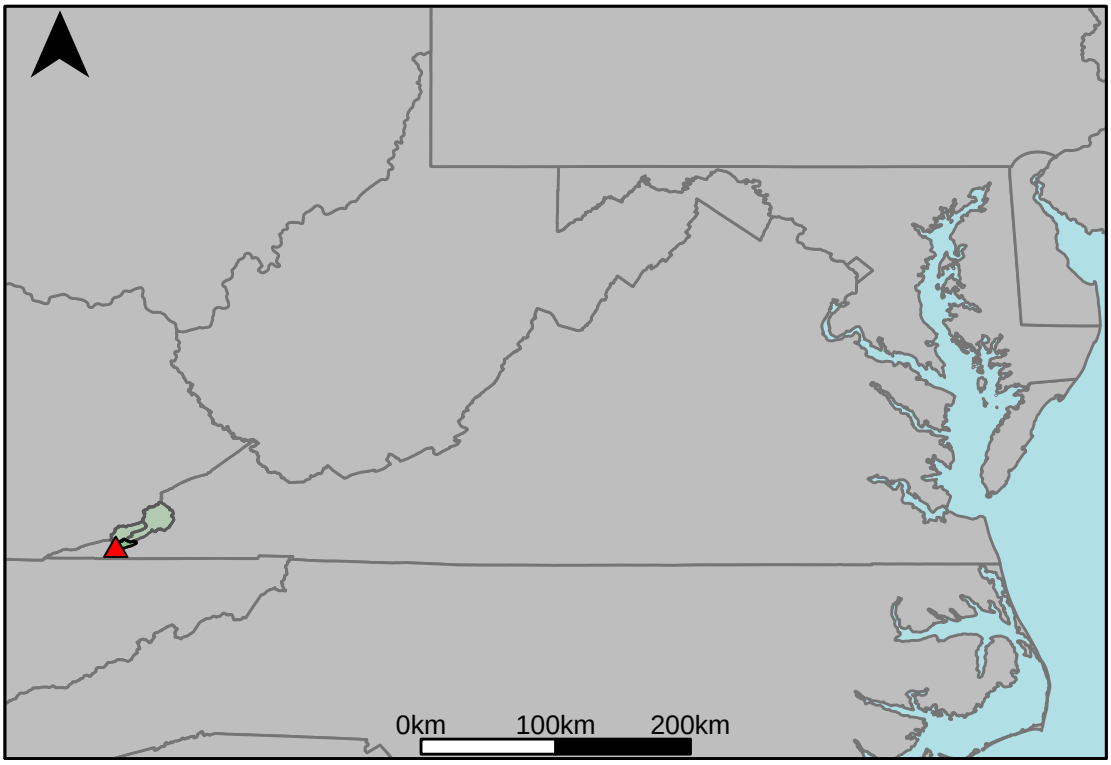
Appendix I.3: USGS Gage 03531500 vs. TU3_9230_9260



This river segment follows part of the flow of the Powell River, a tributary of the Tennessee River. The gage is located in Lee County, VA (Lat 3639'43", Long 8305'42") approximately 32 miles southwest of Norton, VA. Drainage area is 319 sq. miles. This gage started taking data in 1931 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 1.85%, with 44.6% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	59	76.3	29.3
Feb. Low Flow	72	146	103
Mar. Low Flow	169	195	15.4
Apr. Low Flow	211	279	32.2
May Low Flow	312	340	8.97
Jun. Low Flow	327	298	-8.87
Jul. Low Flow	303	212	-30
Aug. Low Flow	208	154	-26
Sep. Low Flow	124	119	-4.03
Oct. Low Flow	88	84.7	-3.75
Nov. Low Flow	66	83.1	25.9
Dec. Low Flow	55	73.1	32.9

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	541	531	-1.85
Jan. Mean Flow	804	749	-6.84
Feb. Mean Flow	1090	1050	-3.67
Mar. Mean Flow	993	912	-8.16
Apr. Mean Flow	834	688	-17.5
May Mean Flow	643	511	-20.5
Jun. Mean Flow	428	341	-20.3
Jul. Mean Flow	224	243	8.48
Aug. Mean Flow	186	232	24.7
Sep. Mean Flow	146	262	79.5
Oct. Mean Flow	137	256	86.9
Nov. Mean Flow	353	471	33.4
Dec. Mean Flow	686	691	0.73

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	211	587	178
Feb. High Flow	1930	1810	-6.22
Mar. High Flow	2500	1910	-23.6
Apr. High Flow	3170	2500	-21.1
May High Flow	3760	3300	-12.2
Jun. High Flow	3030	2760	-8.91
Jul. High Flow	1920	1490	-22.4
Aug. High Flow	2040	1430	-29.9
Sep. High Flow	559	657	17.5
Oct. High Flow	700	543	-22.4
Nov. High Flow	499	972	94.8
Dec. High Flow	422	527	24.9

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	34	4.83	-85.8
Med. 1 Day Min	44	43.7	-0.68
Min. 3 Day Min	34.7	5.75	-83.4
Med. 3 Day Min	46	45.7	-0.65
Min. 7 Day Min	35.1	8.44	-76
Med. 7 Day Min	46.4	50.9	9.7
Min. 30 Day Min	39.6	26.4	-33.3
Med. 30 Day Min	62.2	77.5	24.6
Min. 90 Day Min	72.7	80.7	11
Med. 90 Day Min	136	158	16.2
7Q10	38.2	13.5	-64.7
Year of 90-Day Min. Flow	1995	1999	100
Drought Year Mean	500	455	-9
Mean Baseflow	234	241	2.99

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	21400	15800	-26.2
Med. 1 Day Max	6610	6510	-1.51
Max. 3 Day Max	10900	8900	-18.3
Med. 3 Day Max	4600	4250	-7.61
Max. 7 Day Max	6310	5350	-15.2
Med. 7 Day Max	3030	2790	-7.92
Max. 30 Day Max	3010	2820	-6.31
Med. 30 Day Max	1620	1390	-14.2
Max. 90 Day Max	2180	2120	-2.75
Med. 90 Day Max	1150	1020	-11.3

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	42	30.4	-27.6
5% Non-Exceedance	51	60.7	19
50% Non-Exceedance	277	318	14.8
95% Non-Exceedance	1830	1620	-11.5
99% Non-Exceedance	4150	3820	-7.95
Sept. 10% Non-Exceedance	44	45	2.27

Fig. 1: Hydrograph

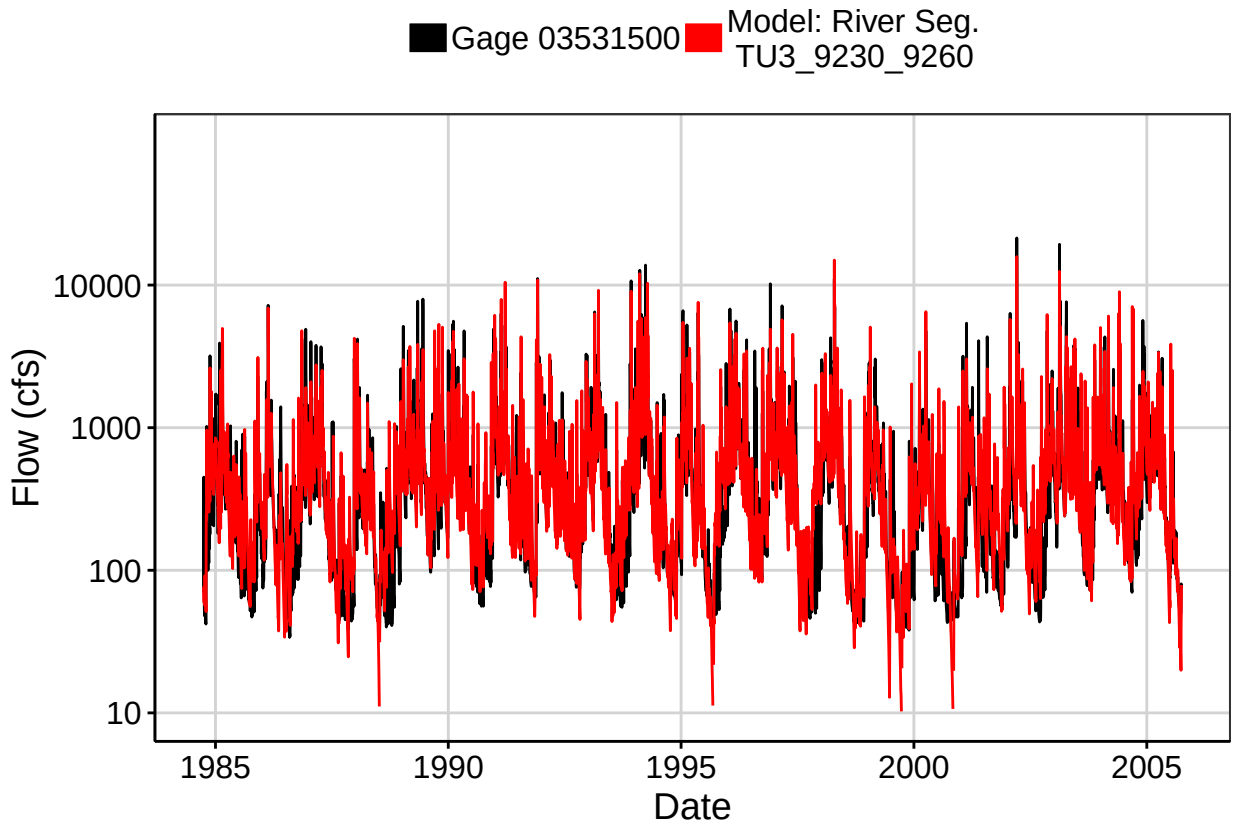


Fig. 2: Zoomed Hydrograph

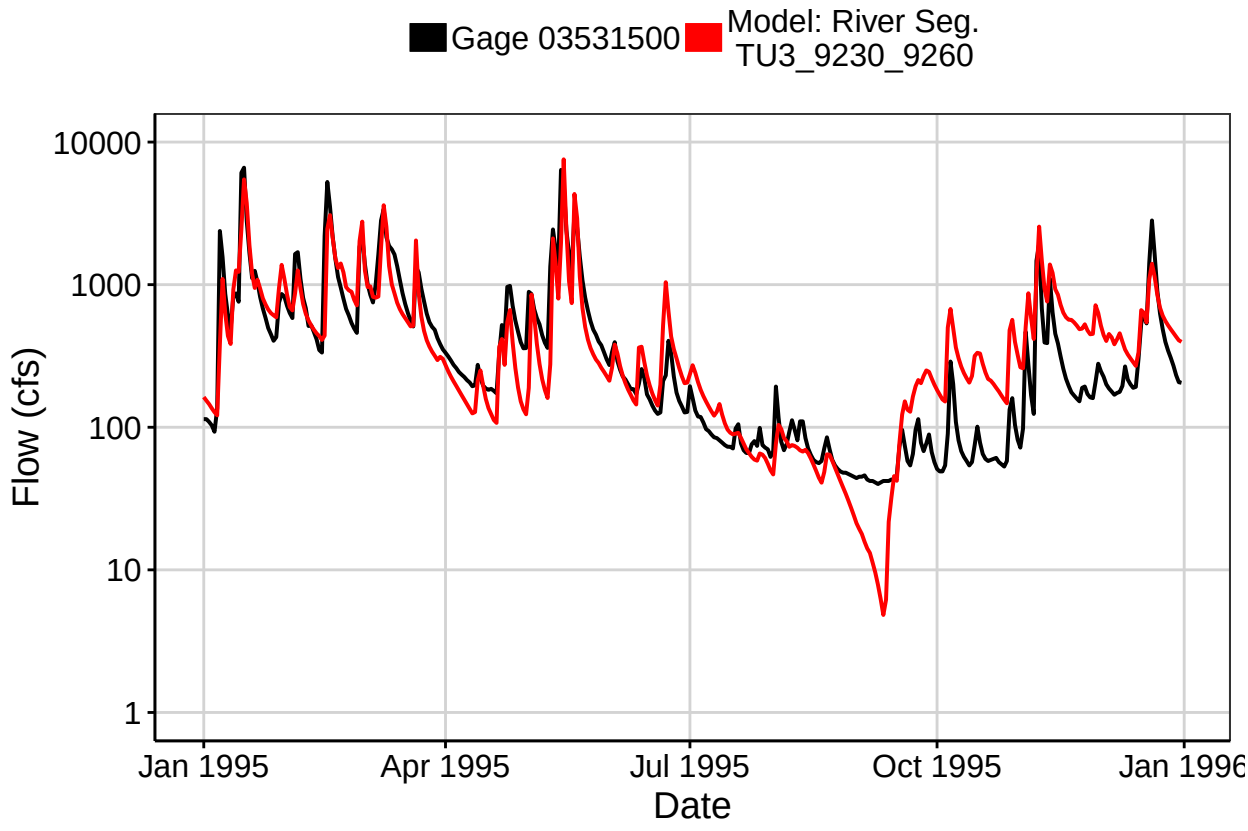


Fig. 3: Flow Exceedance

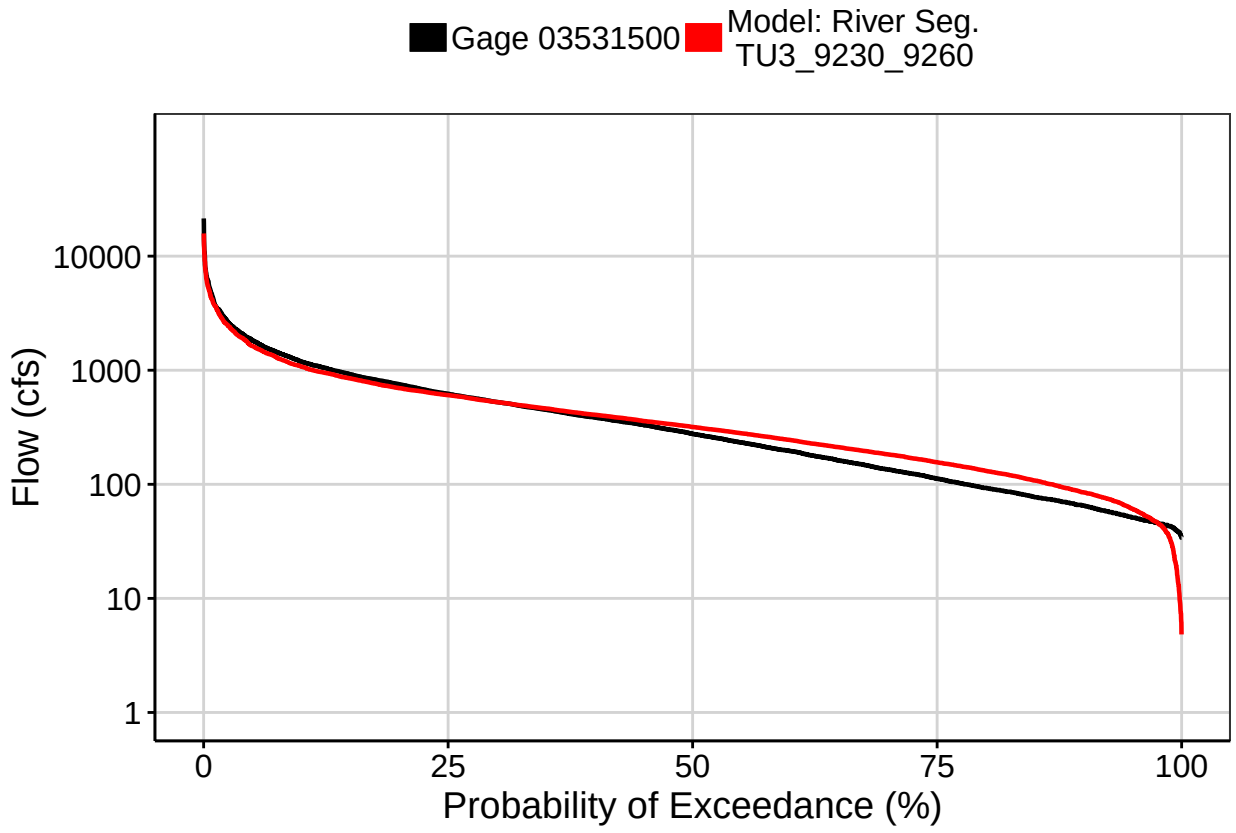


Fig. 4: Baseflow

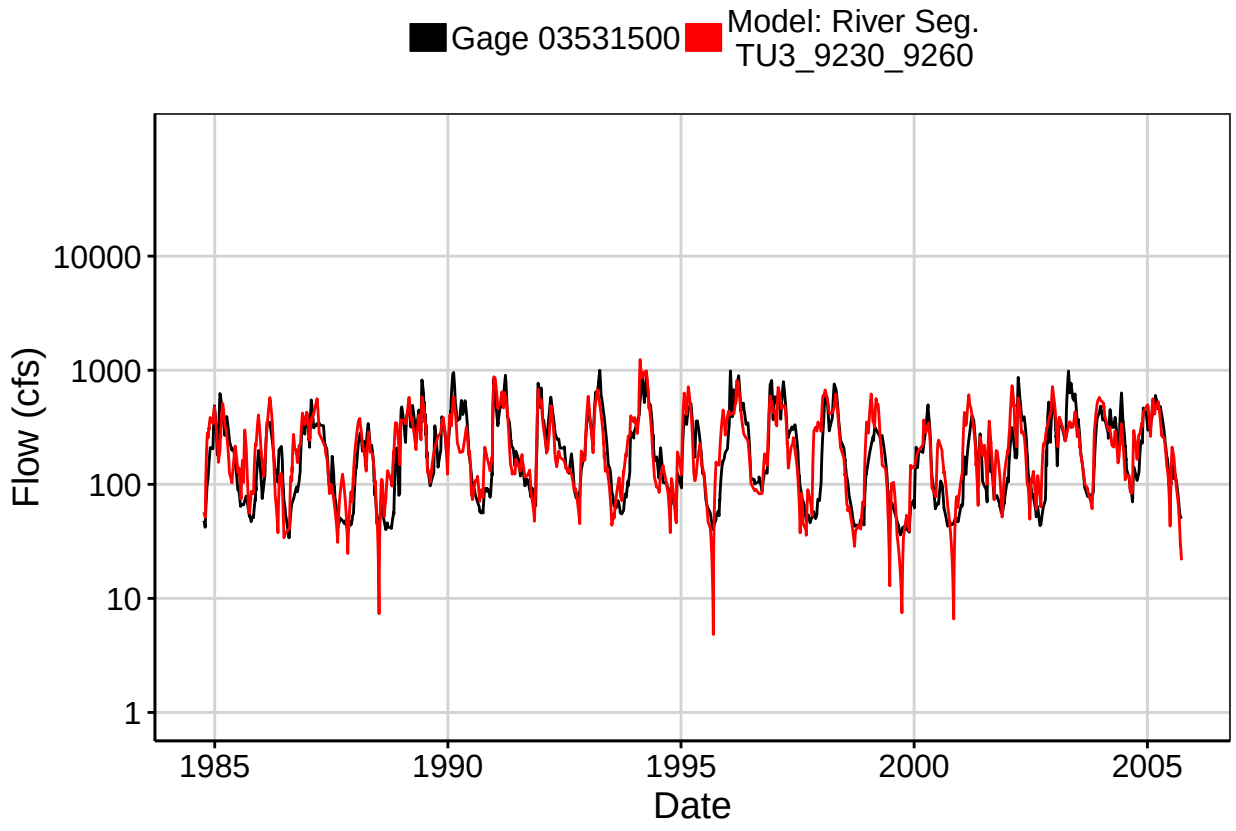


Fig. 5: Combined Baseflow

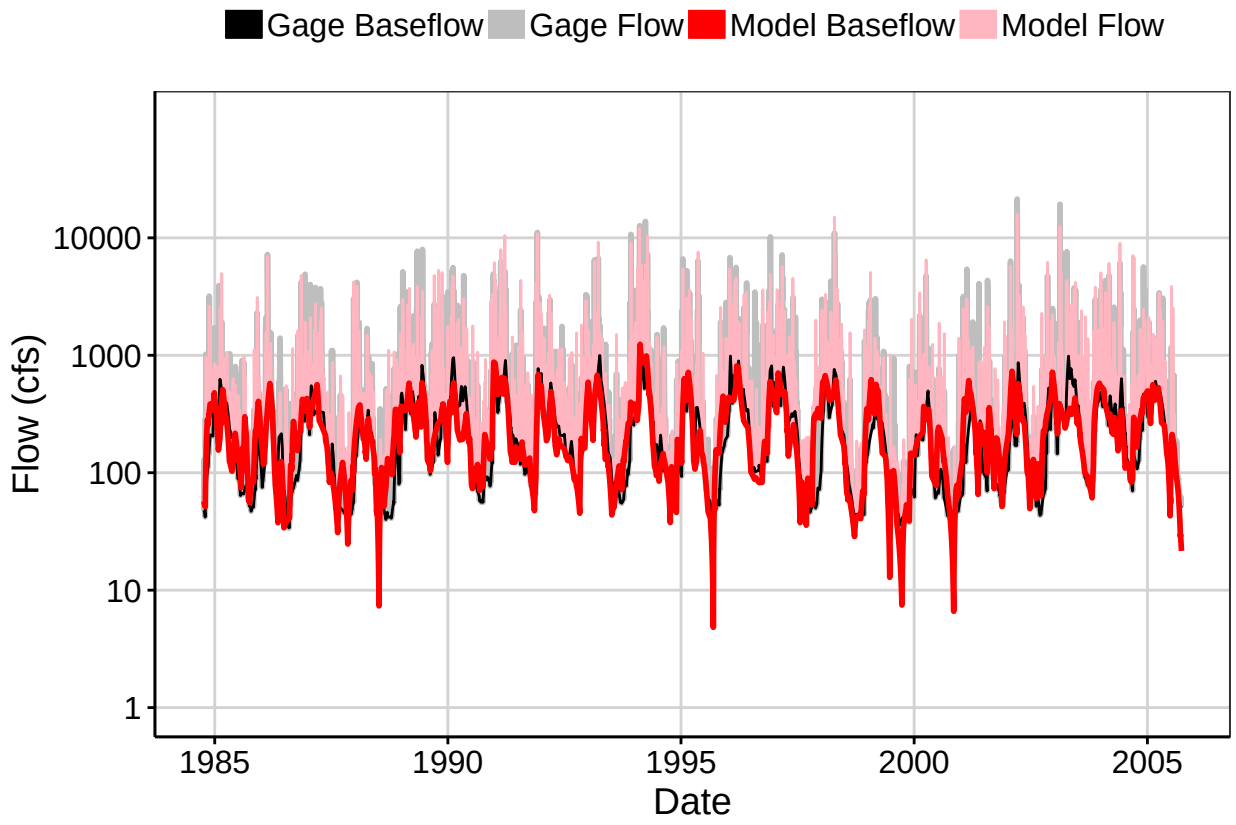


Fig. 6: Largest Error Segment

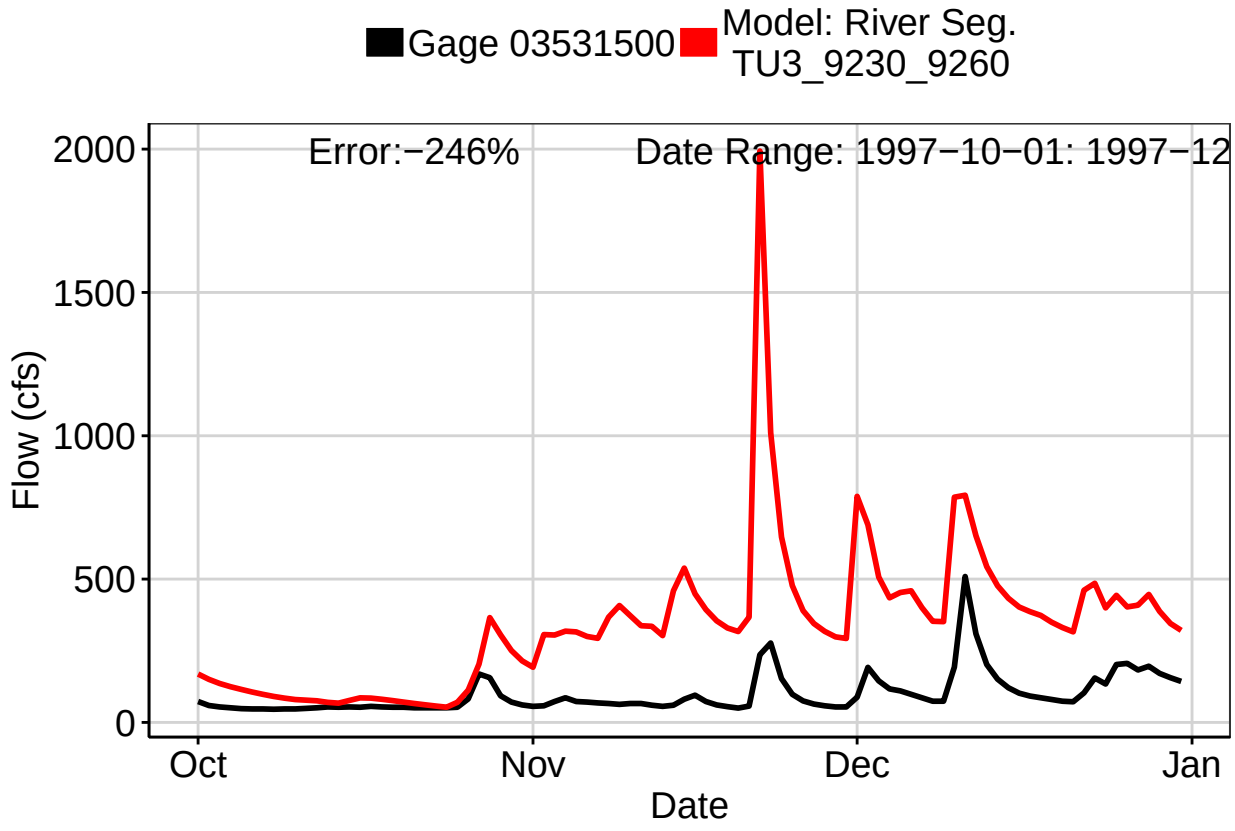


Fig. 7: Second Largest Error Segment

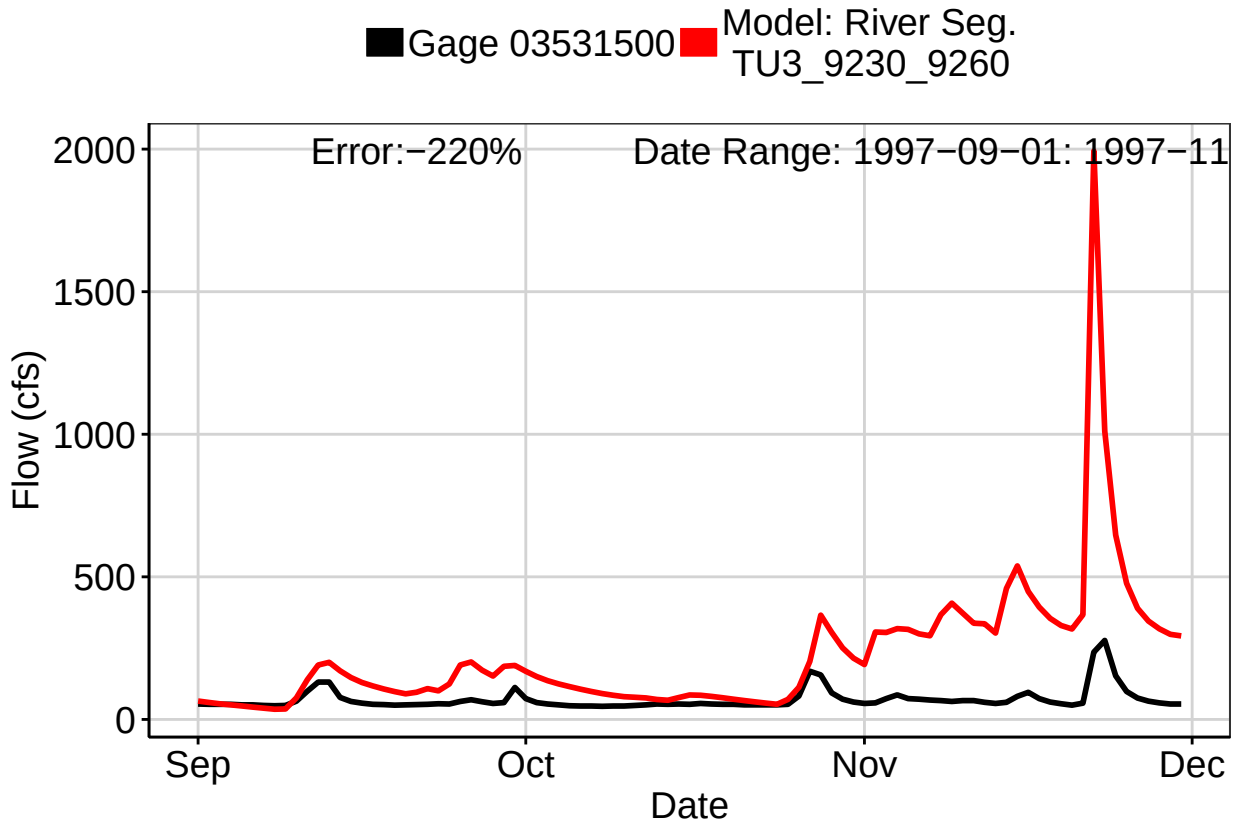


Fig. 8: Third Largest Error Segment

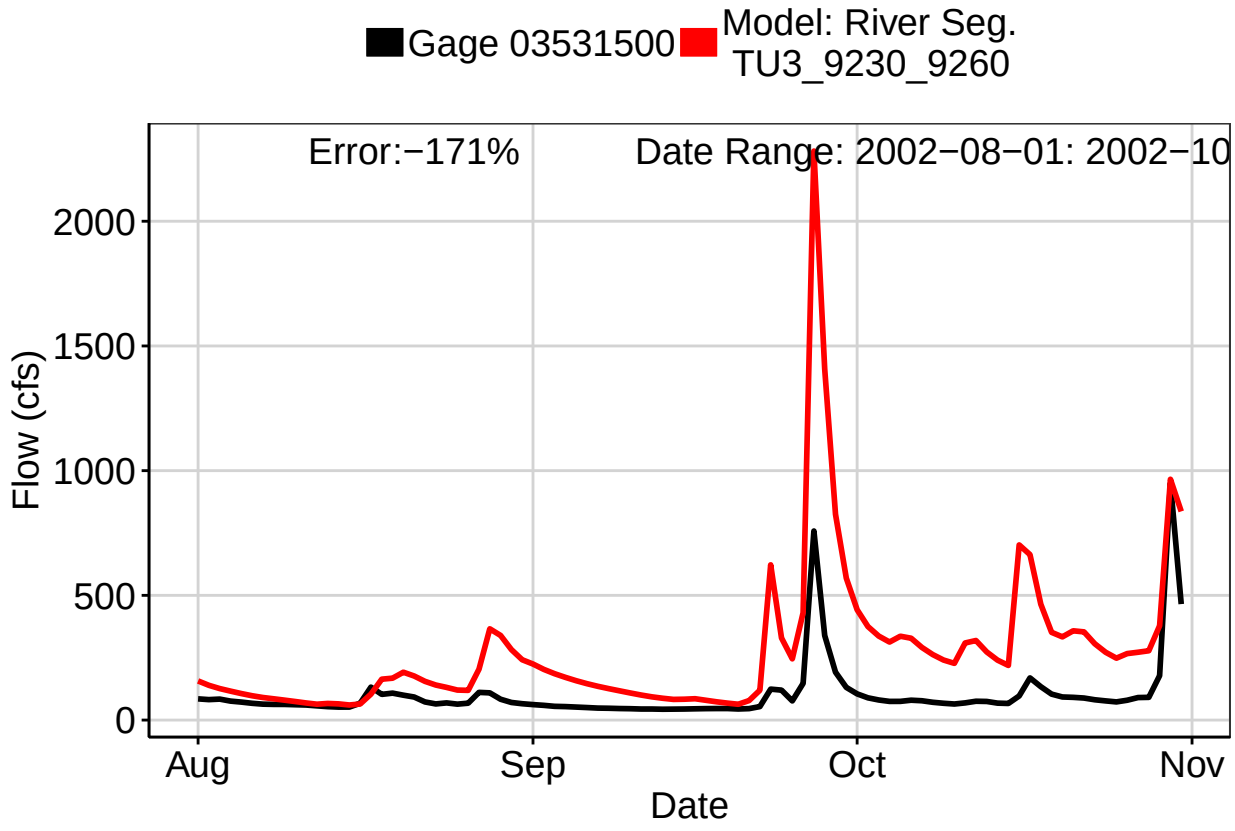


Fig. 9: Residuals Plot