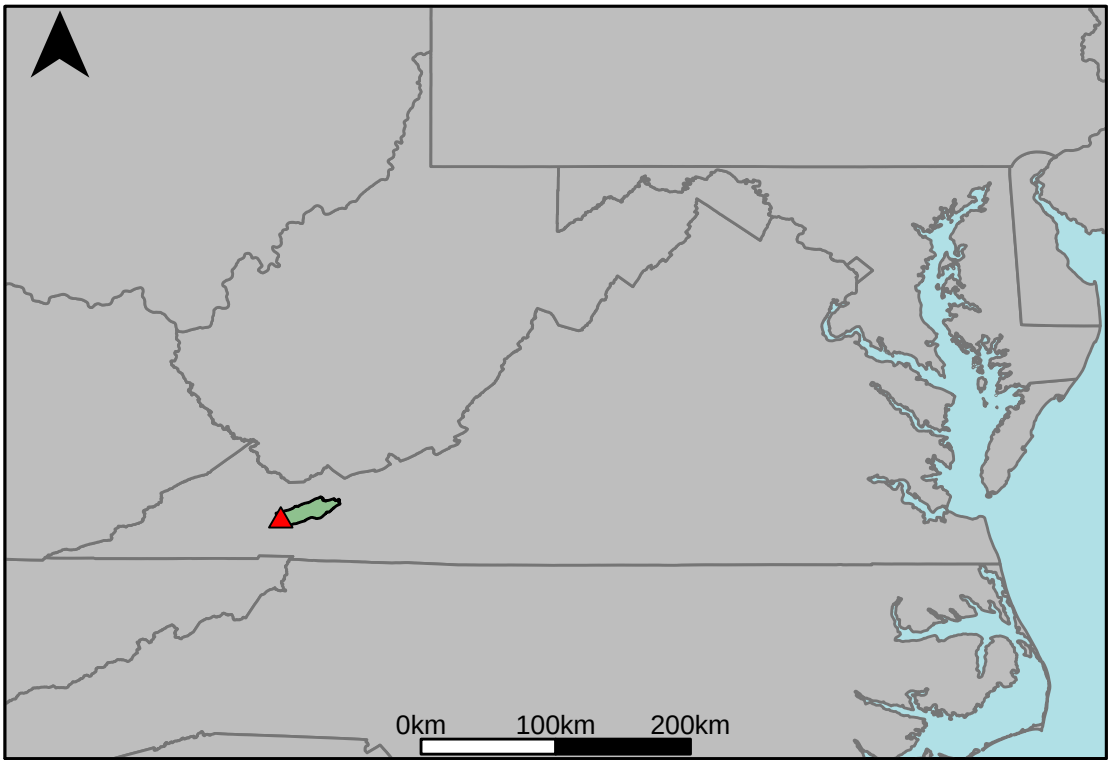
Appendix D.4: USGS Gage 03488000 vs. TU3_8650_8800



This river segment follows part of the flow of the North Fork of the Holston River, a tributary of the Tennessee River. The gage is located in Smyth County, VA (Lat 3653'48", Long 8144'47") approximately 32 miles northeast of Bristol, VA. Drainage area is 221 sq. miles. This gage started taking data in 1907 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 2.38%, with 42.5% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	35	35.7	2
Feb. Low Flow	39	75.2	92.8
Mar. Low Flow	72	93.3	29.6
Apr. Low Flow	118	146	23.7
May Low Flow	173	211	22
Jun. Low Flow	207	240	15.9
Jul. Low Flow	206	170	-17.5
Aug. Low Flow	121	116	-4.13
Sep. Low Flow	78.7	65.1	-17.3
Oct. Low Flow	55	37	-32.7
Nov. Low Flow	44	46.1	4.77
Dec. Low Flow	37	36.8	-0.54

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	294	287	-2.38
Jan. Mean Flow	427	405	-5.15
Feb. Mean Flow	562	556	-1.07
Mar. Mean Flow	566	541	-4.42
Apr. Mean Flow	449	397	-11.6
May Mean Flow	372	289	-22.3
Jun. Mean Flow	230	221	-3.91
Jul. Mean Flow	152	143	-5.92
Aug. Mean Flow	115	136	18.3
Sep. Mean Flow	89.2	137	53.6
Oct. Mean Flow	92.2	147	59.4
Nov. Mean Flow	184	200	8.7
Dec. Mean Flow	304	293	-3.62

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	94	127	35.1
Feb. High Flow	319	356	11.6
Mar. High Flow	1210	431	-64.4
Apr. High Flow	1560	1320	-15.4
May High Flow	1870	1310	-29.9
Jun. High Flow	1580	1620	2.53
Jul. High Flow	928	841	-9.38
Aug. High Flow	1210	628	-48.1
Sep. High Flow	410	431	5.12
Oct. High Flow	274	196	-28.5
Nov. High Flow	226	209	-7.52
Dec. High Flow	129	153	18.6

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	17	5.03	-70.4
Med. 1 Day Min	26	16.1	-38.1
Min. 3 Day Min	18	5.36	-70.2
Med. 3 Day Min	27	17.8	-34.1
Min. 7 Day Min	21	6.11	-70.9
Med. 7 Day Min	27.7	20.2	-27.1
Min. 30 Day Min	25.1	14	-44.2
Med. 30 Day Min	35.3	36.3	2.83
Min. 90 Day Min	31.5	31.4	-0.32
Med. 90 Day Min	62.8	75.5	20.2
7Q10	22.5	8.53	-62.1
Year of 90-Day Min. Flow	1988	1988	0
Drought Year Mean	135	116	-14.1
Mean Baseflow	134	159	18.7

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	12700	5890	-53.6
Med. 1 Day Max	4370	3100	-29.1
Max. 3 Day Max	5840	4510	-22.8
Med. 3 Day Max	2760	2150	-22.1
Max. 7 Day Max	3040	2450	-19.4
Med. 7 Day Max	1830	1360	-25.7
Max. 30 Day Max	1330	1570	18
Med. 30 Day Max	880	723	-17.8
Max. 90 Day Max	951	1030	8.31
Med. 90 Day Max	572	569	-0.52

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	26	13.1	-49.6
5% Non-Exceedance	32	26.9	-15.9
50% Non-Exceedance	156	179	14.7
95% Non-Exceedance	945	843	-10.8
99% Non-Exceedance	2240	1950	-12.9
Sept. 10% Non-Exceedance	21	27	28.6

Fig. 1: Hydrograph

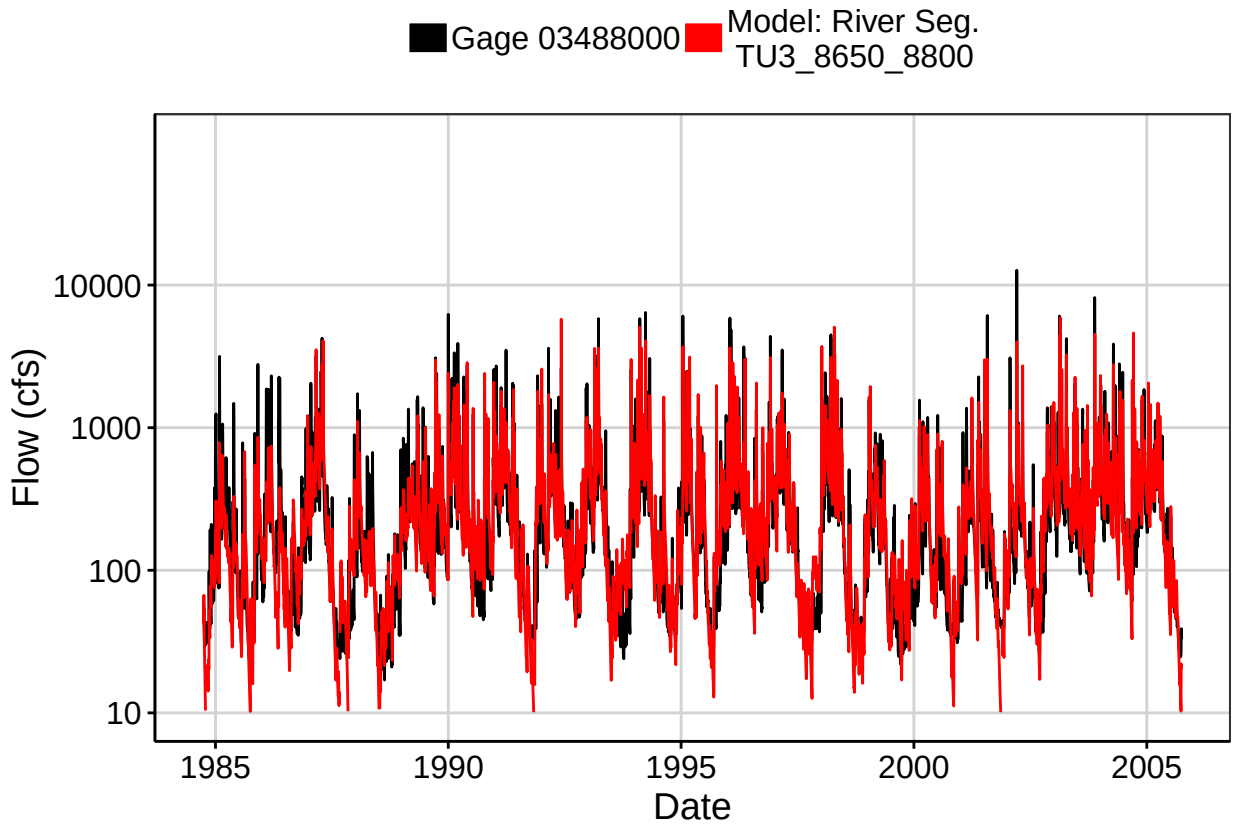


Fig. 2: Zoomed Hydrograph

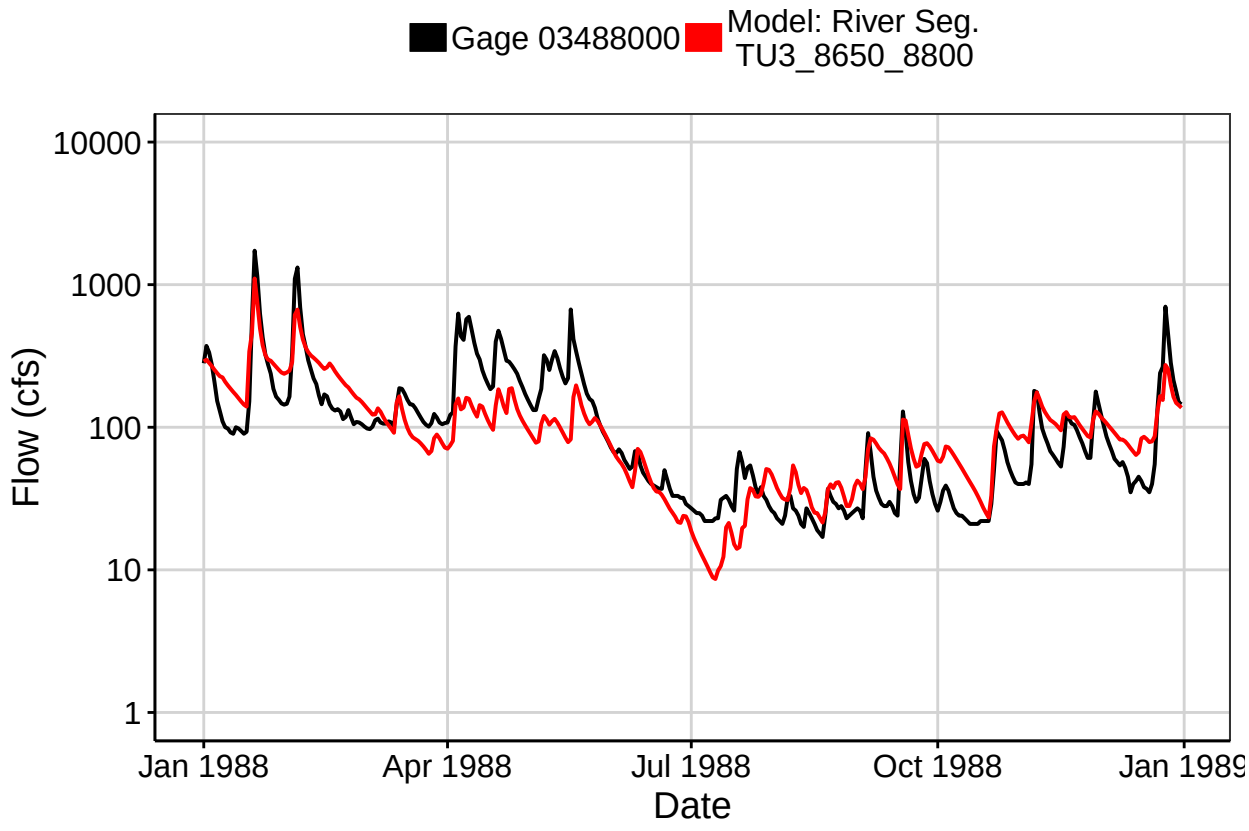


Fig. 3: Flow Exceedance

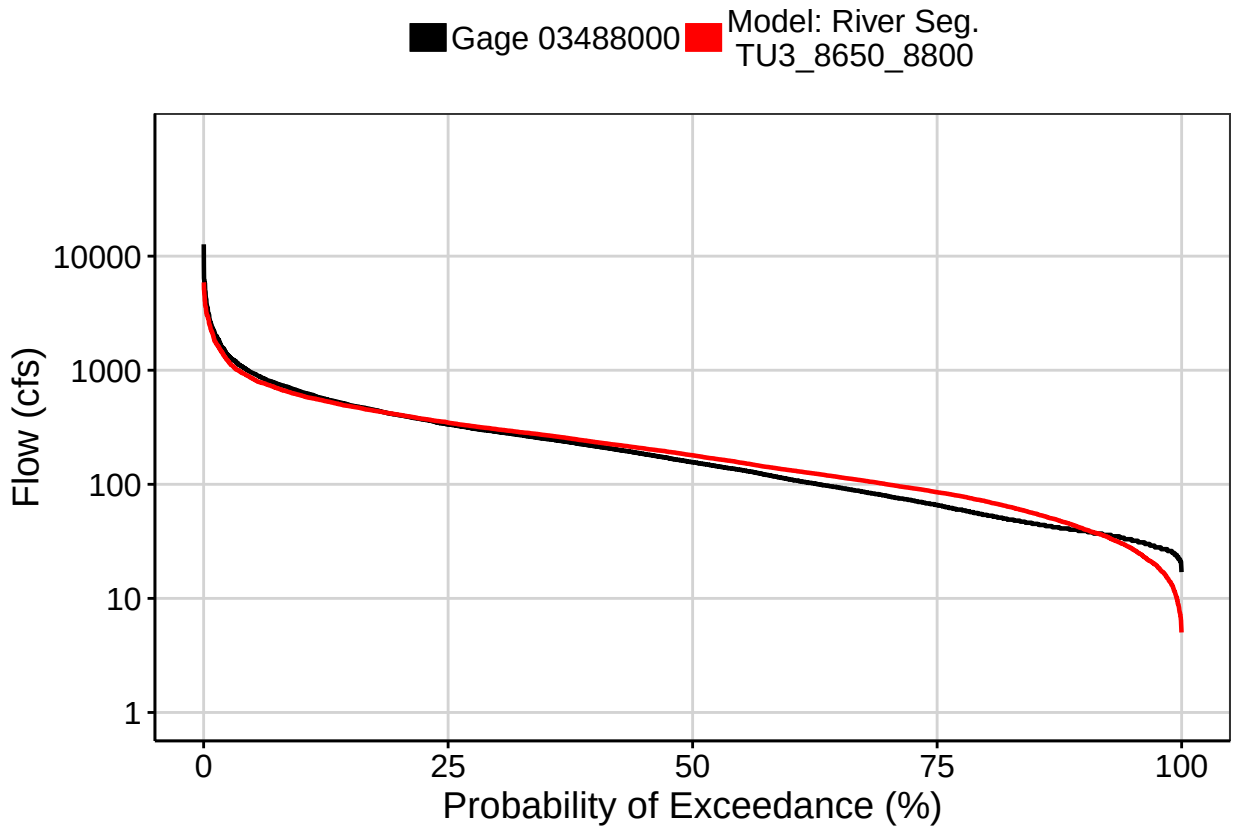


Fig. 4: Baseflow

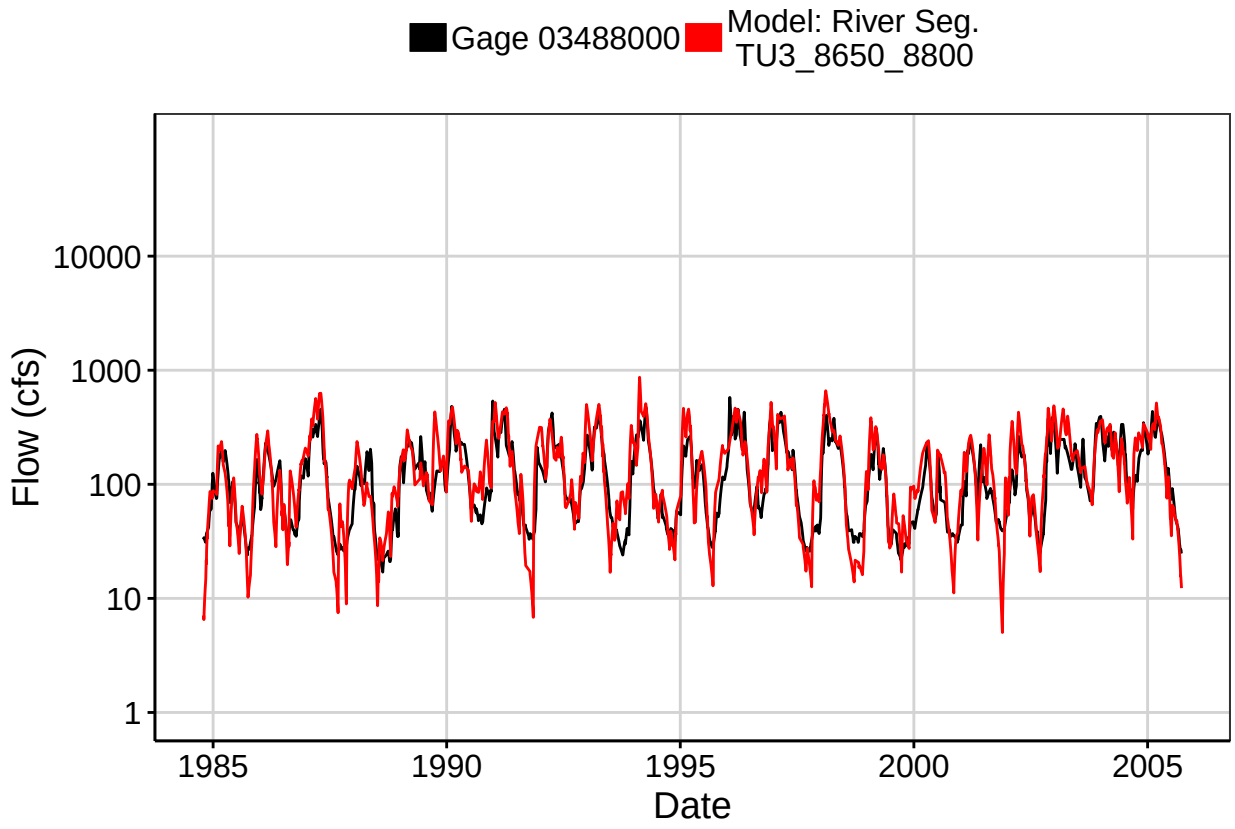


Fig. 5: Combined Baseflow

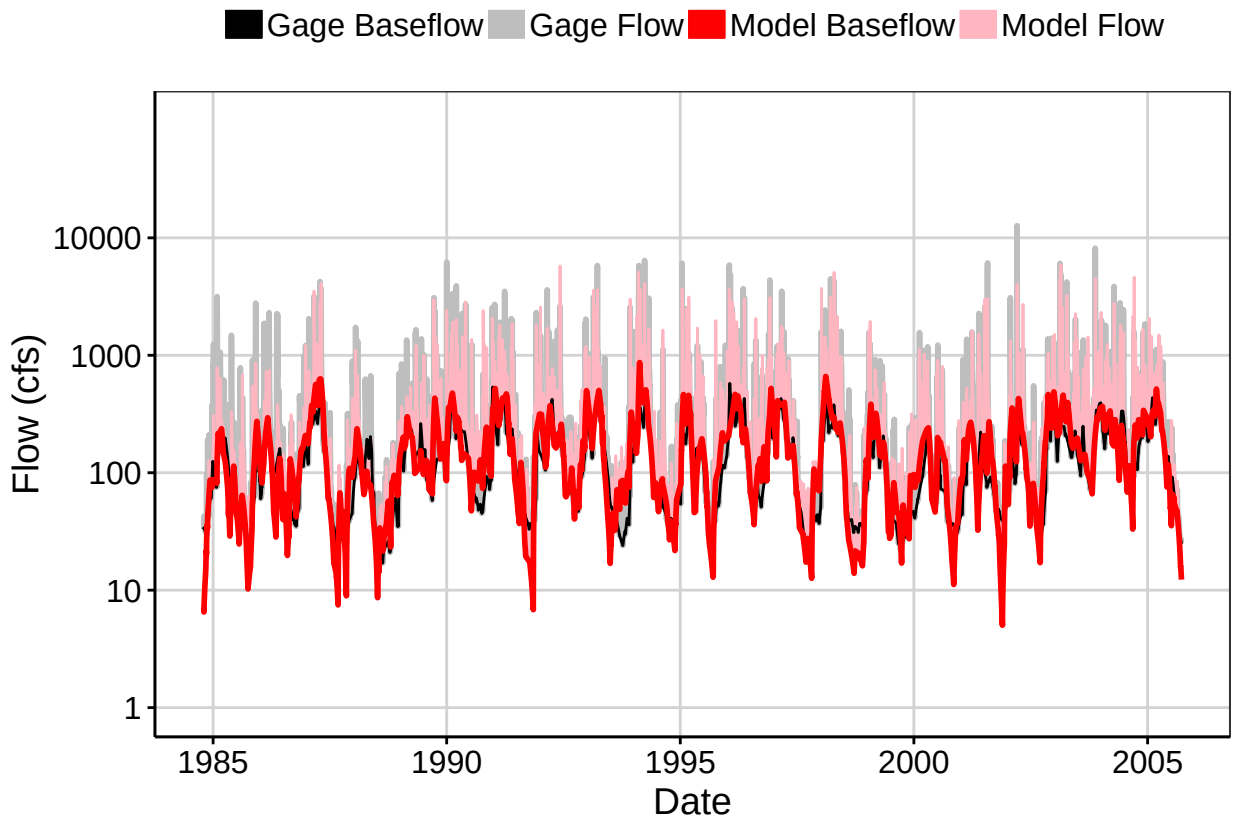


Fig. 6: Largest Error Segment

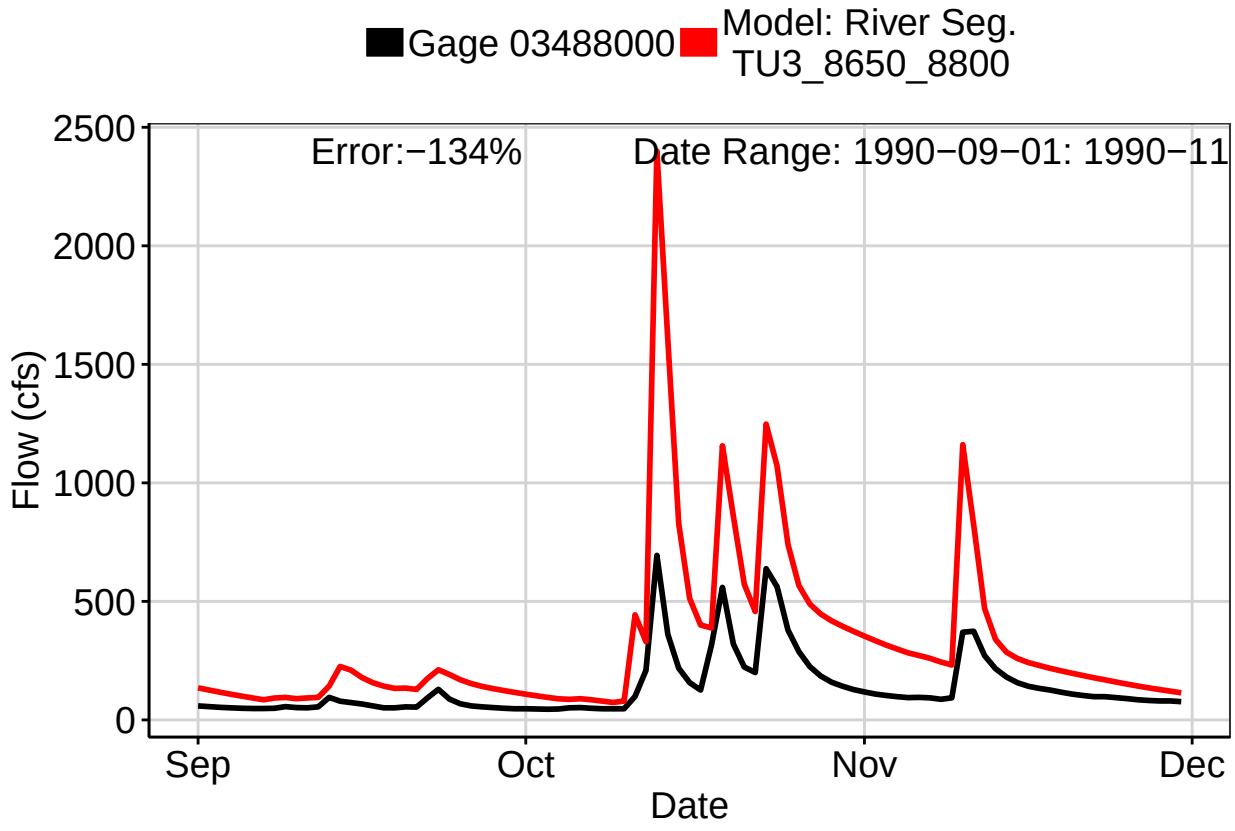


Fig. 7: Second Largest Error Segment

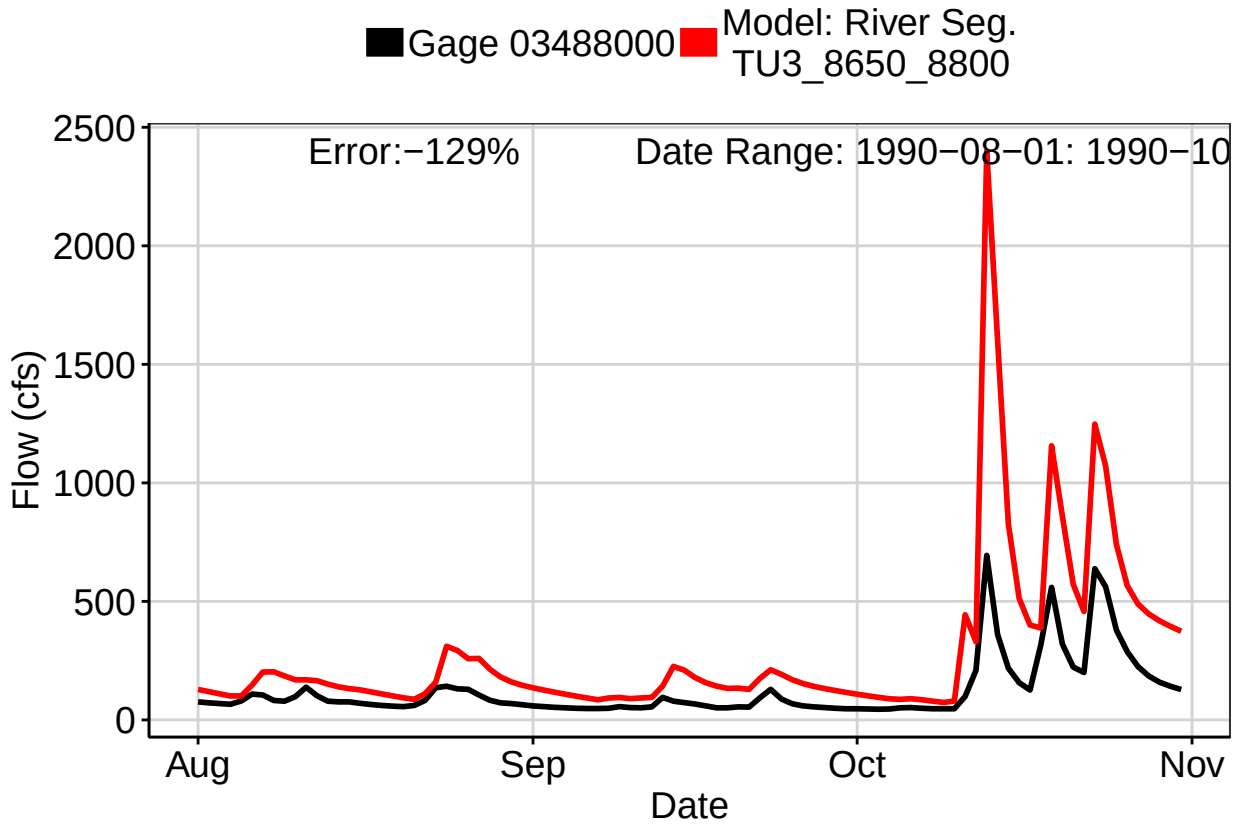


Fig. 8: Third Largest Error Segment

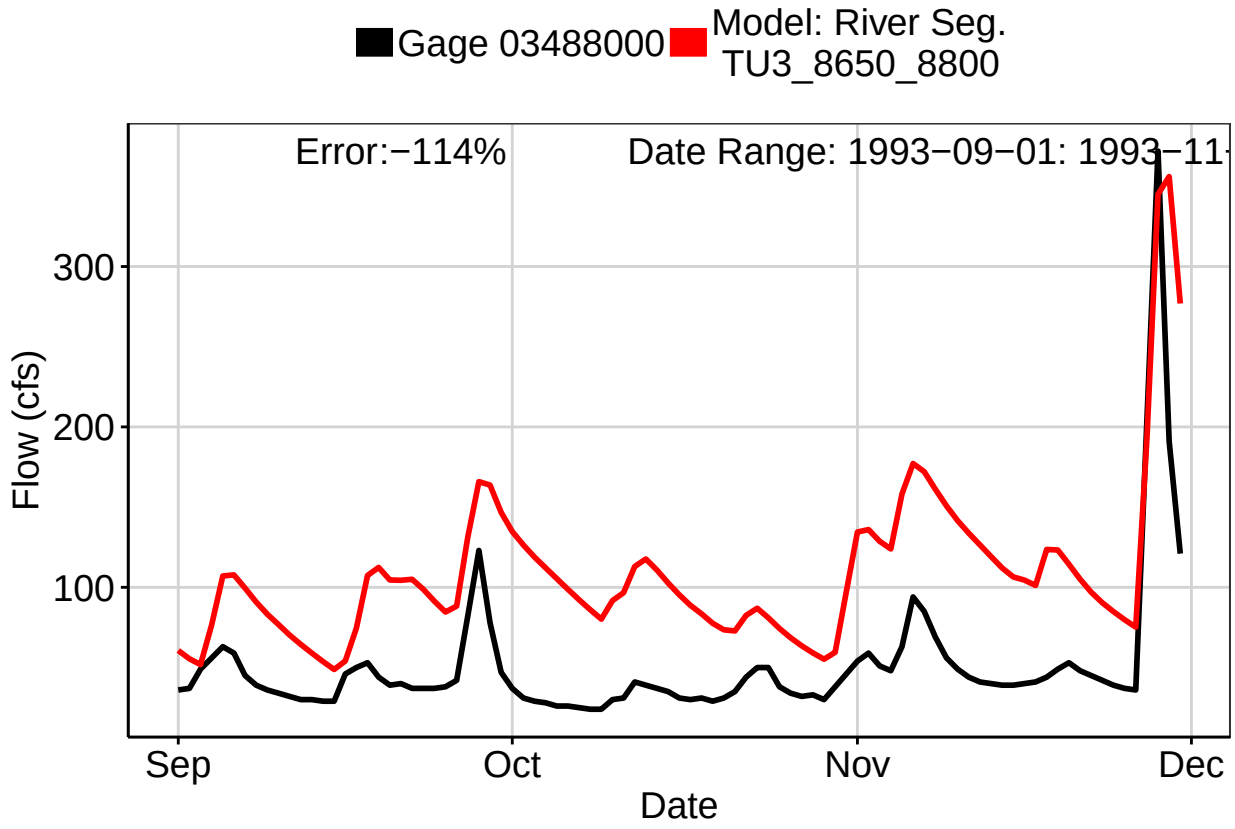


Fig. 9: Residuals Plot