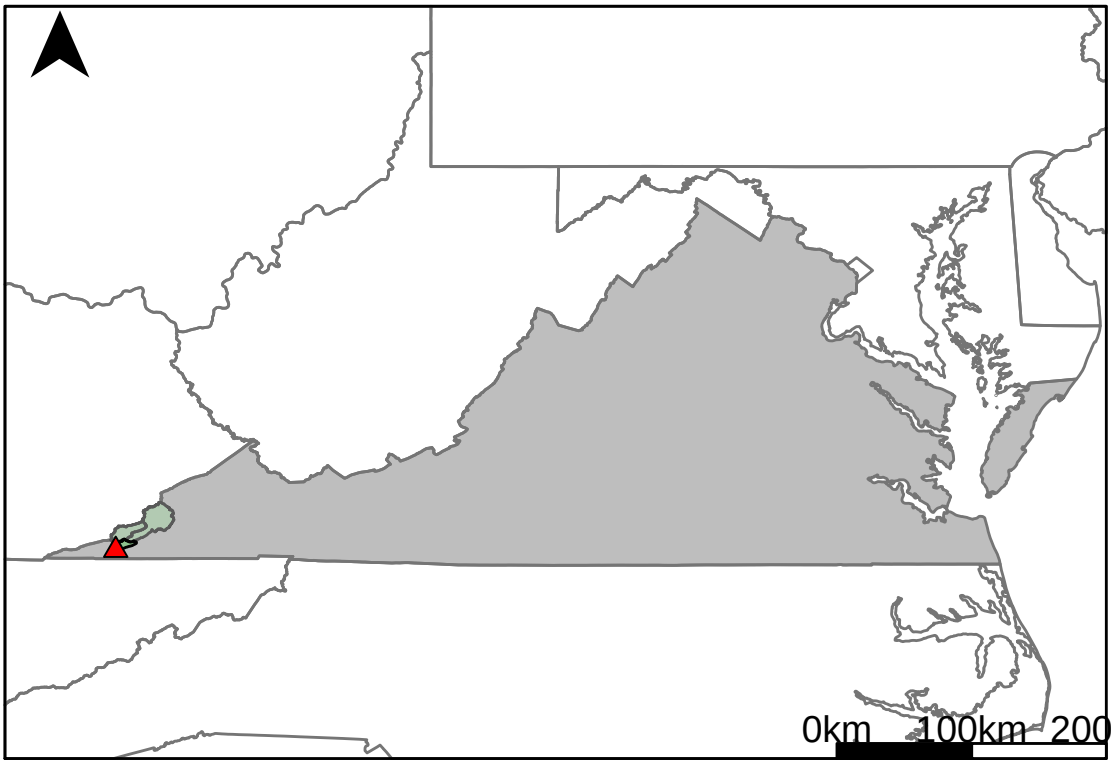
Appendix I.3: USGS Gage 03531500 vs. TU3_9230_9260



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 1.29%, with 45.8% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	59	76.7	-30
Feb. Low Flow	72	147	-104
Mar. Low Flow	169	196	-16
Apr. Low Flow	211	280	-32.7
May Low Flow	312	341	-9.29
Jun. Low Flow	327	299	8.56
Jul. Low Flow	303	213	29.7
Aug. Low Flow	208	155	25.5
Sep. Low Flow	124	119	4.03
Oct. Low Flow	88	85.2	3.18
Nov. Low Flow	66	83.6	-26.7
Dec. Low Flow	55	73.5	-33.6

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	541	534	1.29
Jan. Mean Flow	804	753	6.34
Feb. Mean Flow	1090	1050	3.67
Mar. Mean Flow	993	917	7.65
Apr. Mean Flow	834	692	17
May Mean Flow	643	514	20.1
Jun. Mean Flow	428	343	19.9
Jul. Mean Flow	224	245	-9.38
Aug. Mean Flow	186	234	-25.8
Sep. Mean Flow	146	263	-80.1
Oct. Mean Flow	137	257	-87.6
Nov. Mean Flow	353	474	-34.3
Dec. Mean Flow	686	695	-1.31

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	211	590	-180
Feb. High Flow	1930	1820	5.7
Mar. High Flow	2500	1920	23.2
Apr. High Flow	3170	2510	20.8
May High Flow	3760	3320	11.7
Jun. High Flow	3030	2770	8.58
Jul. High Flow	1920	1490	22.4
Aug. High Flow	2040	1440	29.4
Sep. High Flow	559	661	-18.2
Oct. High Flow	700	546	22
Nov. High Flow	499	977	-95.8
Dec. High Flow	422	530	-25.6

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	34	4.85	85.7
Med. 1 Day Min	44	43.9	0.23
Min. 3 Day Min	34.7	5.78	83.3
Med. 3 Day Min	46	45.9	0.22
Min. 7 Day Min	35.1	8.48	75.8
Med. 7 Day Min	46.4	51.2	-10.3
Min. 30 Day Min	39.6	26.6	32.8
Med. 30 Day Min	62.2	77.9	-25.2
Min. 90 Day Min	72.7	81.1	-11.6
Med. 90 Day Min	136	159	-16.9
7Q10	38.2	13.6	64.4
Year of 90-Day Min. Flow	1995	1999	100
Drought Year Mean	500	534	-6.8
Mean Baseflow	234	242	-3.42

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	21400	15900	25.7
Med. 1 Day Max	6610	6540	1.06
Max. 3 Day Max	10900	8950	17.9
Med. 3 Day Max	4600	4270	7.17
Max. 7 Day Max	6310	5380	14.7
Med. 7 Day Max	3030	2810	7.26
Max. 30 Day Max	3010	2840	5.65
Med. 30 Day Max	1620	1400	13.6
Max. 90 Day Max	2180	2140	1.83
Med. 90 Day Max	1150	1020	11.3

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	42	30.5	27.4
5% Non-Exceedance	51	61	-19.6
50% Non-Exceedance	277	320	-15.5
95% Non-Exceedance	1830	1630	10.9
99% Non-Exceedance	4150	3840	7.47
Sept. 10% Non-Exceedance	44.5	44.2	0.67

Fig. 1: Hydrograph

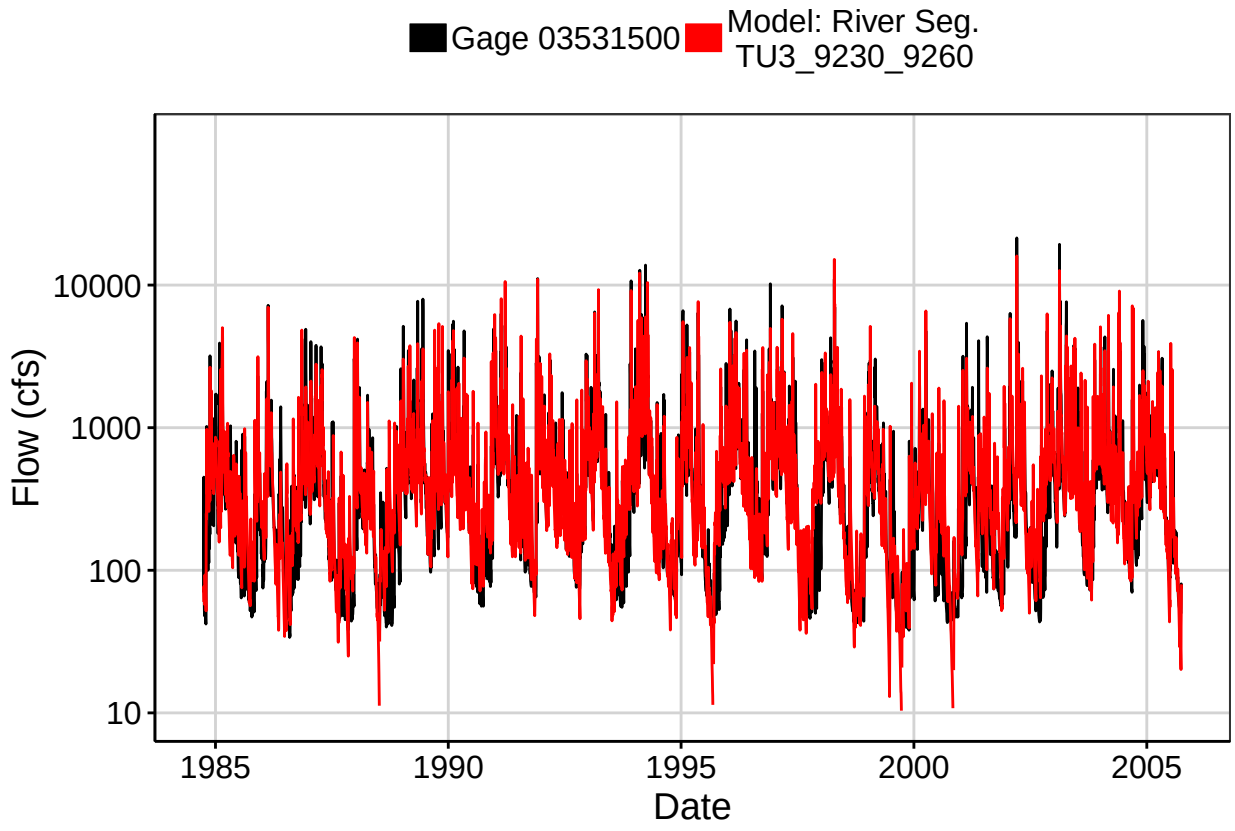


Fig. 2: Zoomed Hydrograph

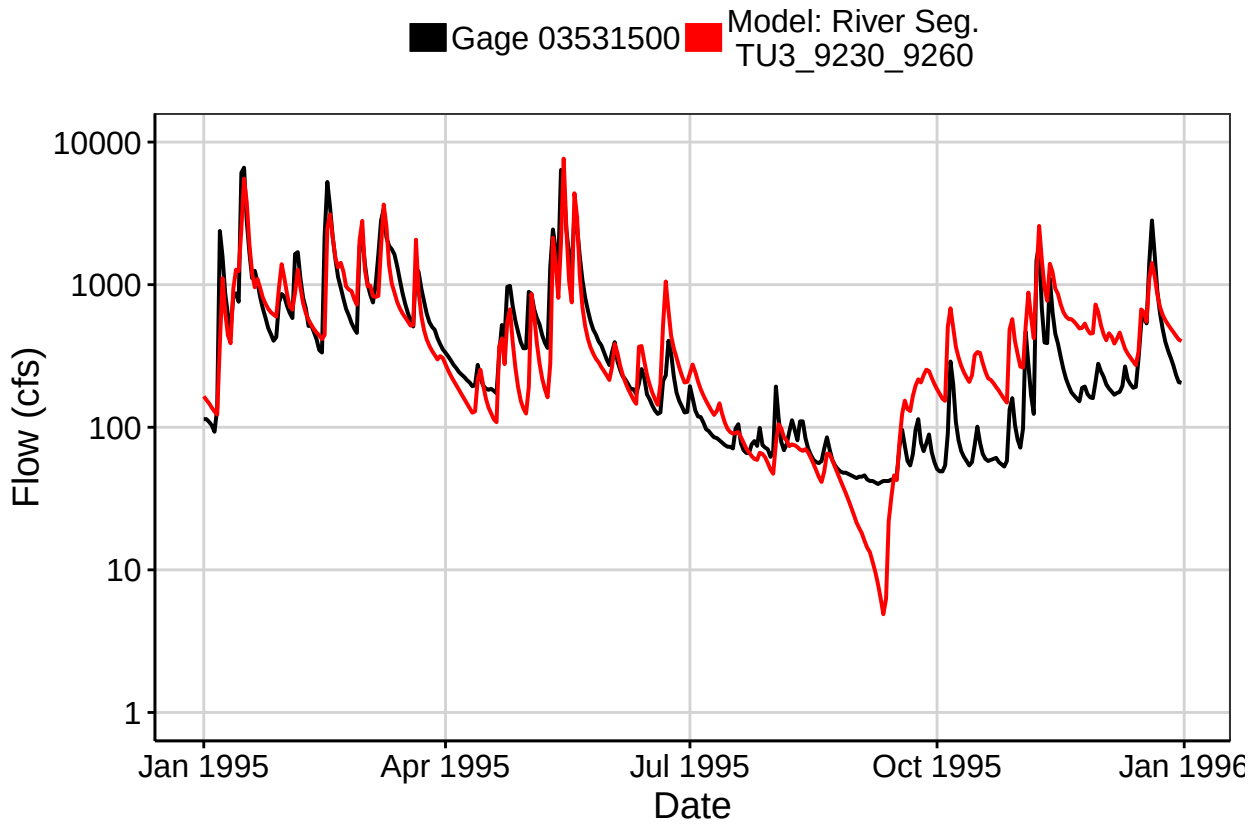


Fig. 3: Flow Exceedance

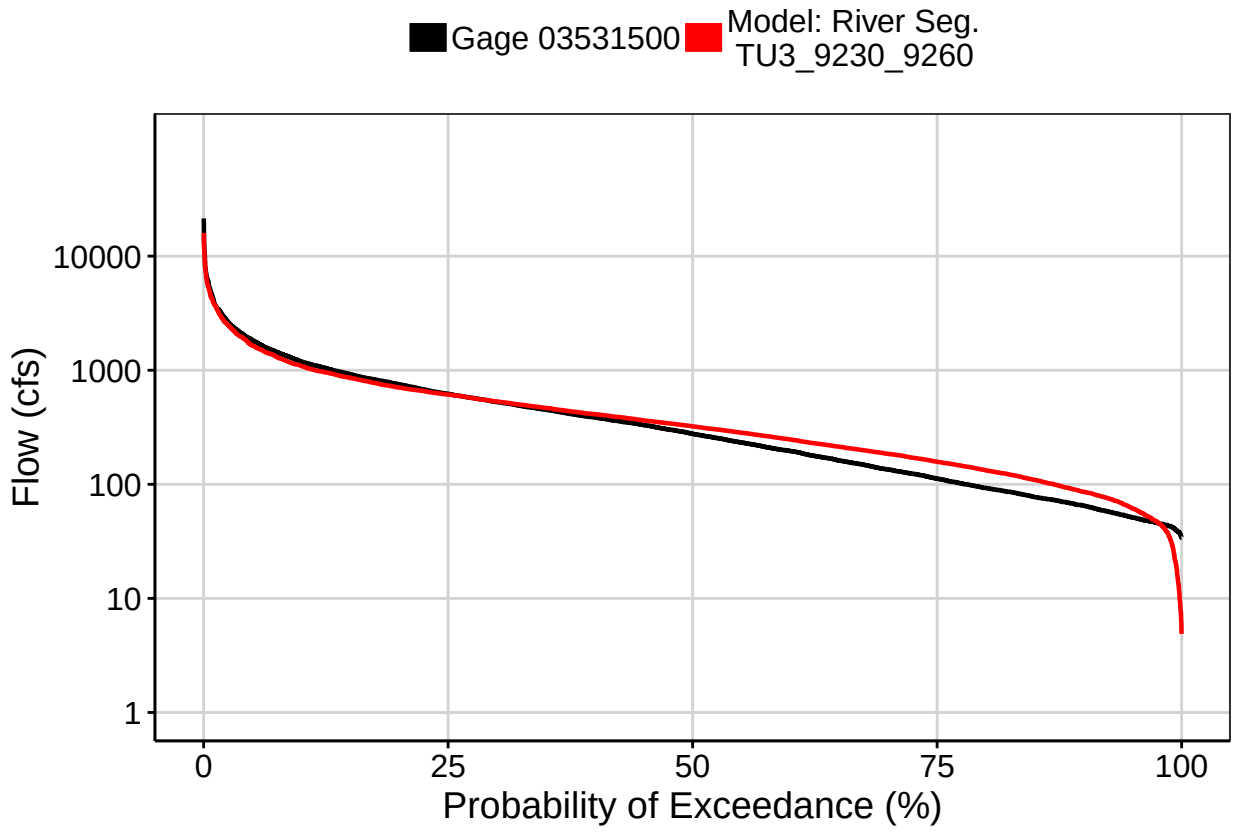


Fig. 4: Baseflow

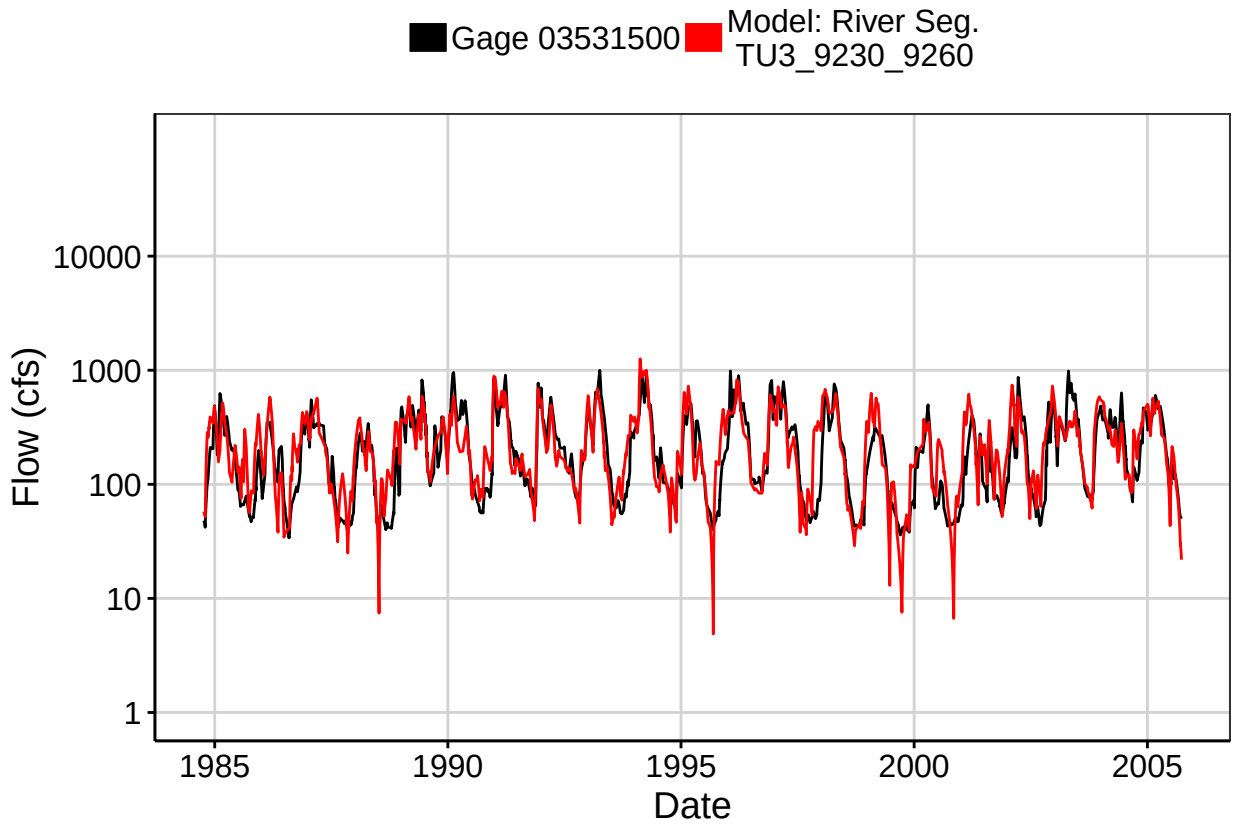


Fig. 5: Combined Baseflow

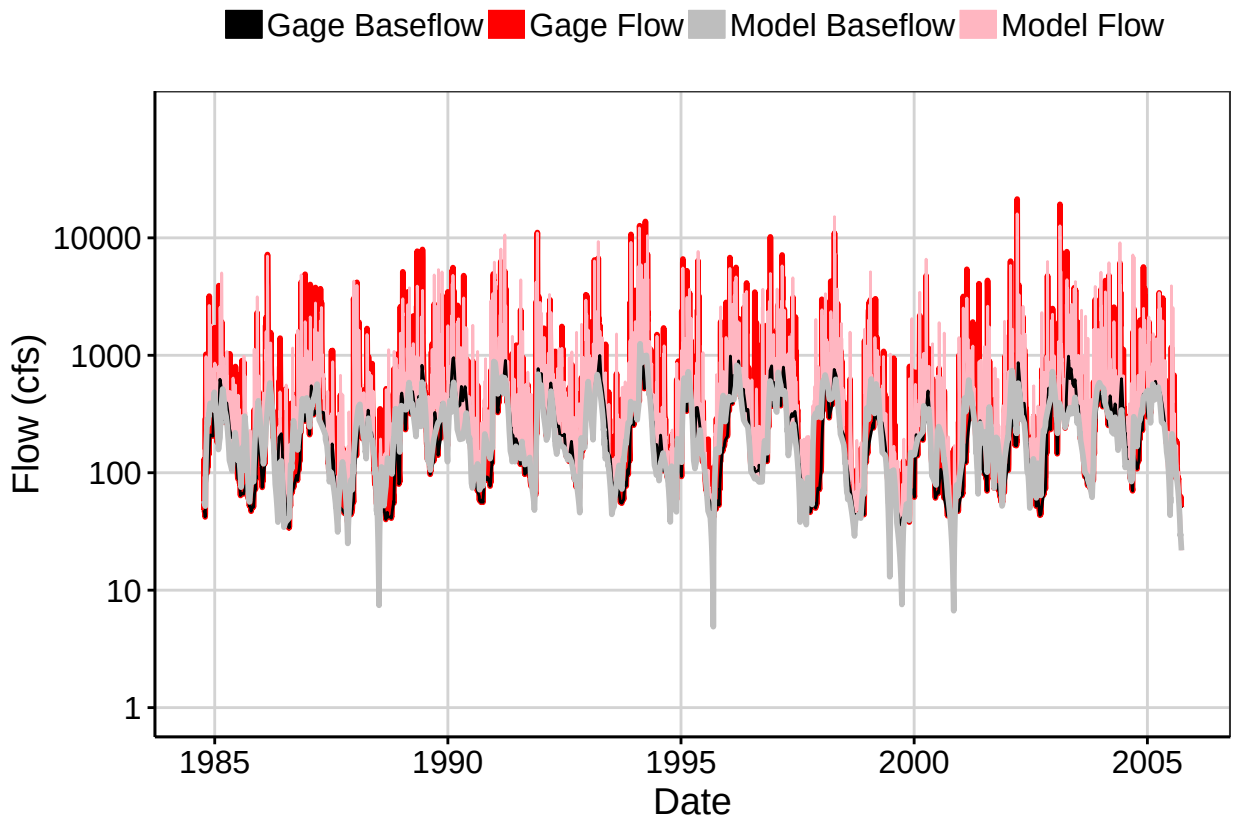


Fig. 6: Largest Error Segment

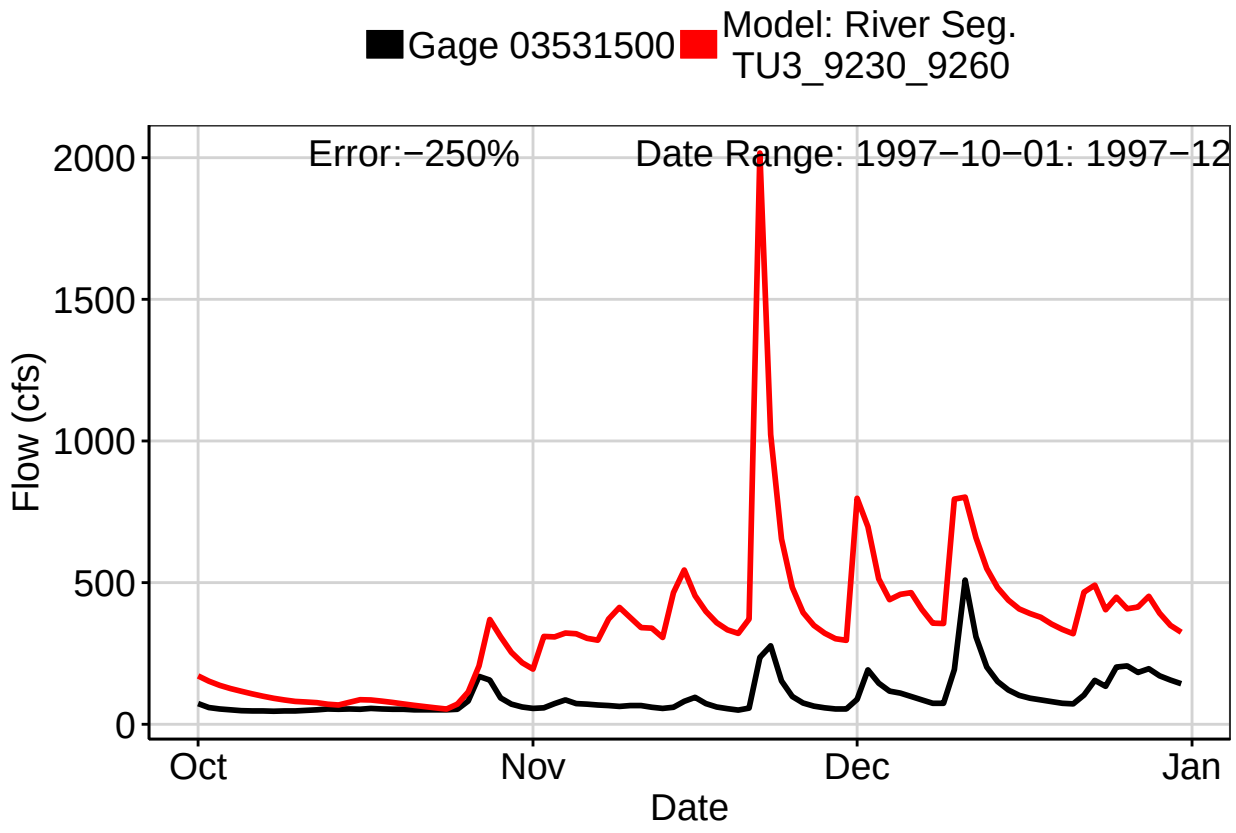


Fig. 7: Second Largest Error Segment

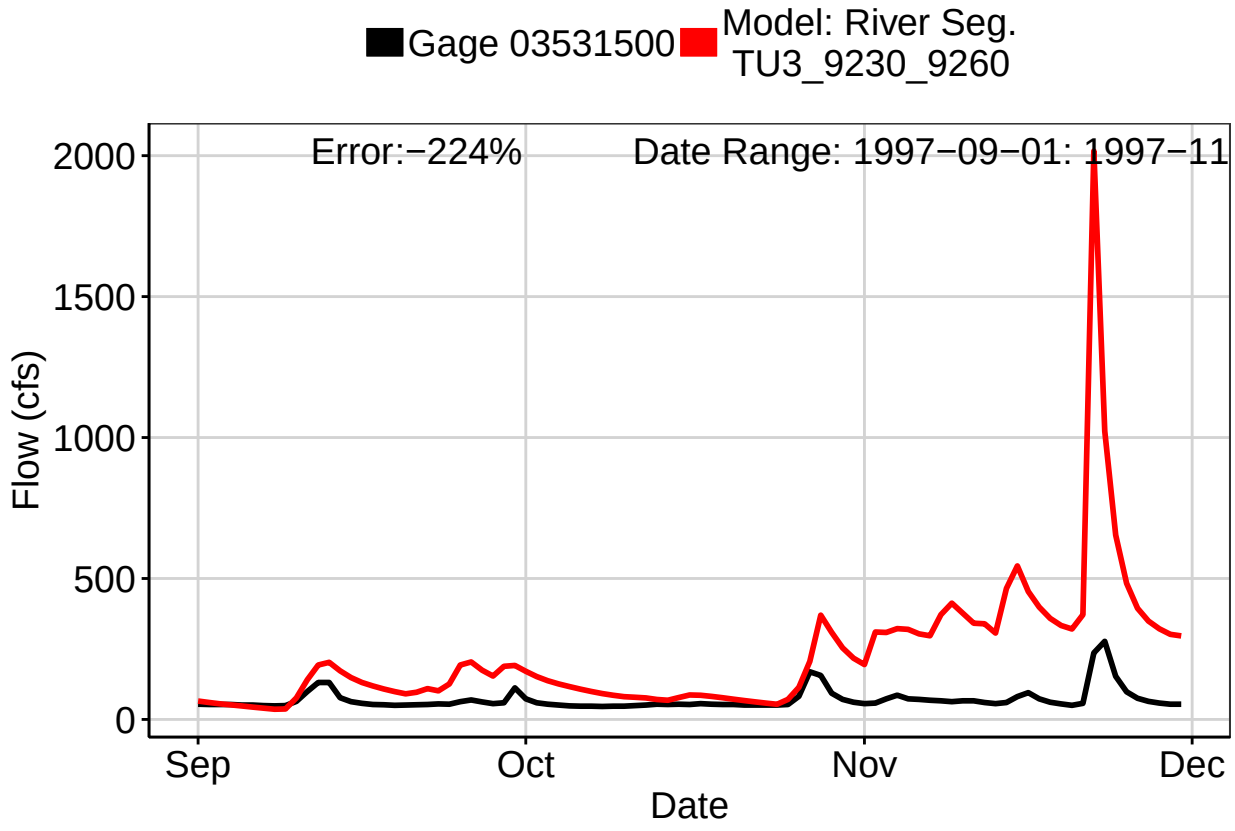


Fig. 8: Third Largest Error Segment

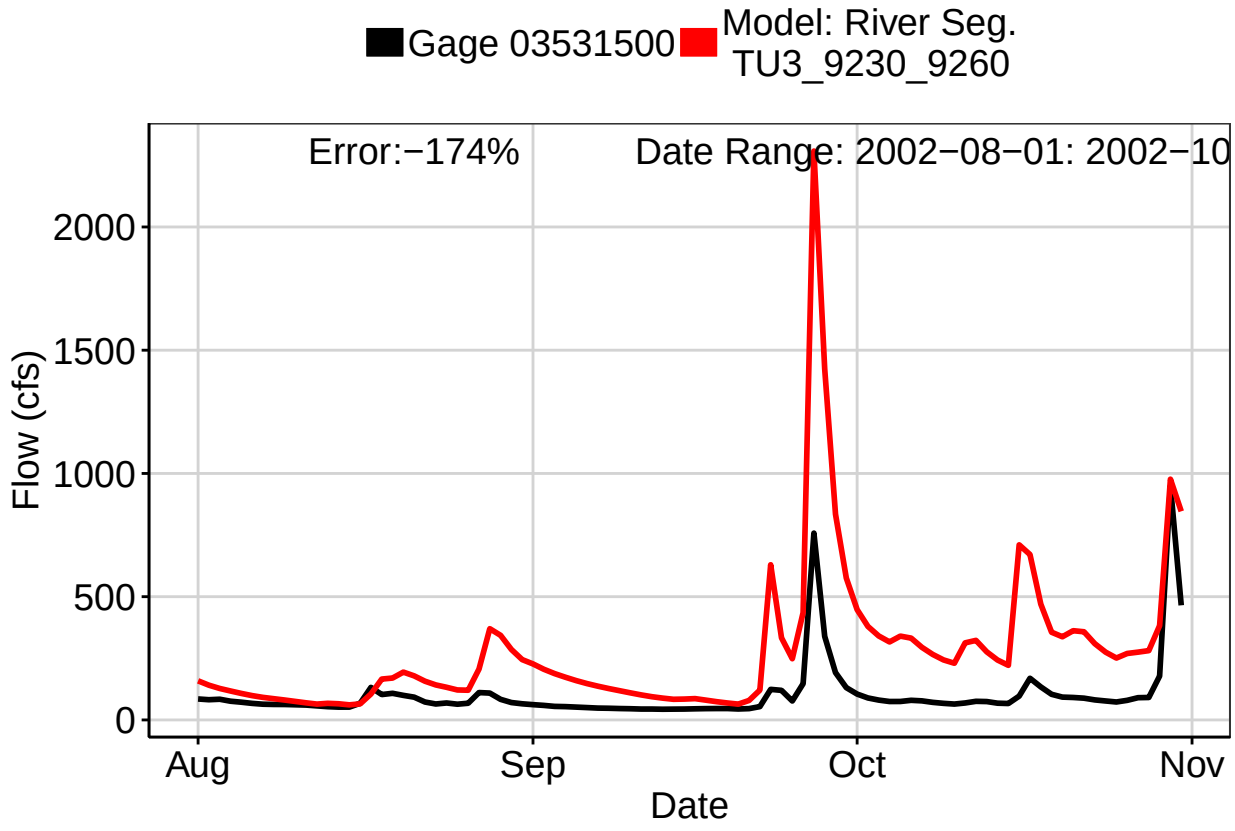


Fig. 9: Residuals Plot