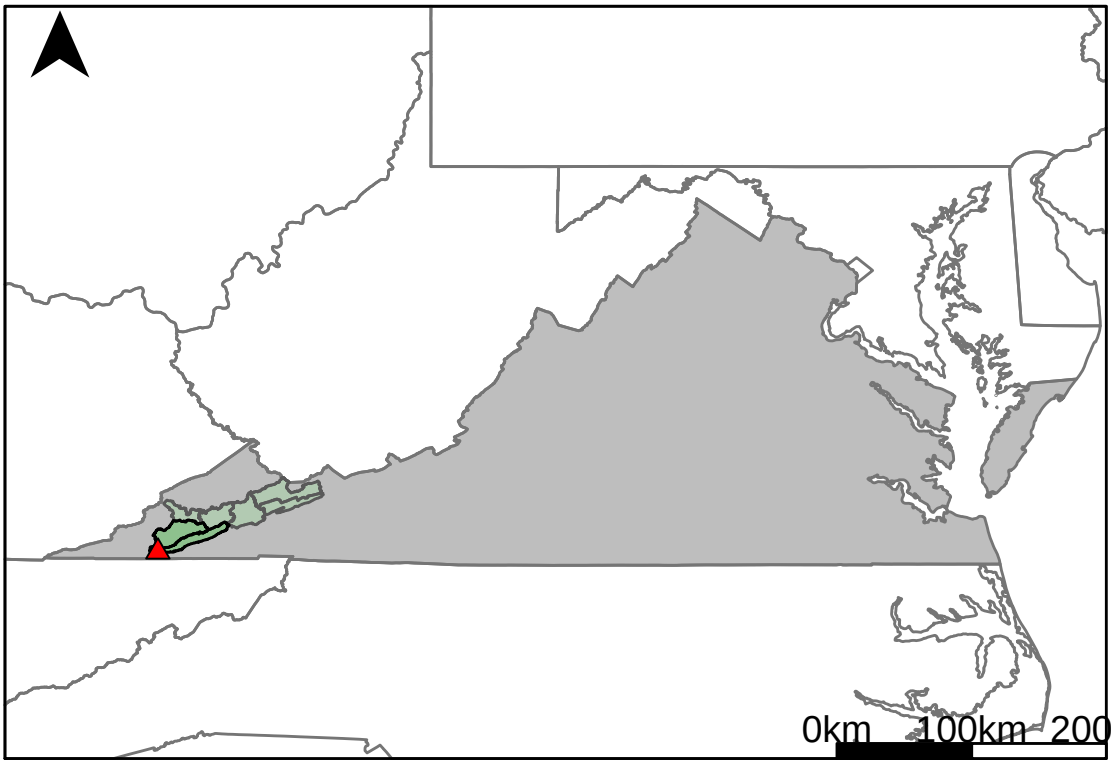
Appendix I.2: USGS Gage 03527000 vs. TU5_9000_9280+TU2_8970_9280



This river segment follows part of the flow of the Clinch River, a tributary of the Tennessee River. The gage is located in Scott County, VA (Lat 3638'55", Long 8245'02") approximately 21 miles southwest of Norton, VA. Drainage area is 1123 sq. miles. This gage started taking data in 1920, but there is a gap from 1976-10-13 to 1978-10-02 and another between 1981-09-30 to 2001-09-17. For this reason, analysis was done from 2001-10-01 to 2005-09-30. There are no known anthropogenic alterations that would affect flow in this area. The average daily discharge error between the model and gage data for the 20 year timespan was 28.5%, with 30.6% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	199	179	10.1
Feb. Low Flow	368	310	15.8
Mar. Low Flow	888	509	42.7
Apr. Low Flow	648	778	-20.1
May Low Flow	1160	1060	8.62
Jun. Low Flow	846	1130	-33.6
Jul. Low Flow	1180	754	36.1
Aug. Low Flow	659	444	32.6
Sep. Low Flow	552	395	28.4
Oct. Low Flow	413	247	40.2
Nov. Low Flow	296	262	11.5
Dec. Low Flow	200	181	9.5

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	1790	1280	28.5
Jan. Mean Flow	2200	1860	15.5
Feb. Mean Flow	2890	2650	8.3
Mar. Mean Flow	2780	2400	13.7
Apr. Mean Flow	3270	1790	45.3
May Mean Flow	1800	1270	29.4
Jun. Mean Flow	1860	893	52
Jul. Mean Flow	999	611	38.8
Aug. Mean Flow	722	572	20.8
Sep. Mean Flow	543	515	5.16
Oct. Mean Flow	422	572	-35.5
Nov. Mean Flow	1690	867	48.7
Dec. Mean Flow	2430	1420	41.6

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	746	669	10.3
Feb. High Flow	6450	1960	69.6
Mar. High Flow	5180	2570	50.4
Apr. High Flow	9170	4900	46.6
May High Flow	6580	6420	2.43
Jun. High Flow	7040	6280	10.8
Jul. High Flow	11800	3100	73.7
Aug. High Flow	7580	3700	51.2
Sep. High Flow	3360	1670	50.3
Oct. High Flow	2960	1060	64.2
Nov. High Flow	1060	758	28.5
Dec. High Flow	1440	708	50.8

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	88	22.4	74.5
Med. 1 Day Min	133	88.8	33.2
Min. 3 Day Min	88.7	23.7	73.3
Med. 3 Day Min	137	98.3	28.2
Min. 7 Day Min	90.7	25.8	71.6
Med. 7 Day Min	142	105	26.1
Min. 30 Day Min	142	60.5	57.4
Med. 30 Day Min	235	168	28.5
Min. 90 Day Min	282	152	46.1
Med. 90 Day Min	694	328	52.7
7Q10	95	44.5	53.2
Year of 90-Day Min. Flow	2002	1988	100
Drought Year Mean	1170	1280	-9.4
Mean Baseflow	846	723	14.5

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	43600	31300	28.2
Med. 1 Day Max	22000	12100	45
Max. 3 Day Max	30700	20700	32.6
Med. 3 Day Max	15600	9010	42.2
Max. 7 Day Max	16200	12900	20.4
Med. 7 Day Max	9880	6230	36.9
Max. 30 Day Max	6180	7310	-18.3
Med. 30 Day Max	5270	3600	31.7
Max. 90 Day Max	3890	5230	-34.4
Med. 90 Day Max	3140	2550	18.8

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	125	80.3	35.8
5% Non-Exceedance	173	142	17.9
50% Non-Exceedance	1120	781	30.3
95% Non-Exceedance	5350	3740	30.1
99% Non-Exceedance	11800	8210	30.4
Sept. 10% Non-Exceedance	121	116	4.13

Fig. 1: Hydrograph

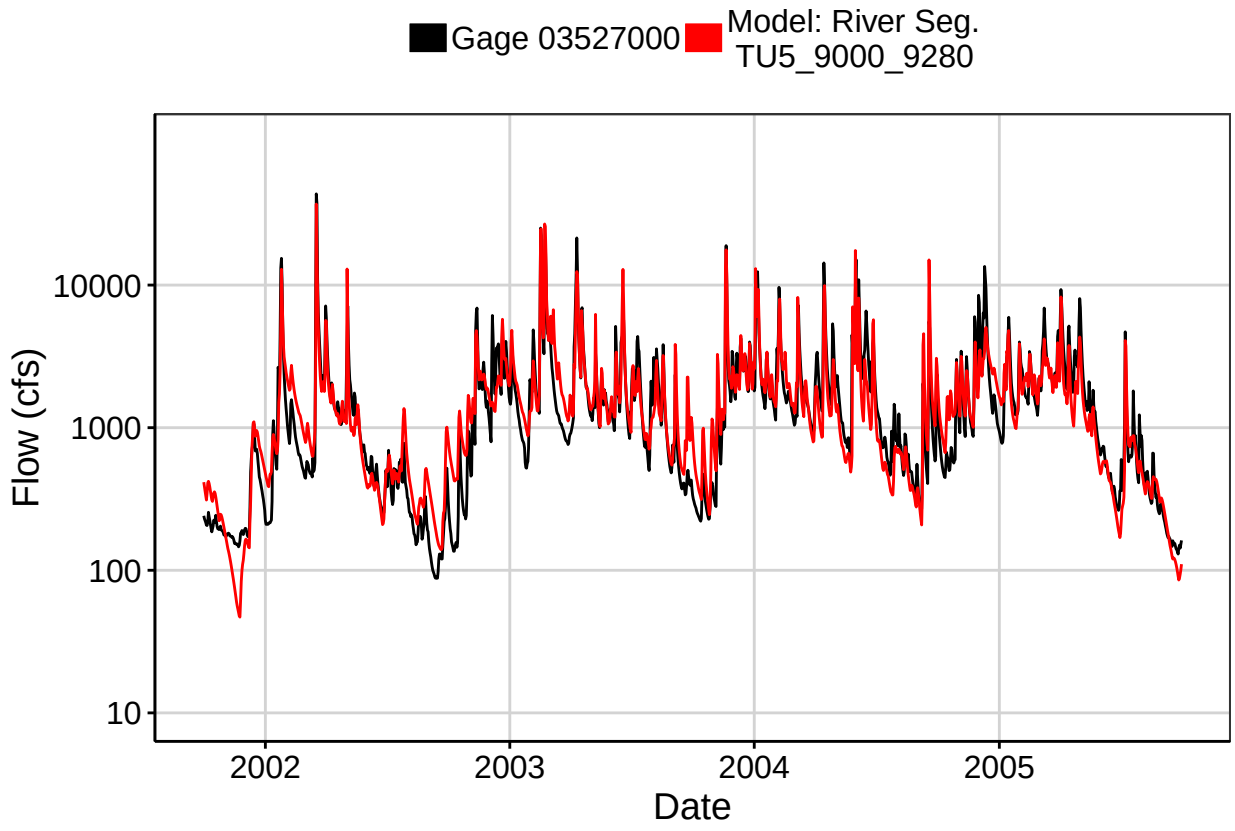


Fig. 2: Zoomed Hydrograph

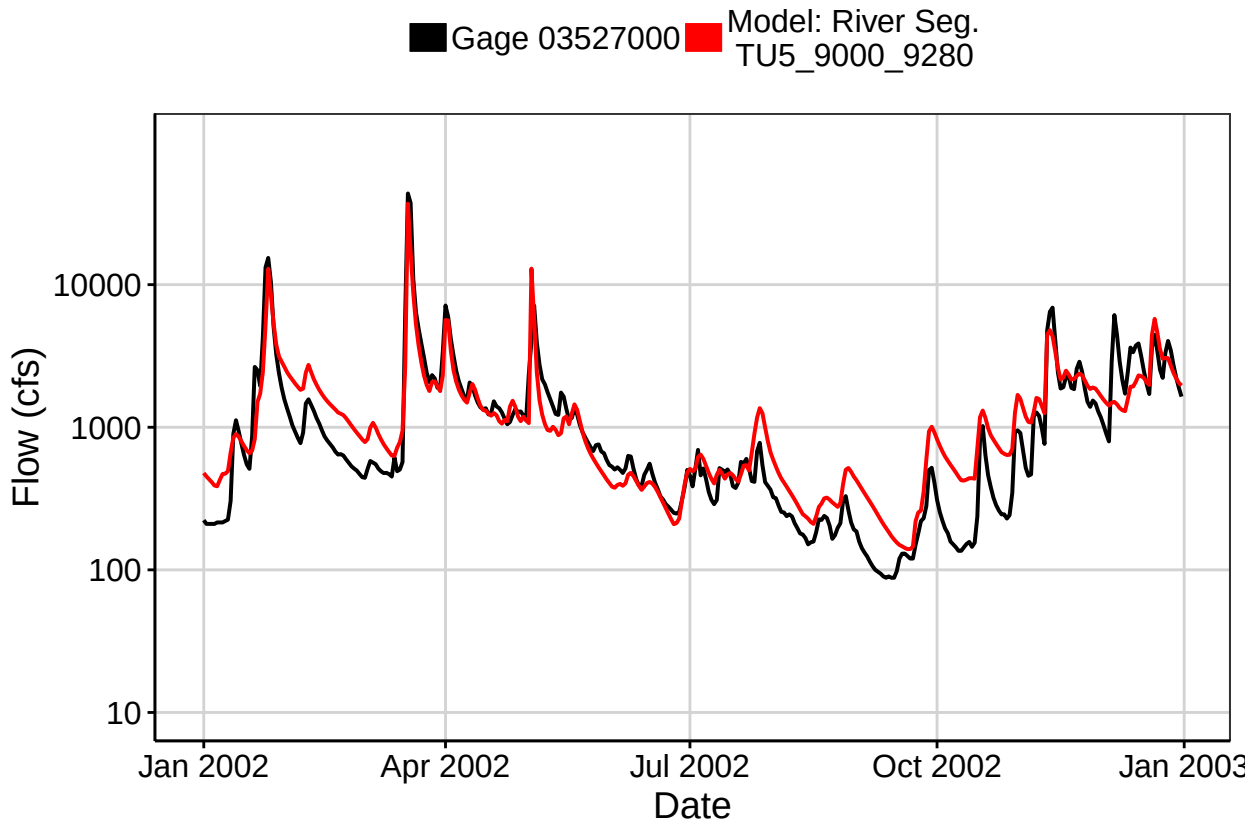


Fig. 3: Flow Exceedance

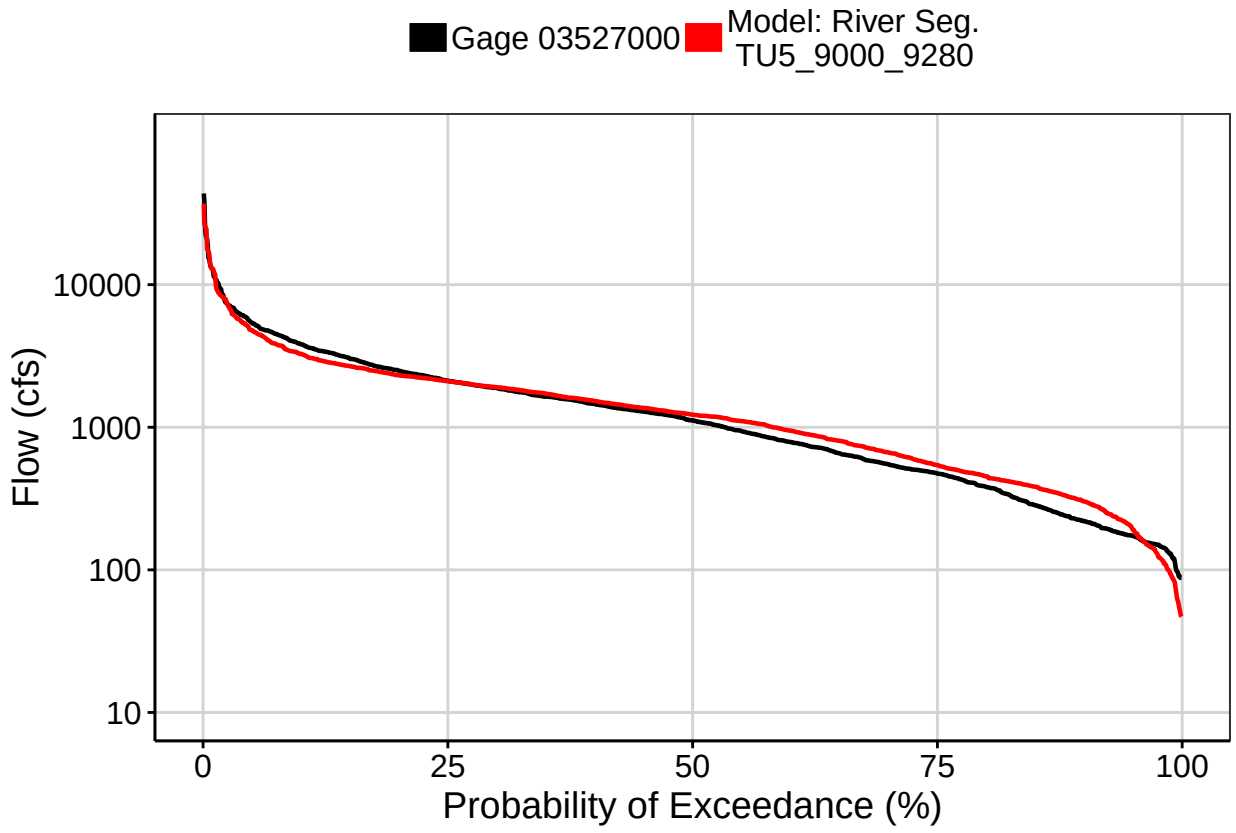


Fig. 4: Baseflow

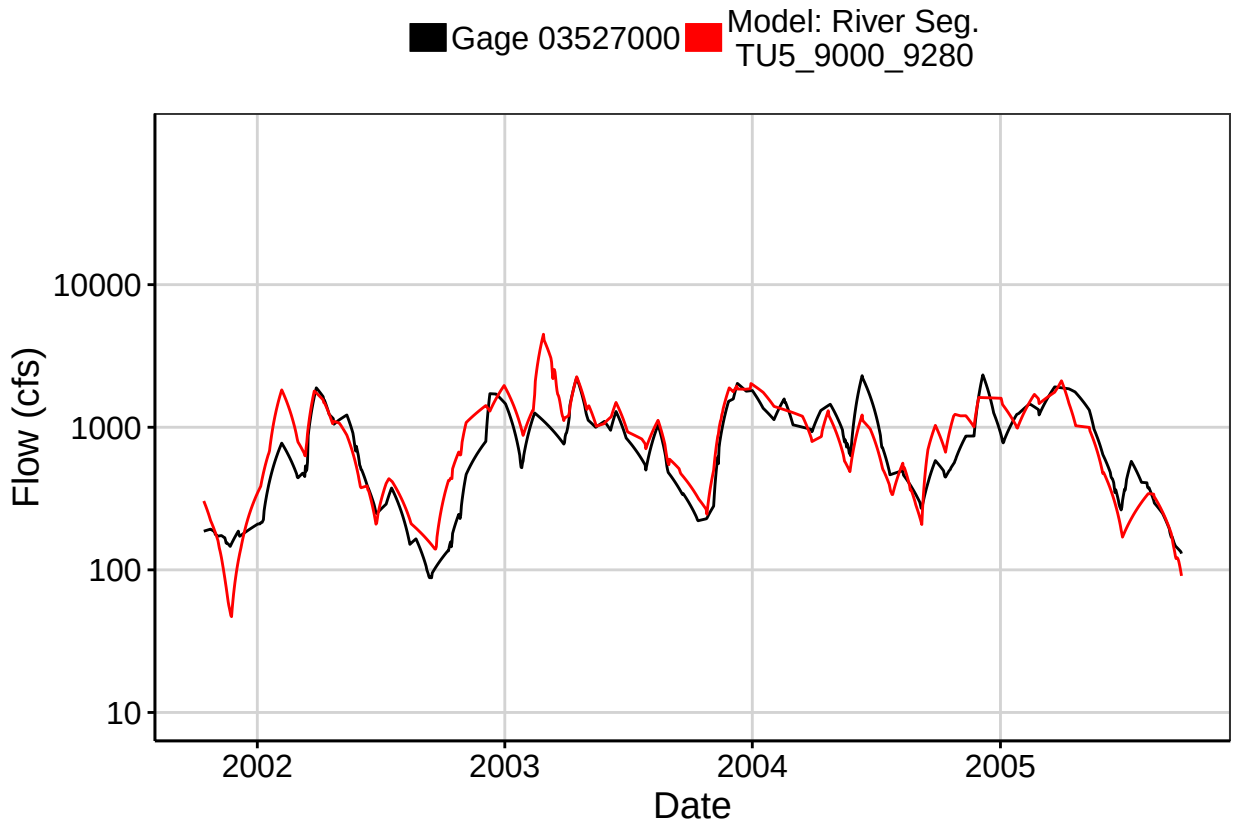


Fig. 5: Combined Baseflow

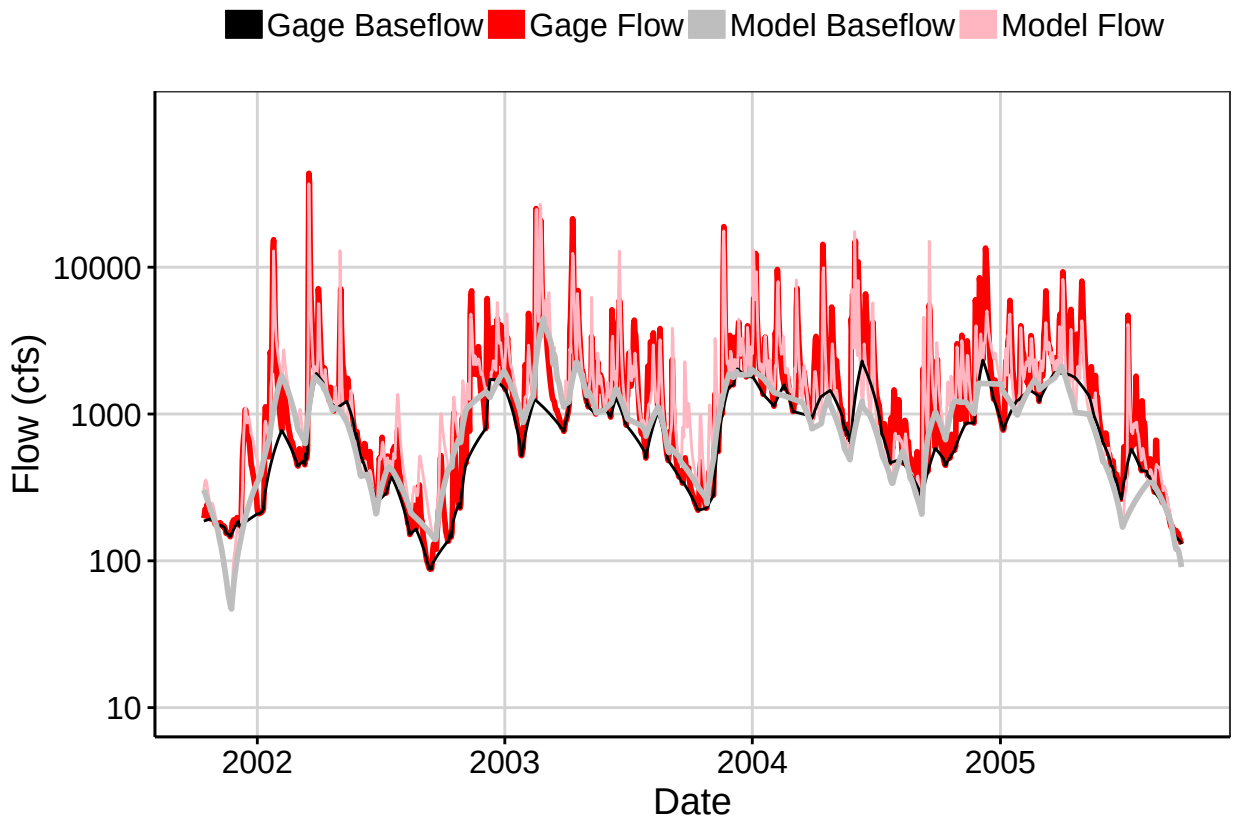


Fig. 6: Largest Error Segment

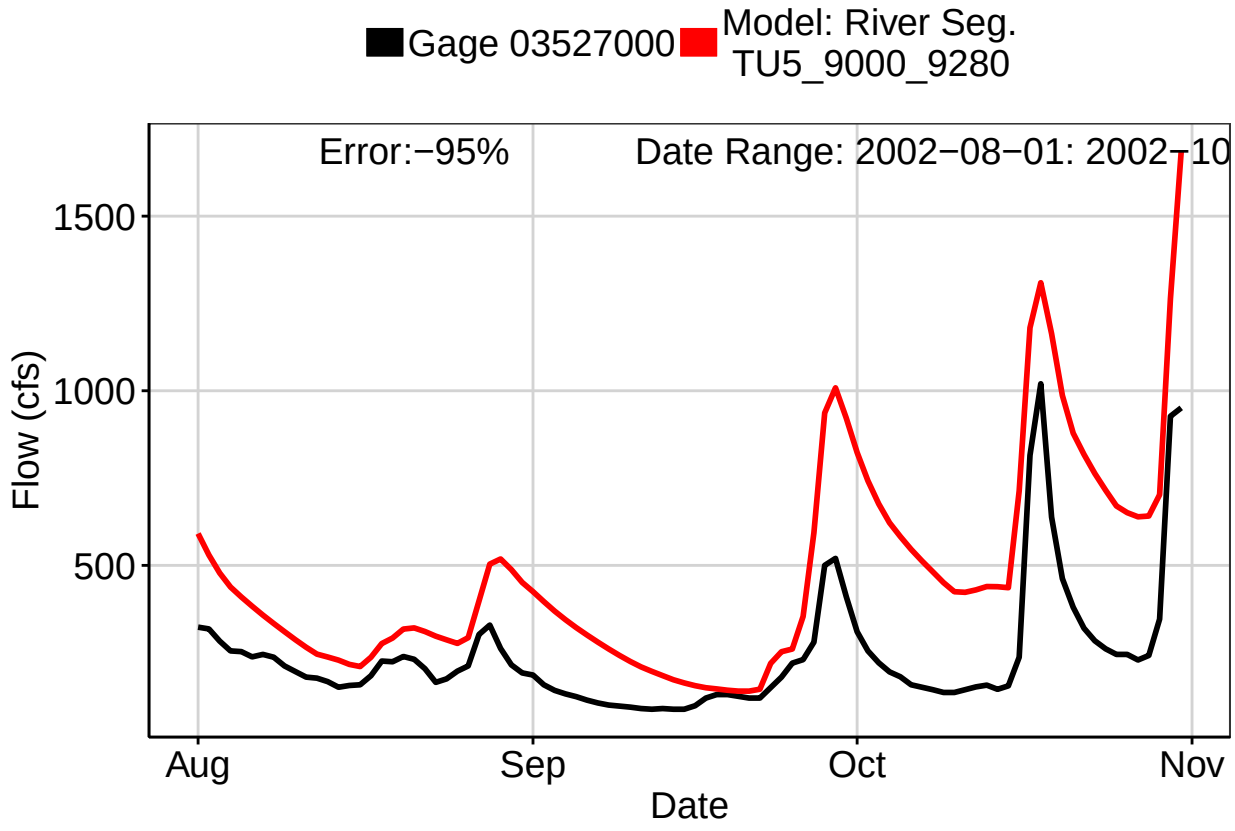


Fig. 7: Second Largest Error Segment

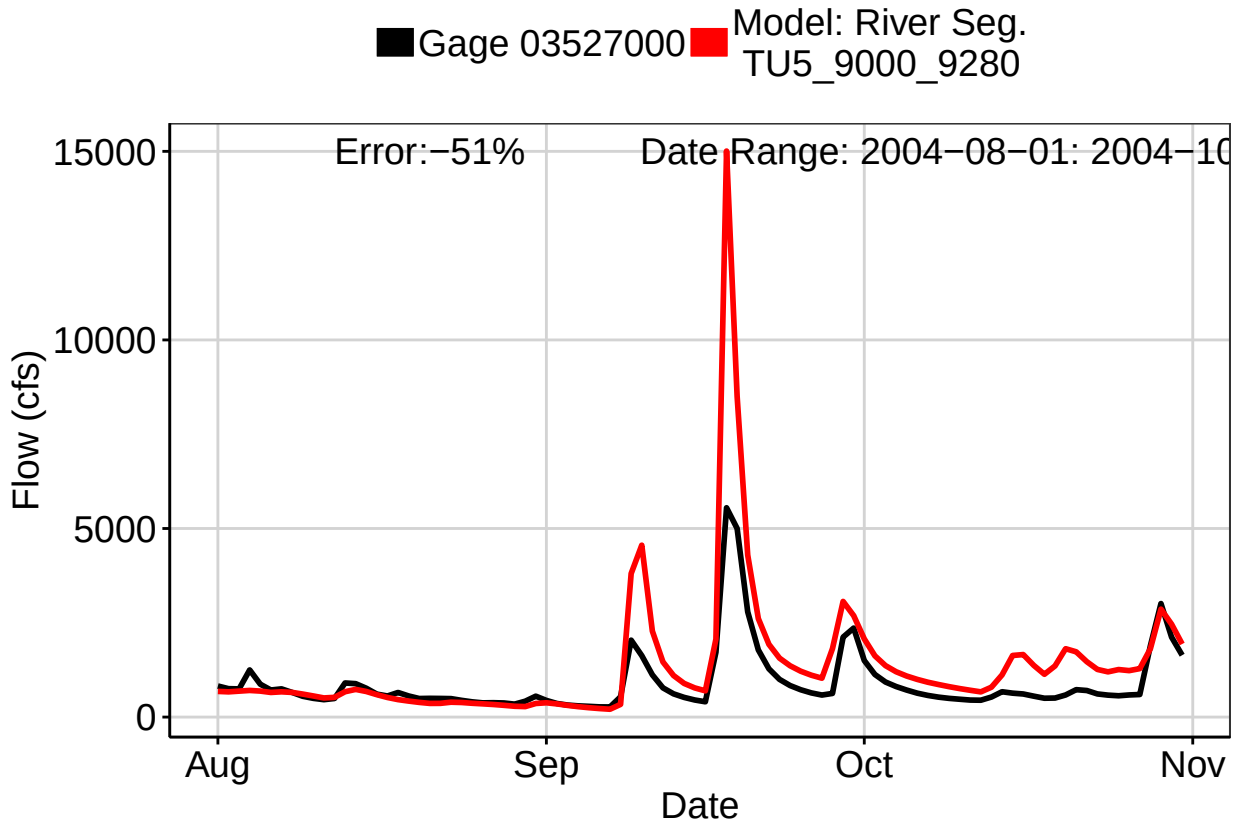


Fig. 8: Third Largest Error Segment

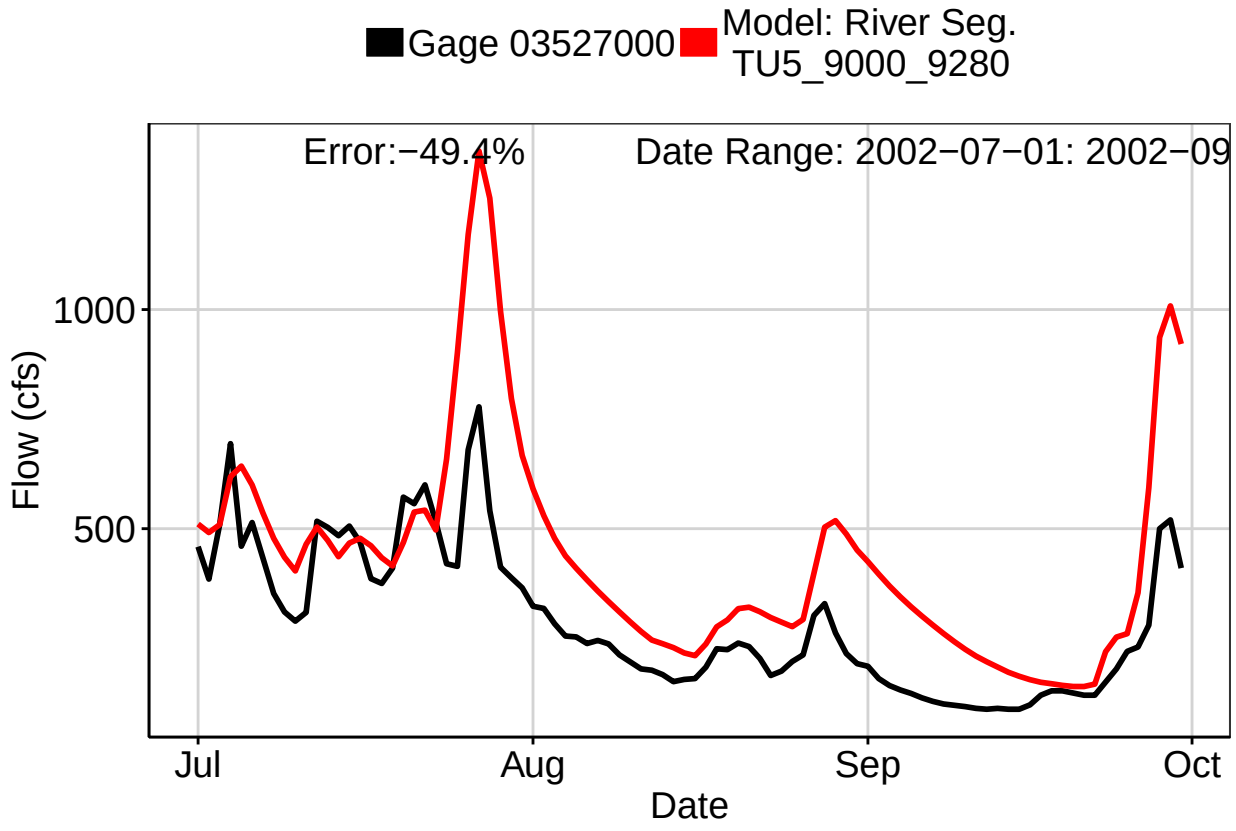


Fig. 9: Residuals Plot