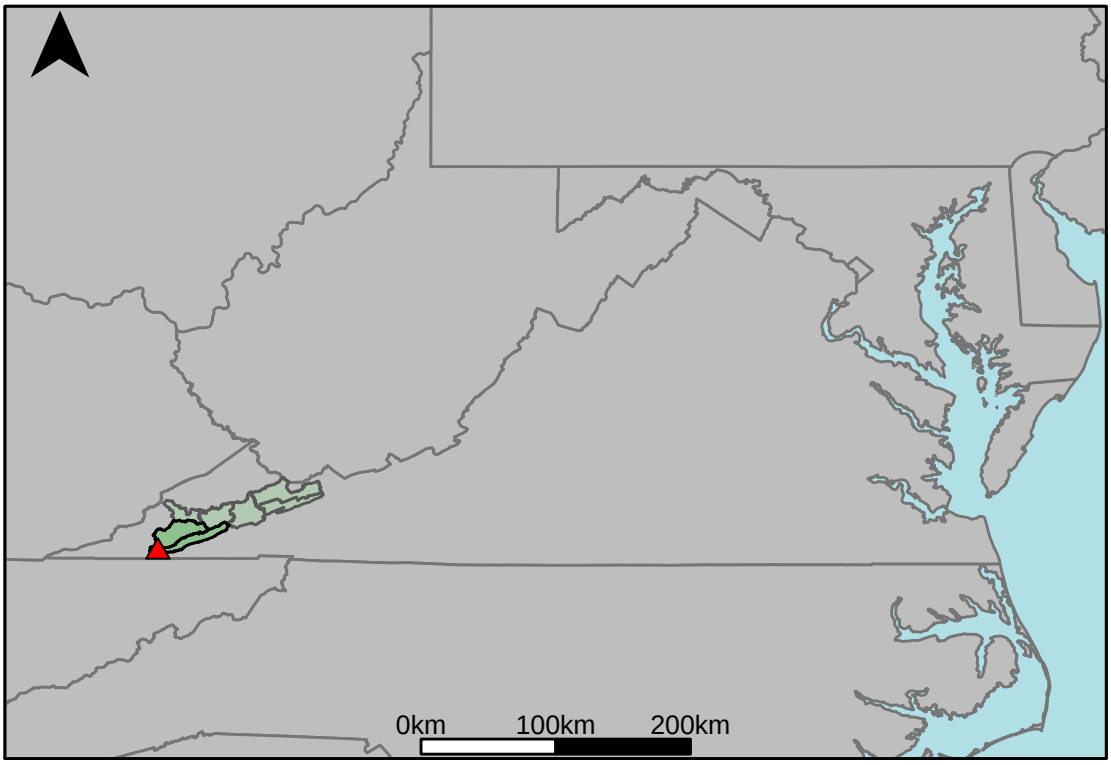
Appendix I.2: USGS Gage 03527000 vs. TU5_9000_9280+TU2_8970_9280



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 2.79%, with 27.8% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	199	331	66.3
Feb. Low Flow	368	745	102
Mar. Low Flow	888	1490	67.8
Apr. Low Flow	648	922	42.3
May Low Flow	1160	1340	15.5
Jun. Low Flow	846	945	11.7
Jul. Low Flow	1180	1030	-12.7
Aug. Low Flow	659	493	-25.2
Sep. Low Flow	552	584	5.8
Oct. Low Flow	413	367	-11.1
Nov. Low Flow	296	286	-3.38
Dec. Low Flow	200	172	-14

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	1790	1740	-2.79
Jan. Mean Flow	2200	2320	5.45
Feb. Mean Flow	2890	3320	14.9
Mar. Mean Flow	2780	2650	-4.68
Apr. Mean Flow	3270	2540	-22.3
May Mean Flow	1800	1610	-10.6
Jun. Mean Flow	1860	1530	-17.7
Jul. Mean Flow	999	876	-12.3
Aug. Mean Flow	722	657	-9
Sep. Mean Flow	543	939	72.9
Oct. Mean Flow	422	733	73.7
Nov. Mean Flow	1690	1780	5.33
Dec. Mean Flow	2430	2050	-15.6

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	746	1400	87.7
Feb. High Flow	6450	4350	-32.6
Mar. High Flow	5180	4690	-9.46
Apr. High Flow	9170	8780	-4.25
May High Flow	6580	5570	-15.3
Jun. High Flow	7040	7380	4.83
Jul. High Flow	11800	9000	-23.7
Aug. High Flow	7580	9500	25.3
Sep. High Flow	3360	4430	31.8
Oct. High Flow	2960	2020	-31.8
Nov. High Flow	1060	656	-38.1
Dec. High Flow	1440	2400	66.7

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	88	46.5	-47.2
Med. 1 Day Min	133	145	9.02
Min. 3 Day Min	88.7	48	-45.9
Med. 3 Day Min	137	156	13.9
Min. 7 Day Min	90.7	53.2	-41.3
Med. 7 Day Min	142	185	30.3
Min. 30 Day Min	142	100	-29.6
Med. 30 Day Min	235	280	19.1
Min. 90 Day Min	282	327	16
Med. 90 Day Min	694	672	-3.17
7Q10	95	49.7	-47.7
Year of 90-Day Min. Flow	2002	2002	0
Drought Year Mean	1170	1110	-5.13
Mean Baseflow	846	948	12.1

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	43600	36600	-16.1
Med. 1 Day Max	22000	22000	0
Max. 3 Day Max	30700	22800	-25.7
Med. 3 Day Max	15600	17500	12.2
Max. 7 Day Max	16200	14200	-12.3
Med. 7 Day Max	9880	9520	-3.64
Max. 30 Day Max	6180	7710	24.8
Med. 30 Day Max	5270	4080	-22.6
Max. 90 Day Max	3890	4340	11.6
Med. 90 Day Max	3140	3040	-3.18

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	125	88.7	-29
5% Non-Exceedance	173	190	9.83
50% Non-Exceedance	1120	1210	8.04
95% Non-Exceedance	5350	4730	-11.6
99% Non-Exceedance	11800	12500	5.93
Sept. 10% Non-Exceedance	120	120	0

Fig. 1: Hydrograph

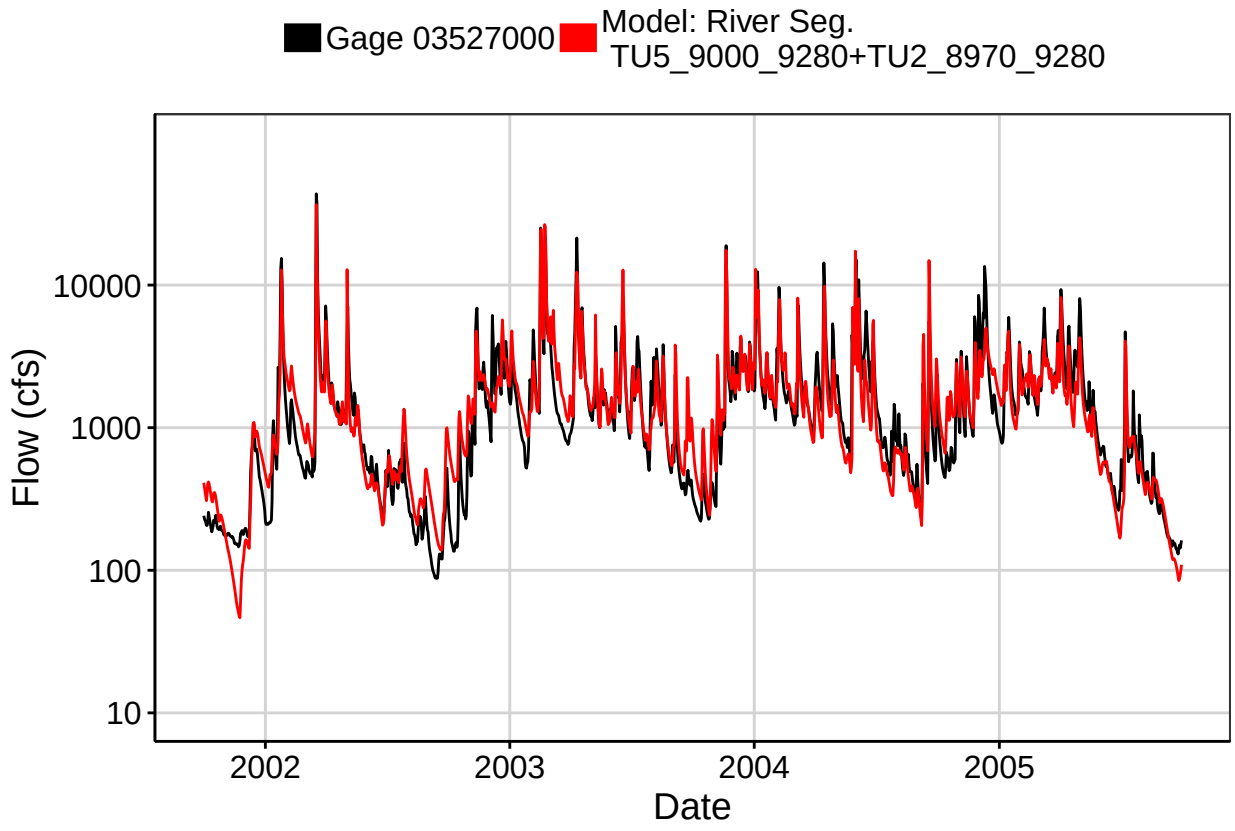


Fig. 2: Zoomed Hydrograph

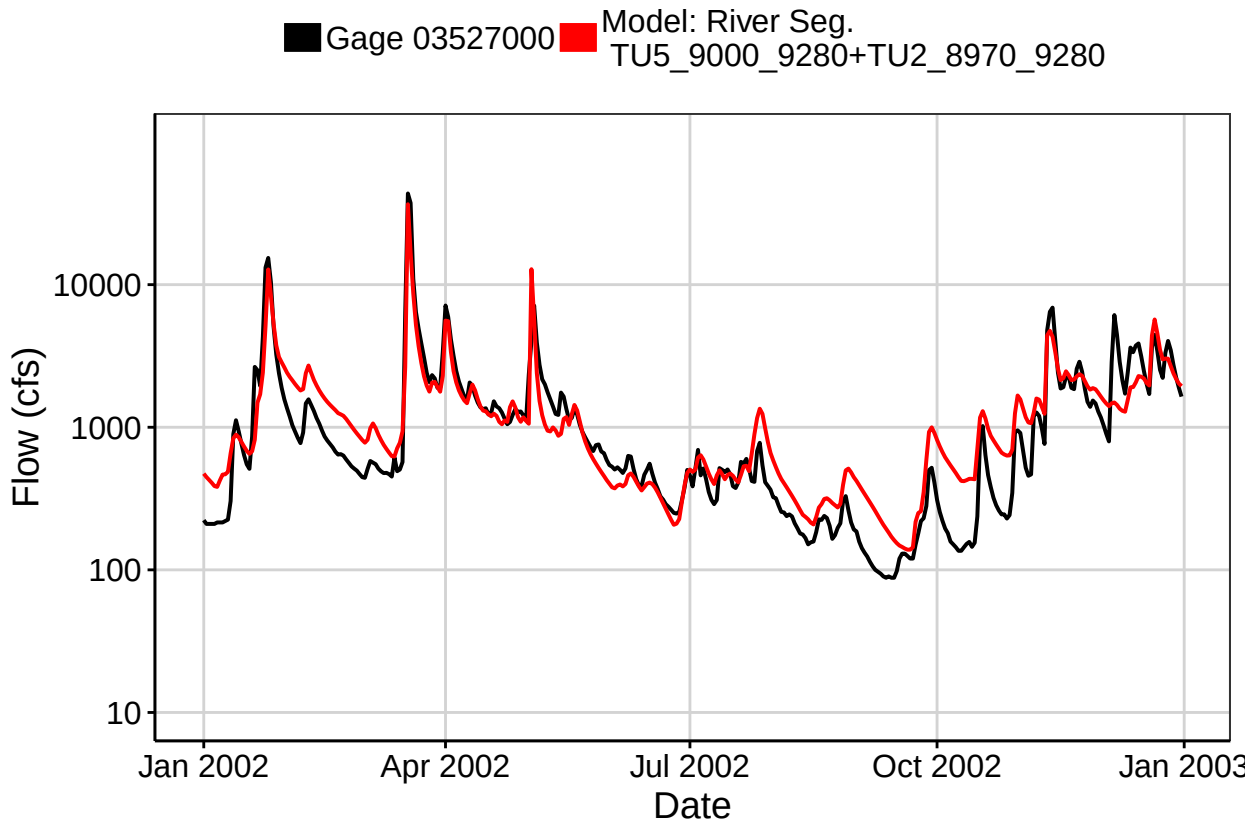


Fig. 3: Flow Exceedance

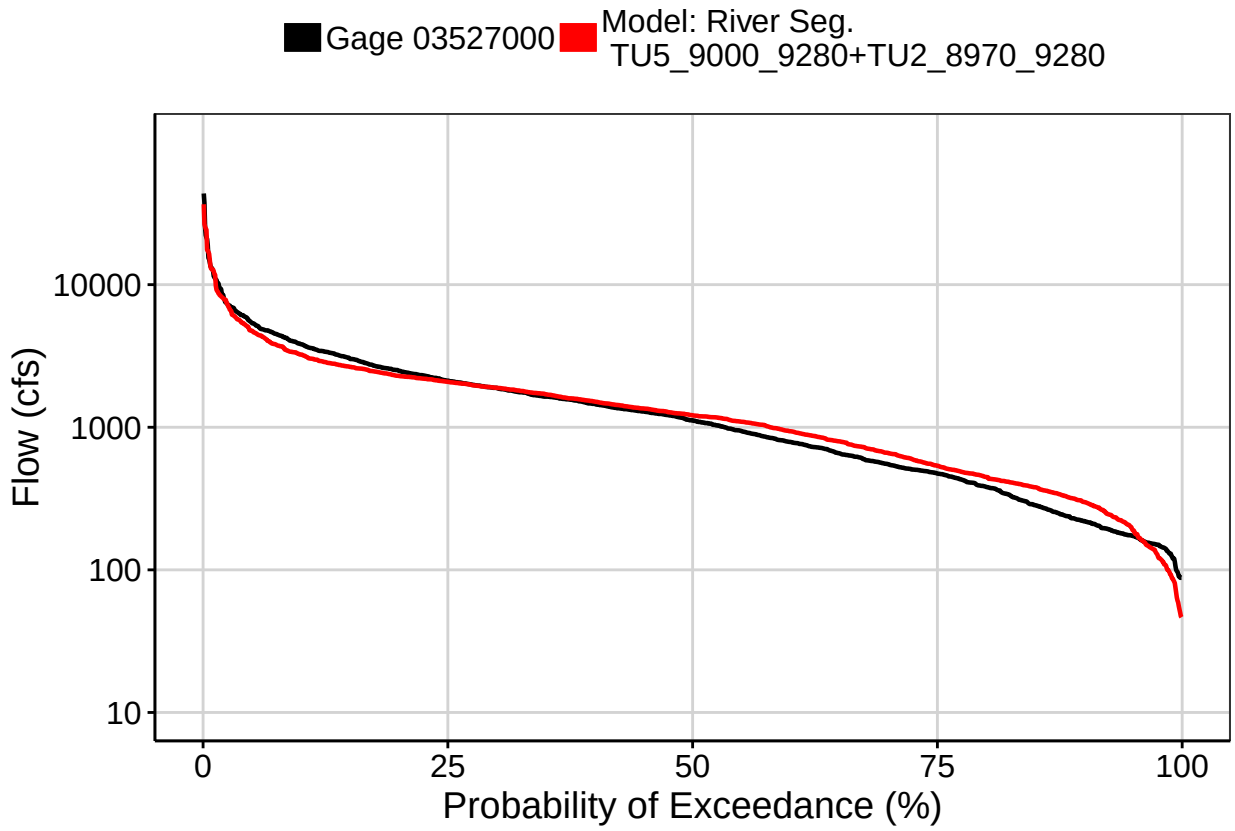


Fig. 4: Baseflow

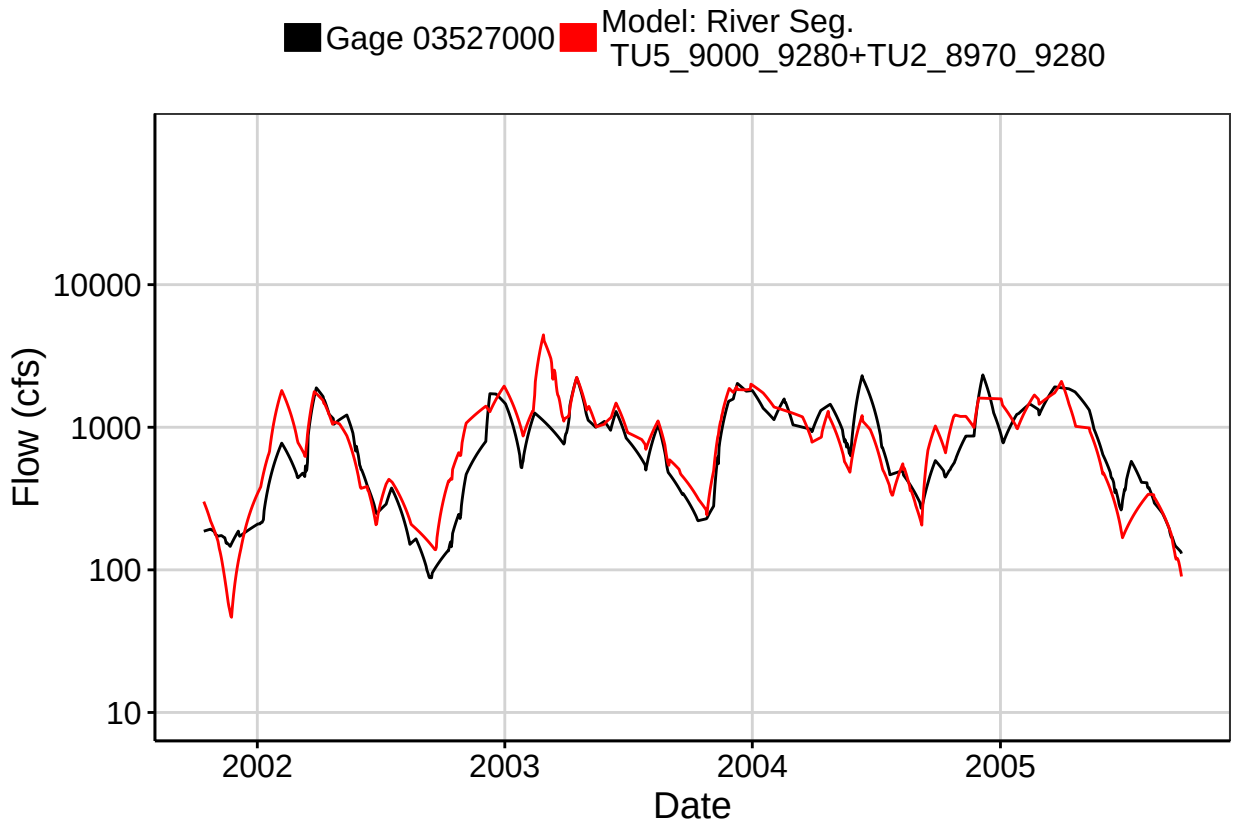


Fig. 5: Combined Baseflow

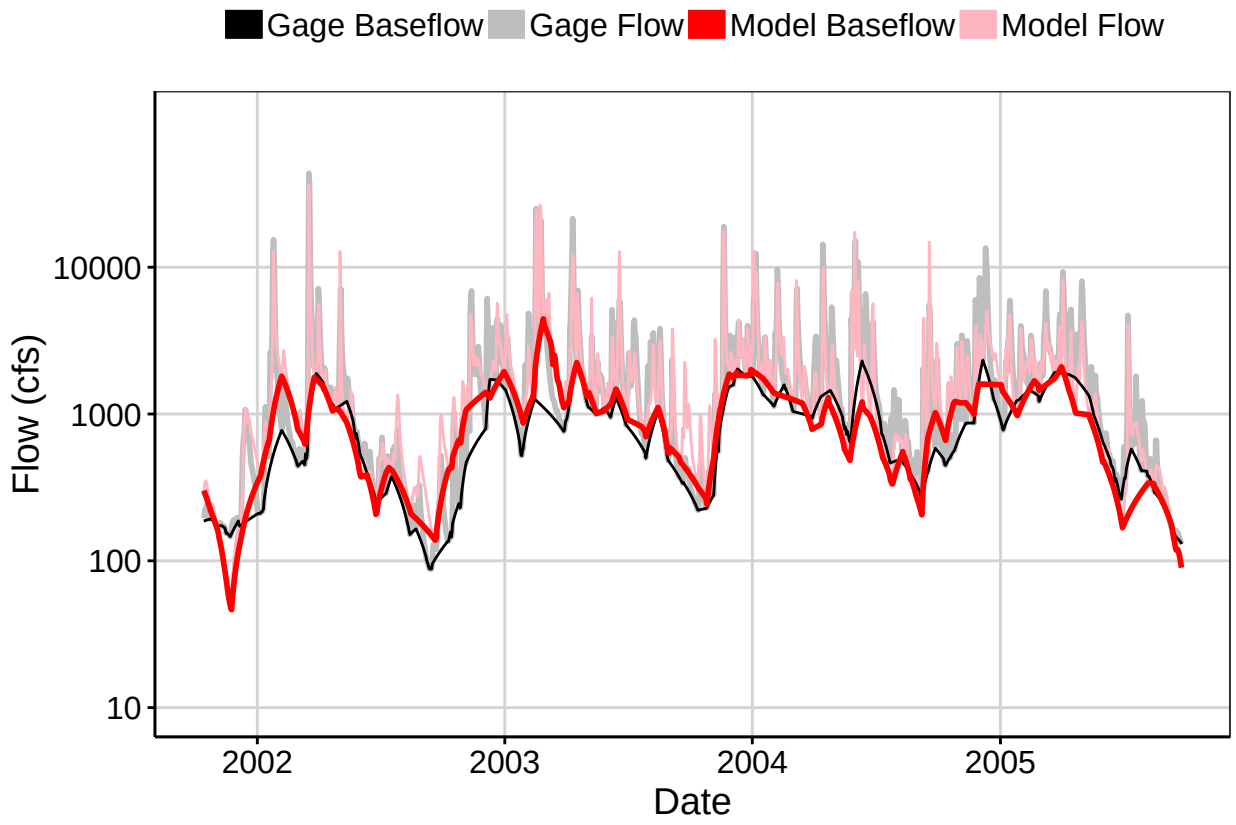


Fig. 6: Largest Error Segment

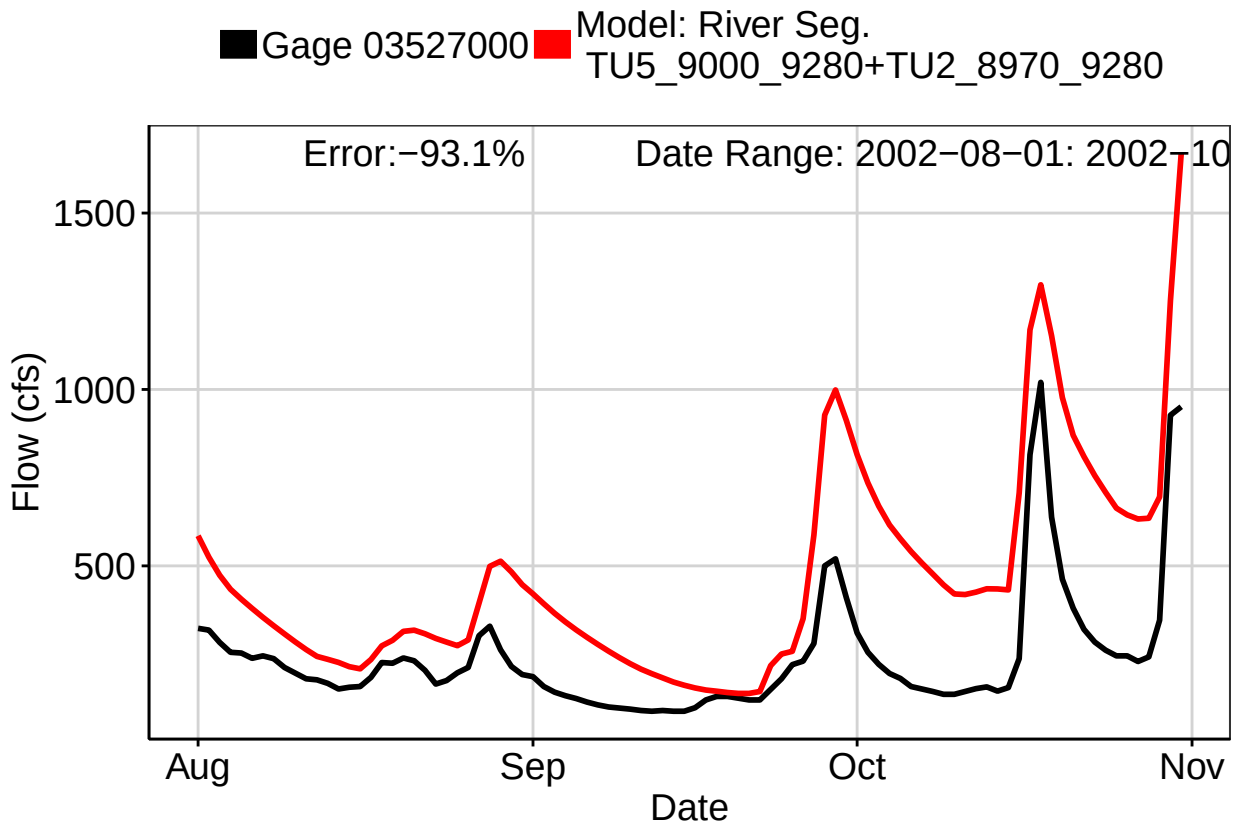


Fig. 7: Second Largest Error Segment

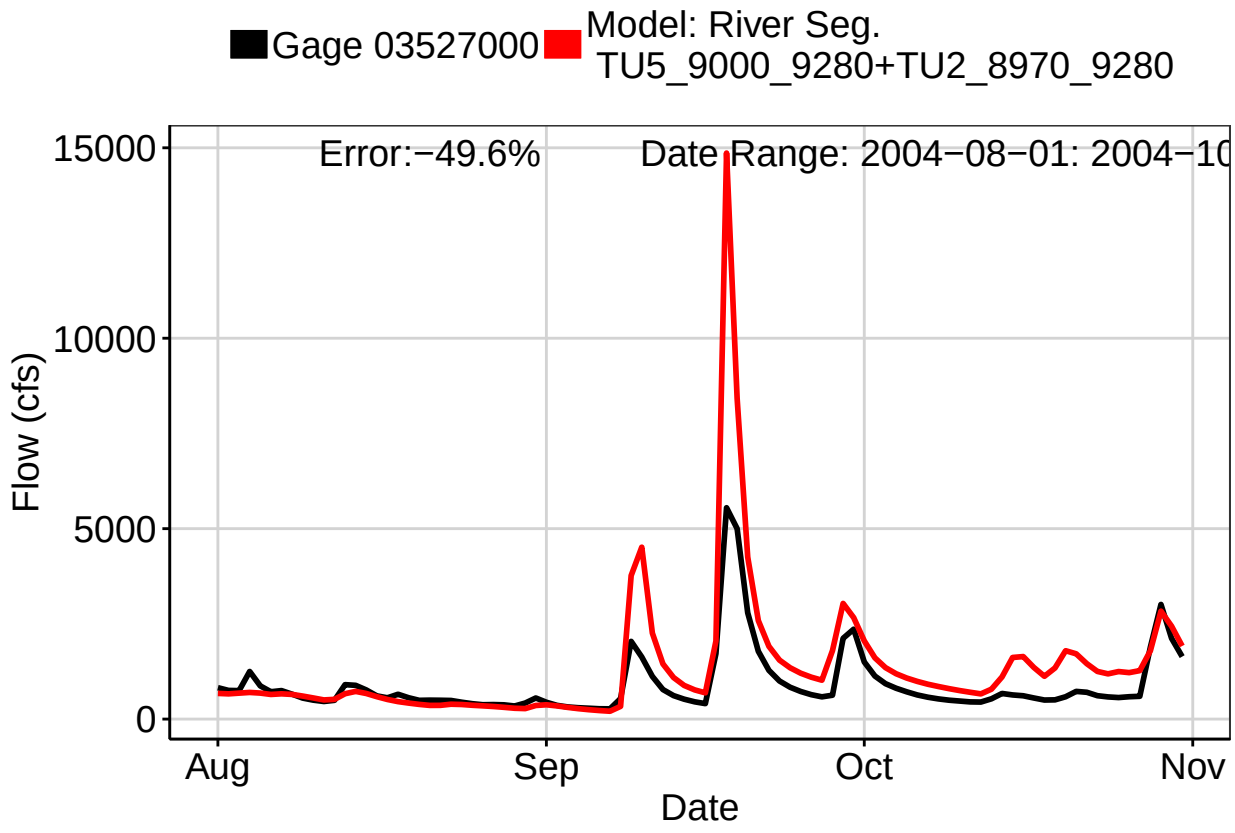


Fig. 8: Third Largest Error Segment

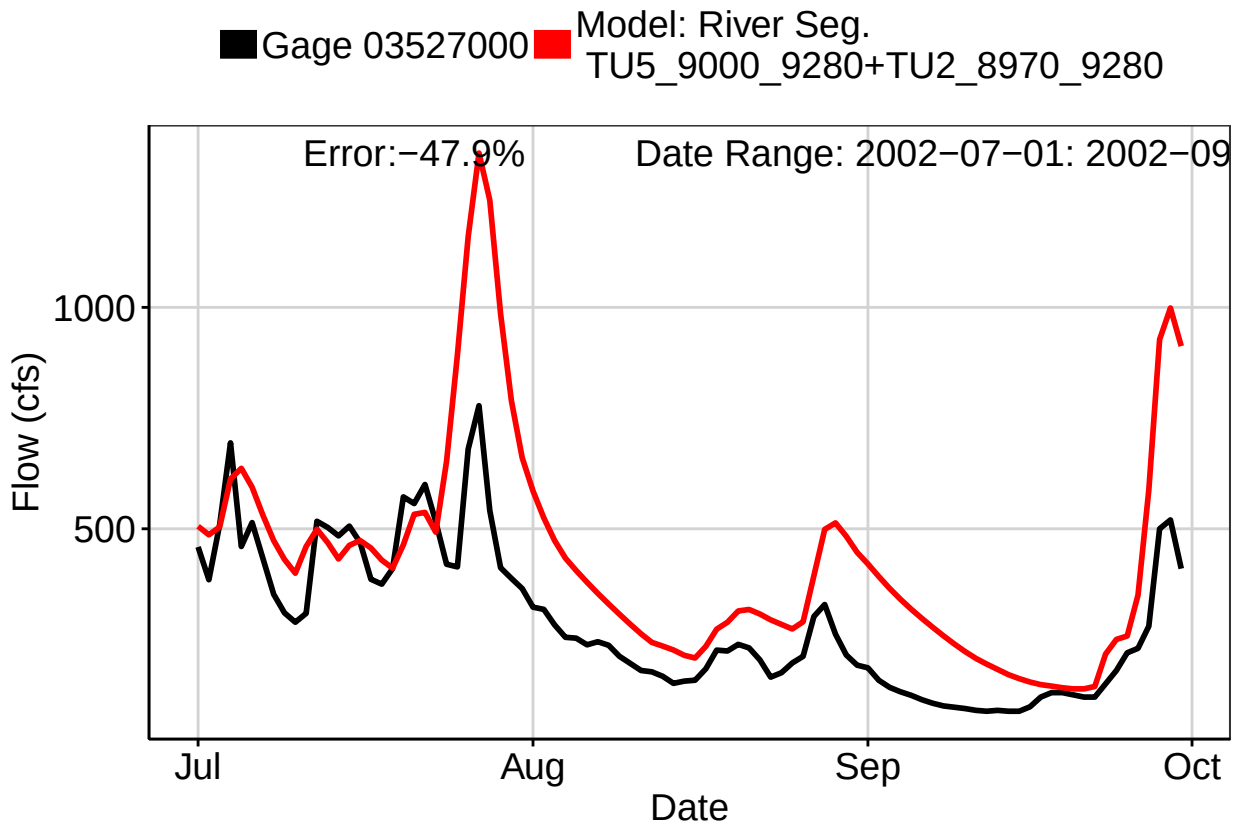


Fig. 9: Residuals Plot