan was 0.28%, with 38.8% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	91	86.2	-5.27
Feb. Low Flow	94.1	177	88.1
Mar. Low Flow	201	248	23.4
Apr. Low Flow	270	393	45.6
May Low Flow	481	488	1.46
Jun. Low Flow	488	582	19.3
Jul. Low Flow	441	396	-10.2
Aug. Low Flow	307	244	-20.5
Sep. Low Flow	189	192	1.59
Oct. Low Flow	153	116	-24.2
Nov. Low Flow	114	122	7.02
Dec. Low Flow	93	82.9	-10.9

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	701	699	-0.28
Jan. Mean Flow	1010	1010	0
Feb. Mean Flow	1360	1420	4.41
Mar. Mean Flow	1340	1300	-2.99
Apr. Mean Flow	1110	959	-13.6
May Mean Flow	826	710	-14
Jun. Mean Flow	567	509	-10.2
Jul. Mean Flow	352	352	0
Aug. Mean Flow	294	324	10.2
Sep. Mean Flow	215	299	39.1
Oct. Mean Flow	222	332	49.5
Nov. Mean Flow	435	476	9.43
Dec. Mean Flow	738	749	1.49

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	215	352	63.7
Feb. High Flow	1260	917	-27.2
Mar. High Flow	2500	1290	-48.4
Apr. High Flow	3210	3500	9.03
May High Flow	5120	3230	-36.9
Jun. High Flow	3530	3970	12.5
Jul. High Flow	1940	1790	-7.73
Aug. High Flow	2750	1650	-40
Sep. High Flow	1050	932	-11.2
Oct. High Flow	787	490	-37.7
Nov. High Flow	533	476	-10.7
Dec. High Flow	346	352	1.73

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	39	8.16	-79.1
Med. 1 Day Min	70	35.5	-49.3
Min. 3 Day Min	44	8.6	-80.5
Med. 3 Day Min	70.3	38.4	-45.4
Min. 7 Day Min	49	9.98	-79.6
Med. 7 Day Min	72.9	45.3	-37.9
Min. 30 Day Min	62.7	27.5	-56.1
Med. 30 Day Min	90.8	73.9	-18.6
Min. 90 Day Min	83.4	69.2	-17
Med. 90 Day Min	172	190	10.5
7Q10	55.4	18.2	-67.1
Year of 90-Day Min. Flow	1988	1988	0
Drought Year Mean	287	290	1.05
Mean Baseflow	333	373	12

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	20100	19000	-5.47
Med. 1 Day Max	8530	8120	-4.81
Max. 3 Day Max	11400	13100	14.9
Med. 3 Day Max	6190	5110	-17.4
Max. 7 Day Max	6930	7160	3.32
Med. 7 Day Max	4030	3370	-16.4
Max. 30 Day Max	3410	4020	17.9
Med. 30 Day Max	2050	1910	-6.83
Max. 90 Day Max	2210	2700	22.2
Med. 90 Day Max	1430	1400	-2.1

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	60.7	33.8	-44.3
5% Non-Exceedance	83	73.5	-11.4
50% Non-Exceedance	371	420	13.2
95% Non-Exceedance	2270	2060	-9.25
99% Non-Exceedance	5020	4950	-1.39
Sept. 10% Non-Exceedance	55.6	69	24.1

Fig. 1: Hydrograph

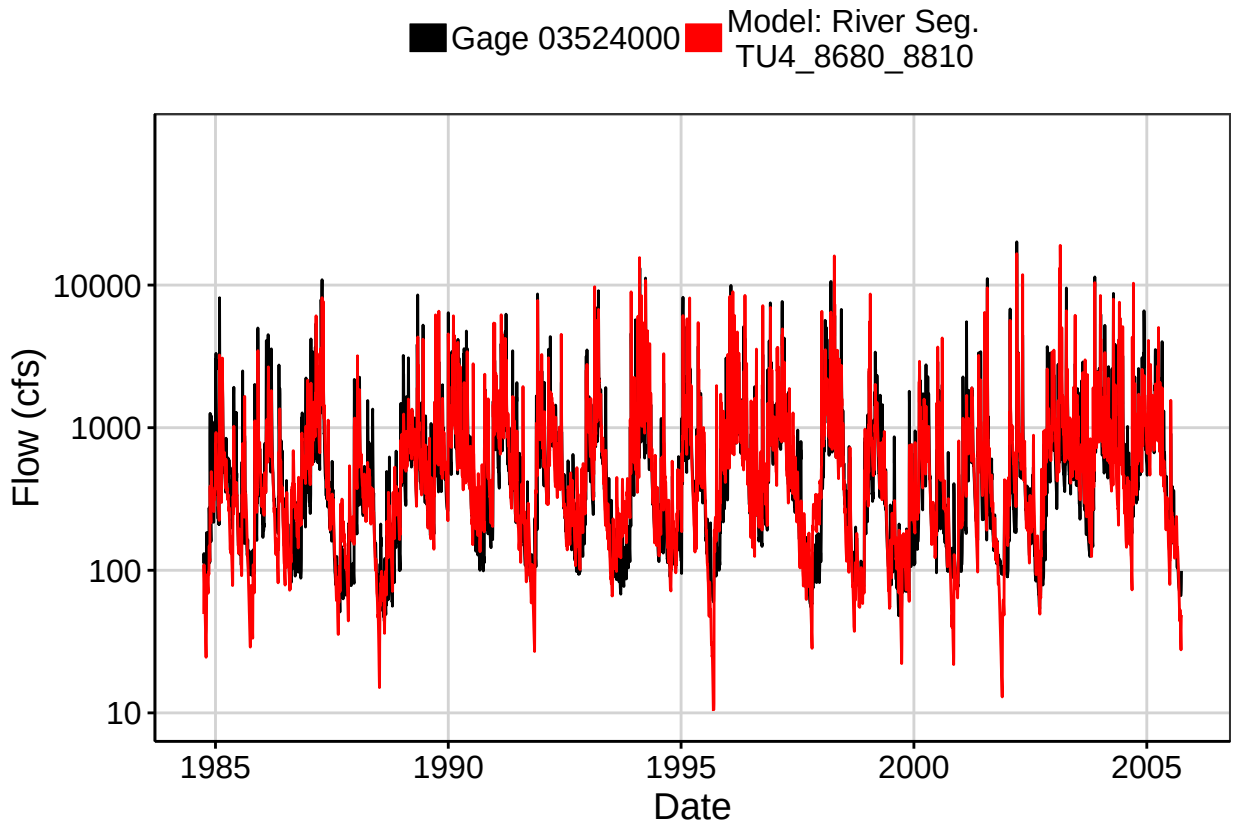


Fig. 2: Zoomed Hydrograph

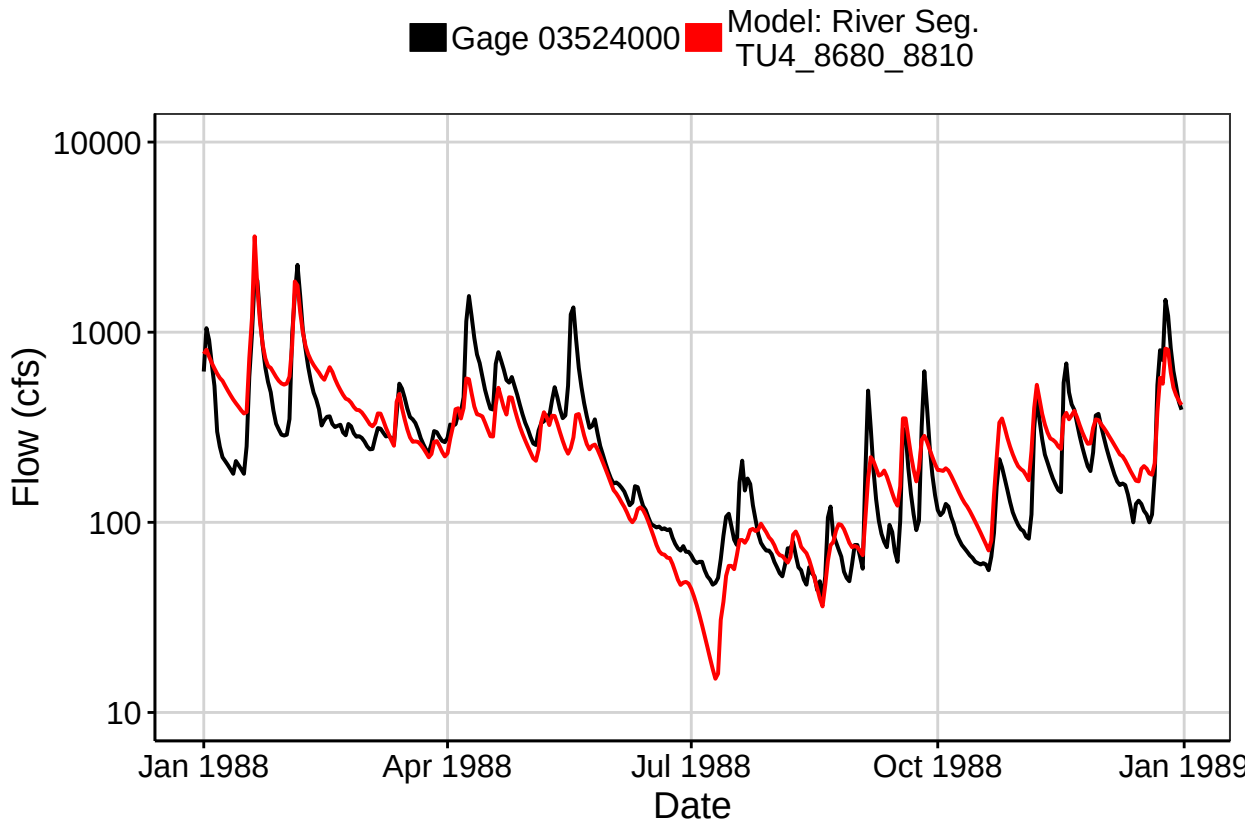


Fig. 3: Flow Exceedance

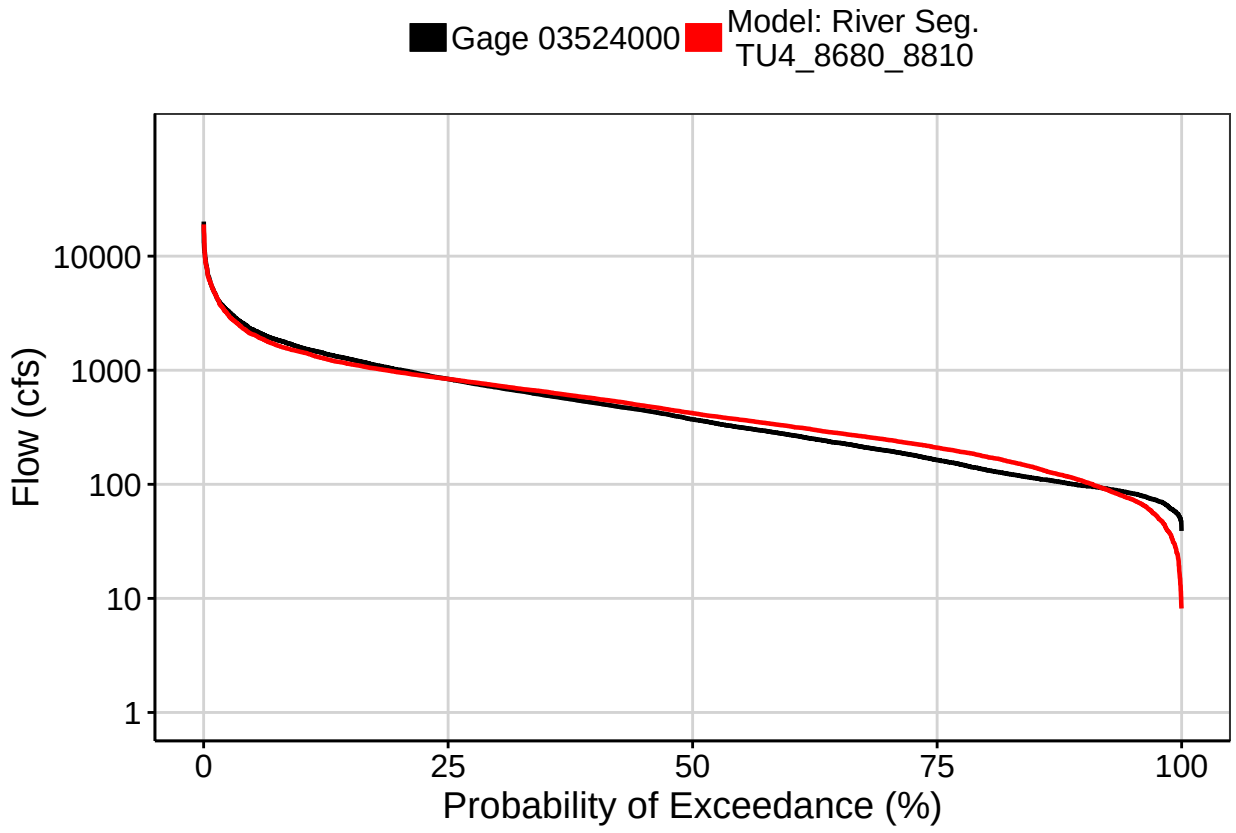


Fig. 4: Baseflow

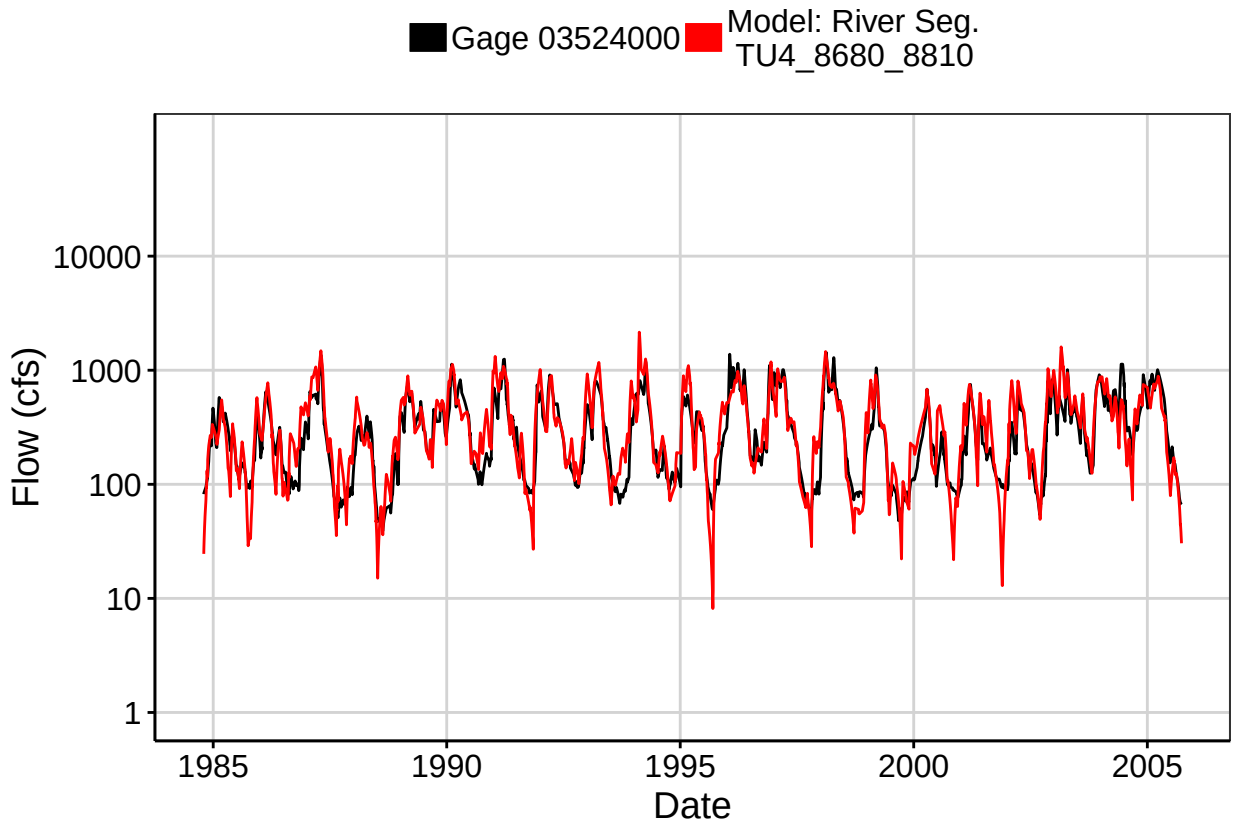


Fig. 5: Combined Baseflow

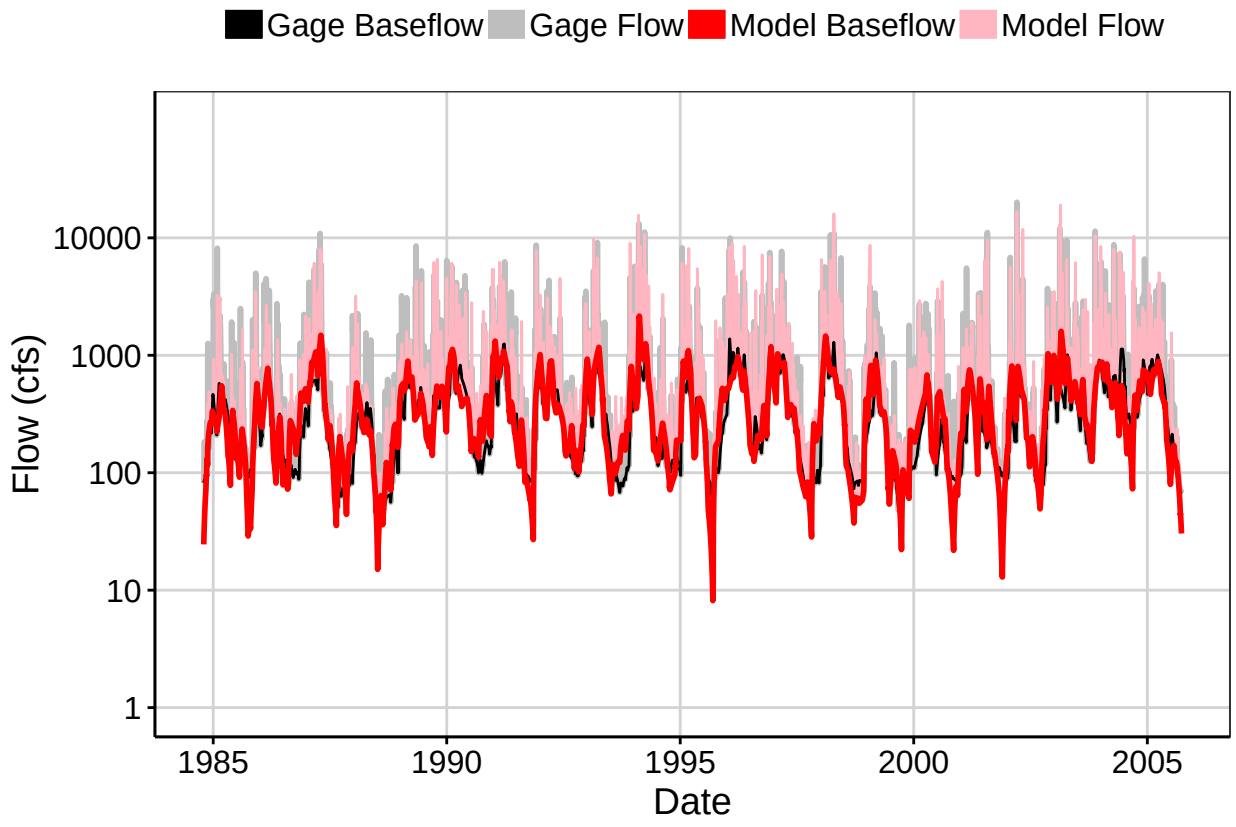


Fig. 6: Largest Error Segment

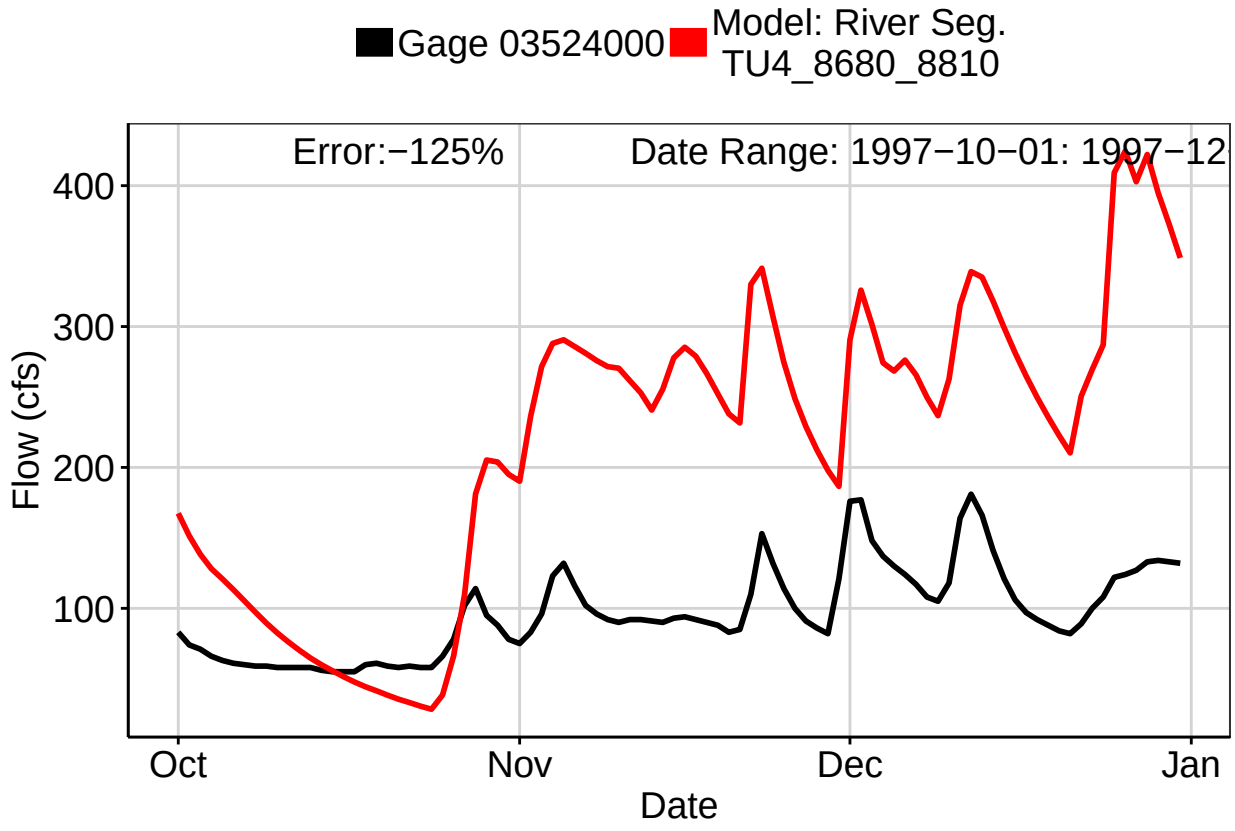


Fig. 7: Second Largest Error Segment

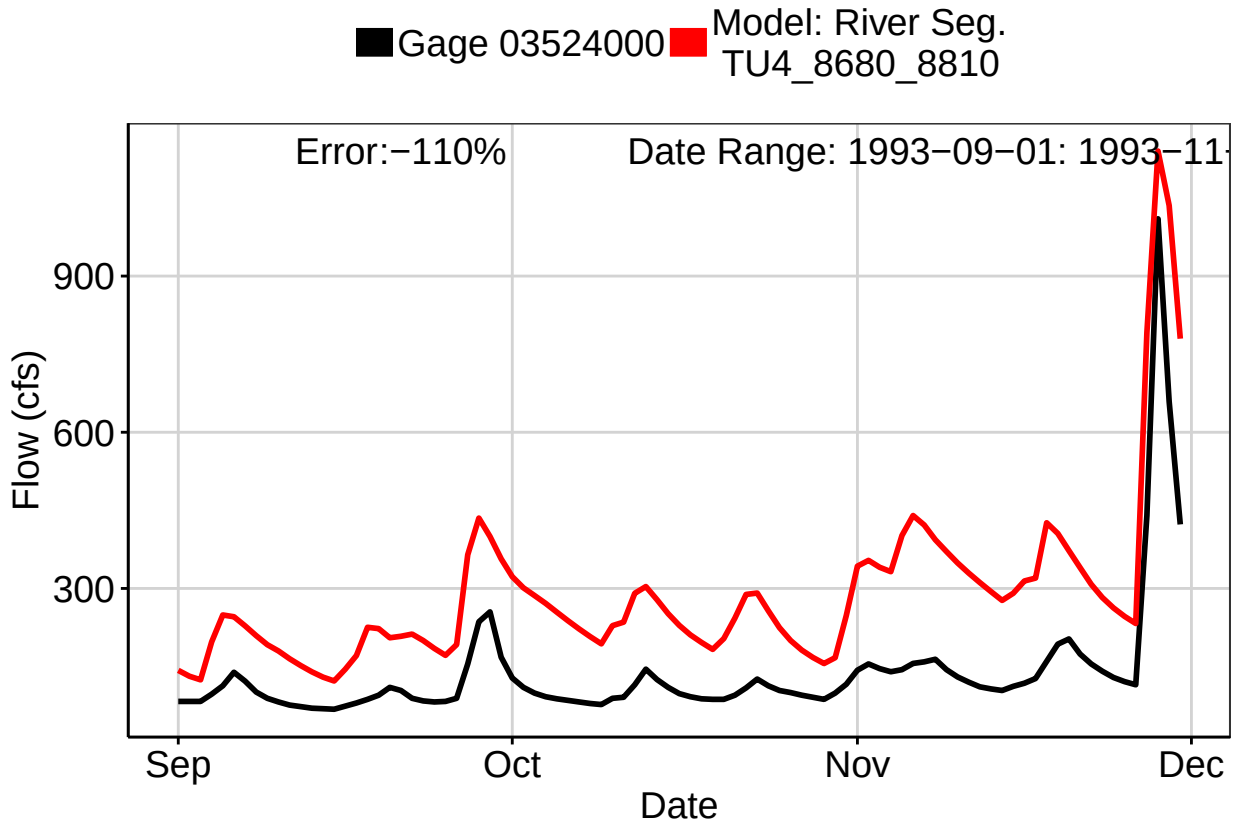


Fig. 8: Third Largest Error Segment

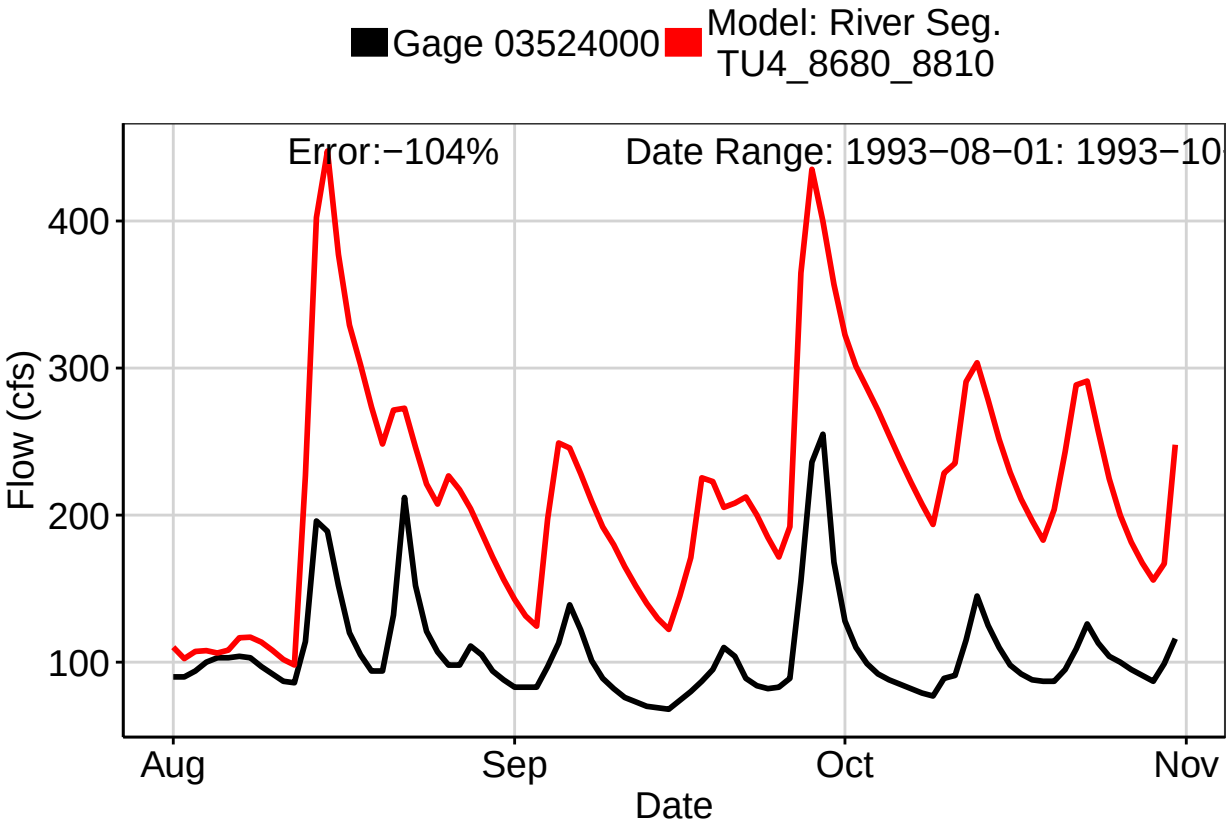


Fig. 9: Residuals Plot