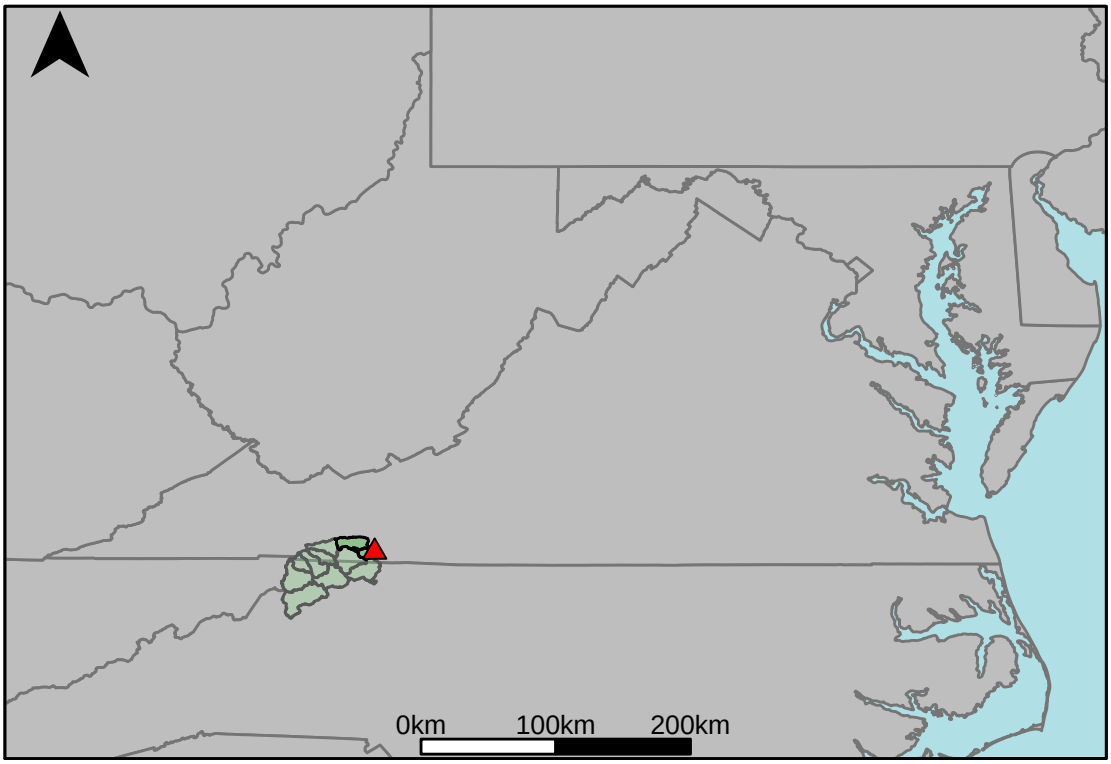
Appendix F.2: USGS Gage 03164000 vs. NR5_9050_8870+NR1_8960_8870



This river segment follows part of the flow of the New River. The gage is located in Grayson County, VA (Lat 3638'50", Long 8058'45") approximately 3 miles east of Galax, VA. Drainage area is 1141 sq. miles. This gage started taking data in 1929 and is still taking data. There is a privately owned low concrete dam with a small generator for electricity 36.4 miles upstream of the station near the Mouth of Wilson, VA. Almost all of the water flows over the dam because it has very little storage capacity but it can cause problems for extremely low flows. The average daily discharge error between the model and gage data for the 20 year timespan was -2.66%, with 28.7% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	610	543	-11
Feb. Low Flow	754	652	-13.5
Mar. Low Flow	943	1060	12.4
Apr. Low Flow	781	1040	33.2
May Low Flow	1300	1410	8.46
Jun. Low Flow	1540	1740	13
Jul. Low Flow	1540	1420	-7.79
Aug. Low Flow	1400	1150	-17.9
Sep. Low Flow	1110	1030	-7.21
Oct. Low Flow	857	777	-9.33
Nov. Low Flow	685	689	0.58
Dec. Low Flow	587	612	4.26

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	1880	1930	2.66
Jan. Mean Flow	2210	2330	5.43
Feb. Mean Flow	2490	2800	12.4
Mar. Mean Flow	2810	3200	13.9
Apr. Mean Flow	2620	2650	1.15
May Mean Flow	2100	1950	-7.14
Jun. Mean Flow	1860	1750	-5.91
Jul. Mean Flow	1390	1260	-9.35
Aug. Mean Flow	1250	1330	6.4
Sep. Mean Flow	1340	1400	4.48
Oct. Mean Flow	1200	1320	10
Nov. Mean Flow	1640	1620	-1.22
Dec. Mean Flow	1710	1640	-4.09

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	1440	1250	-13.2
Feb. High Flow	4140	2620	-36.7
Mar. High Flow	3850	2700	-29.9
Apr. High Flow	4740	5720	20.7
May High Flow	6070	5230	-13.8
Jun. High Flow	8060	7760	-3.72
Jul. High Flow	5500	5210	-5.27
Aug. High Flow	3890	4350	11.8
Sep. High Flow	2430	2320	-4.53
Oct. High Flow	2320	1830	-21.1
Nov. High Flow	2200	1400	-36.4
Dec. High Flow	1930	1500	-22.3

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	283	198	-30
Med. 1 Day Min	486	451	-7.2
Min. 3 Day Min	298	203	-31.9
Med. 3 Day Min	505	459	-9.11
Min. 7 Day Min	317	211	-33.4
Med. 7 Day Min	524	485	-7.44
Min. 30 Day Min	398	262	-34.2
Med. 30 Day Min	654	620	-5.2
Min. 90 Day Min	524	519	-0.95
Med. 90 Day Min	1000	838	-16.2
7Q10	362	286	-21
Year of 90-Day Min. Flow	1988	1988	0
Drought Year Mean	1030	917	-11
Mean Baseflow	1210	1290	6.61

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	57800	47600	-17.6
Med. 1 Day Max	18300	18700	2.19
Max. 3 Day Max	31000	32800	5.81
Med. 3 Day Max	11900	15600	31.1
Max. 7 Day Max	17100	18200	6.43
Med. 7 Day Max	7810	10100	29.3
Max. 30 Day Max	6560	7040	7.32
Med. 30 Day Max	4050	4660	15.1
Max. 90 Day Max	4750	5940	25.1
Med. 90 Day Max	3150	3280	4.13

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	397	357	-10.1
5% Non-Exceedance	532	502	-5.64
50% Non-Exceedance	1390	1350	-2.88
95% Non-Exceedance	4540	4910	8.15
99% Non-Exceedance	9300	10900	17.2
Sept. 10% Non-Exceedance	554	510	-7.94

Fig. 1: Hydrograph

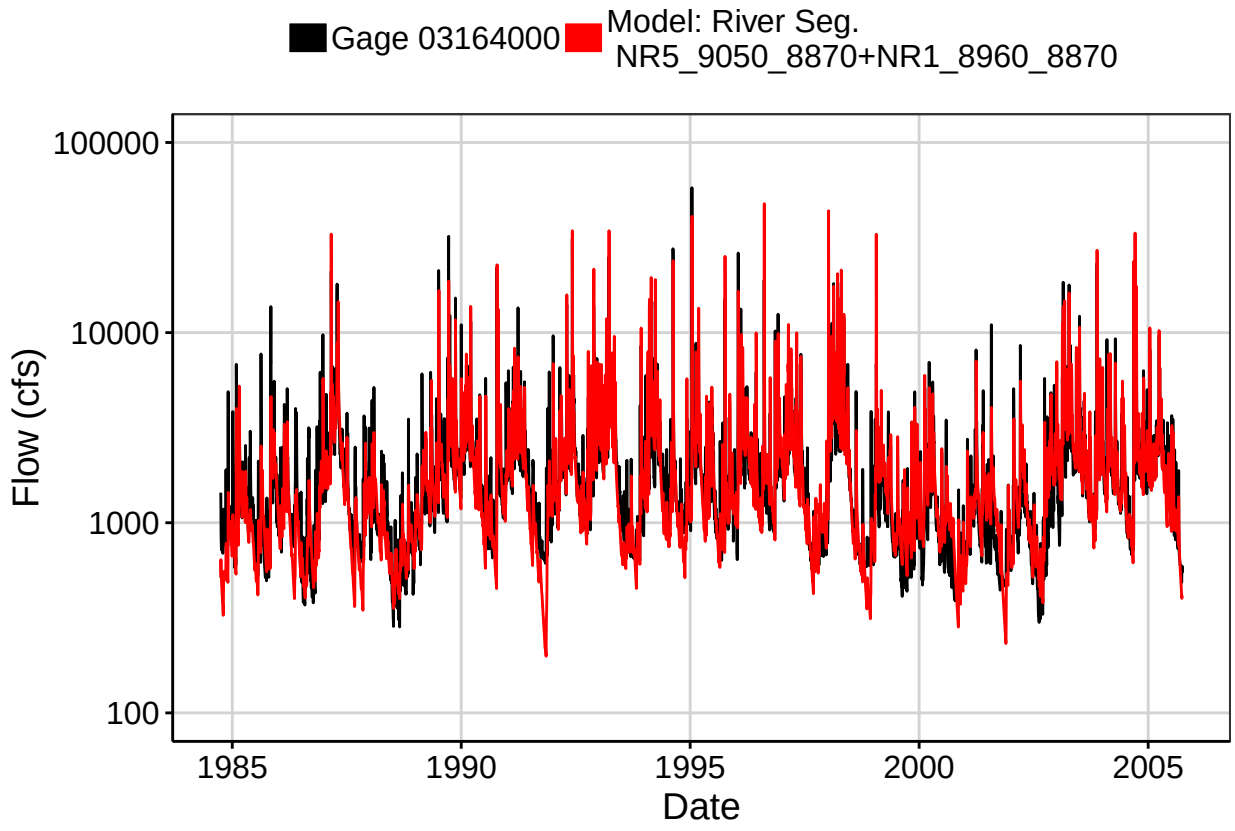


Fig. 2: Zoomed Hydrograph

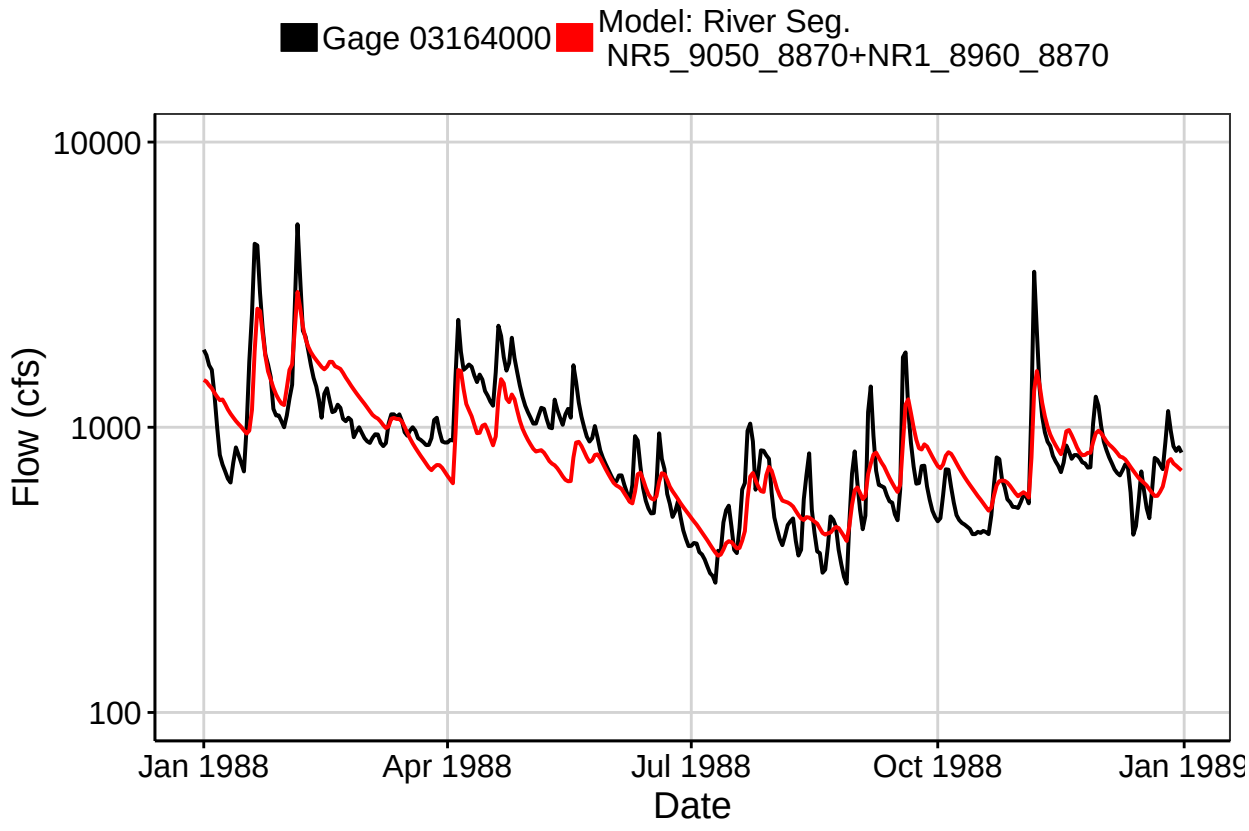


Fig. 3: Flow Exceedance

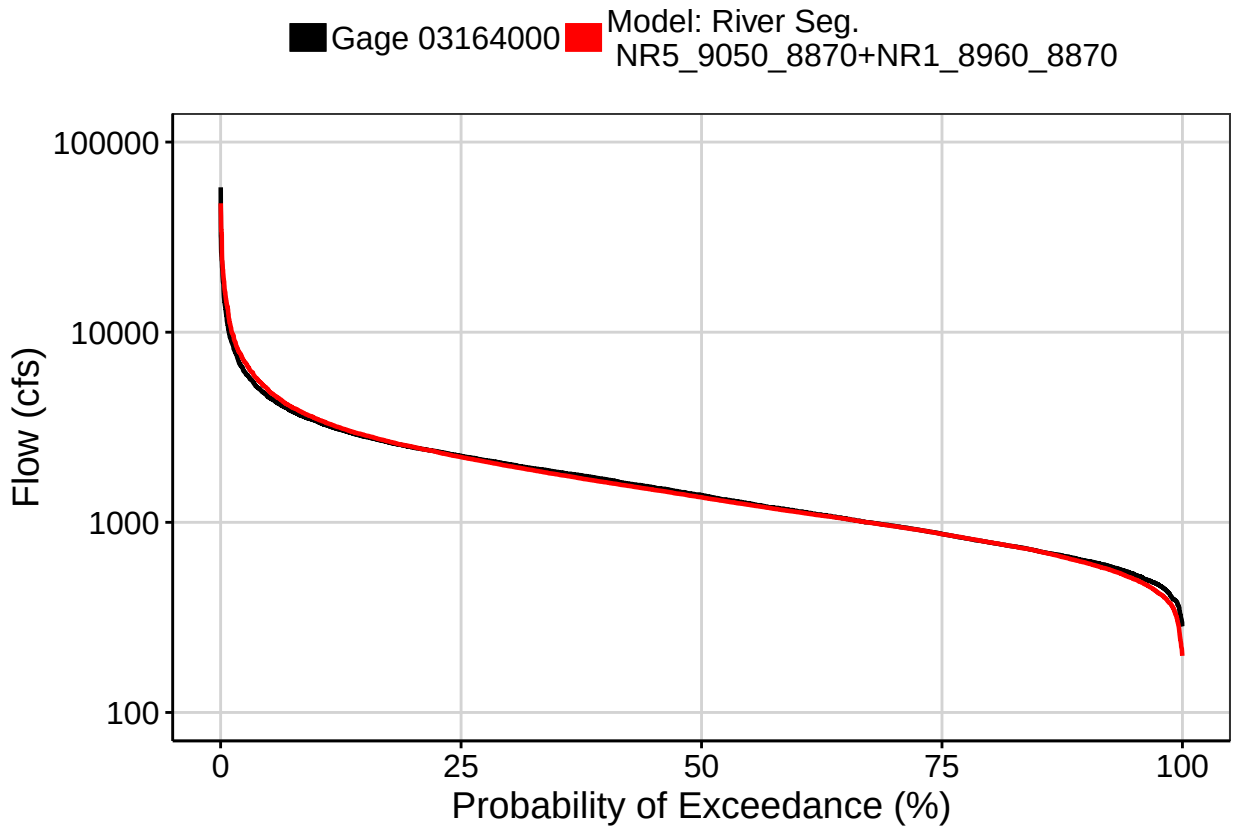


Fig. 4: Baseflow

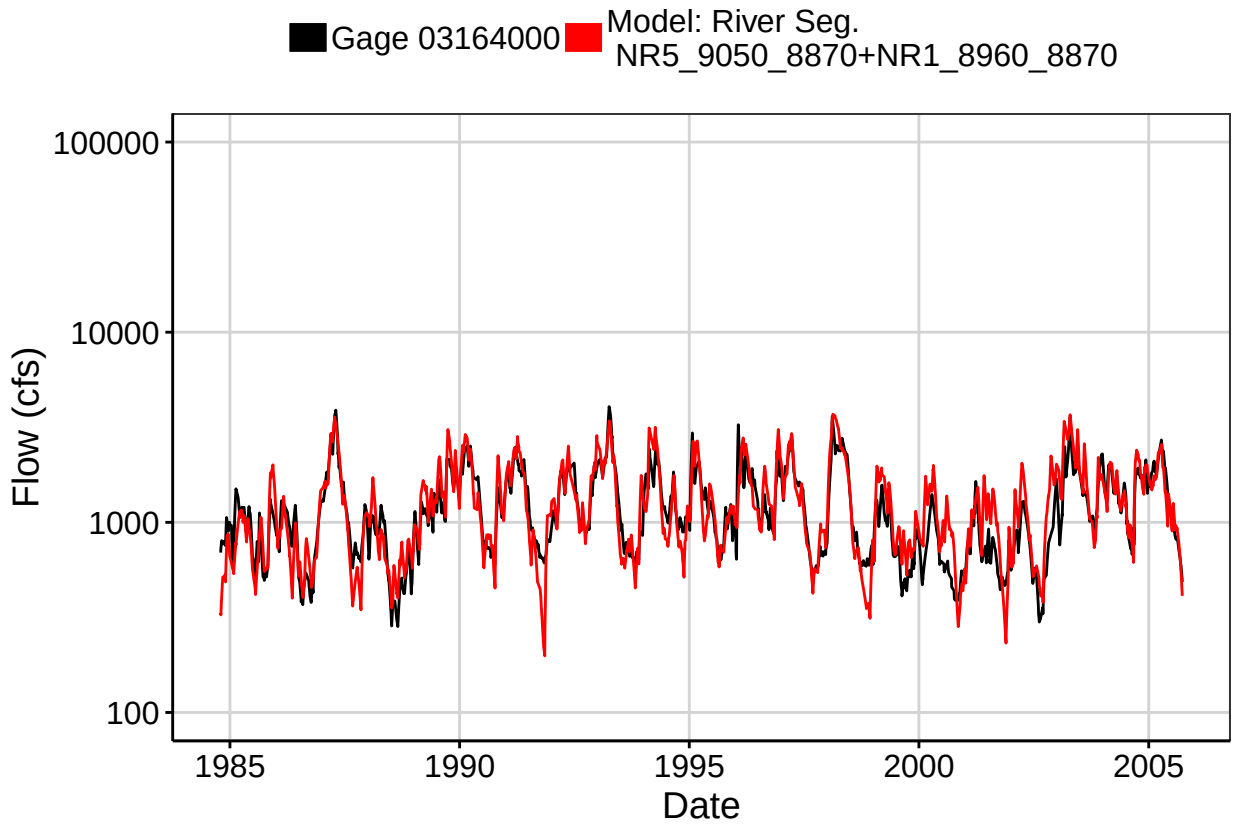


Fig. 5: Combined Baseflow

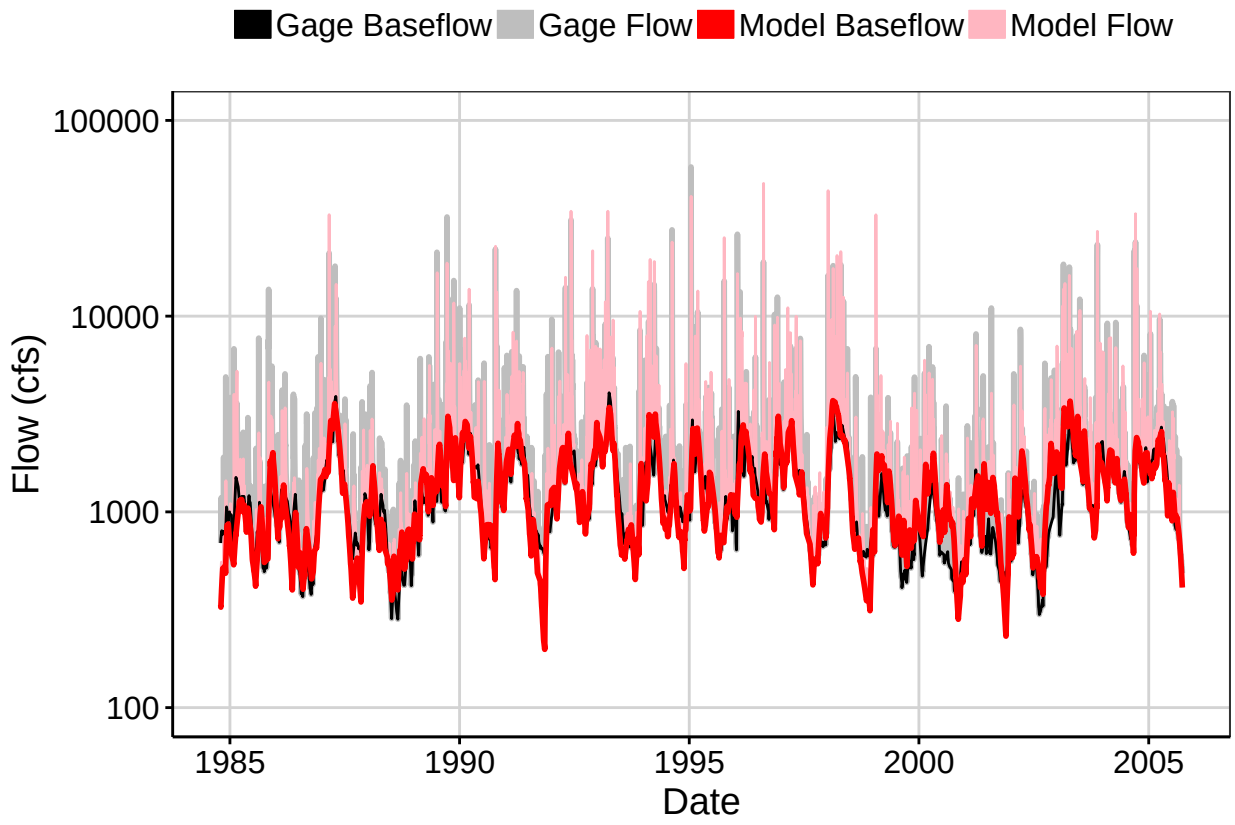


Fig. 6: Largest Error Segment

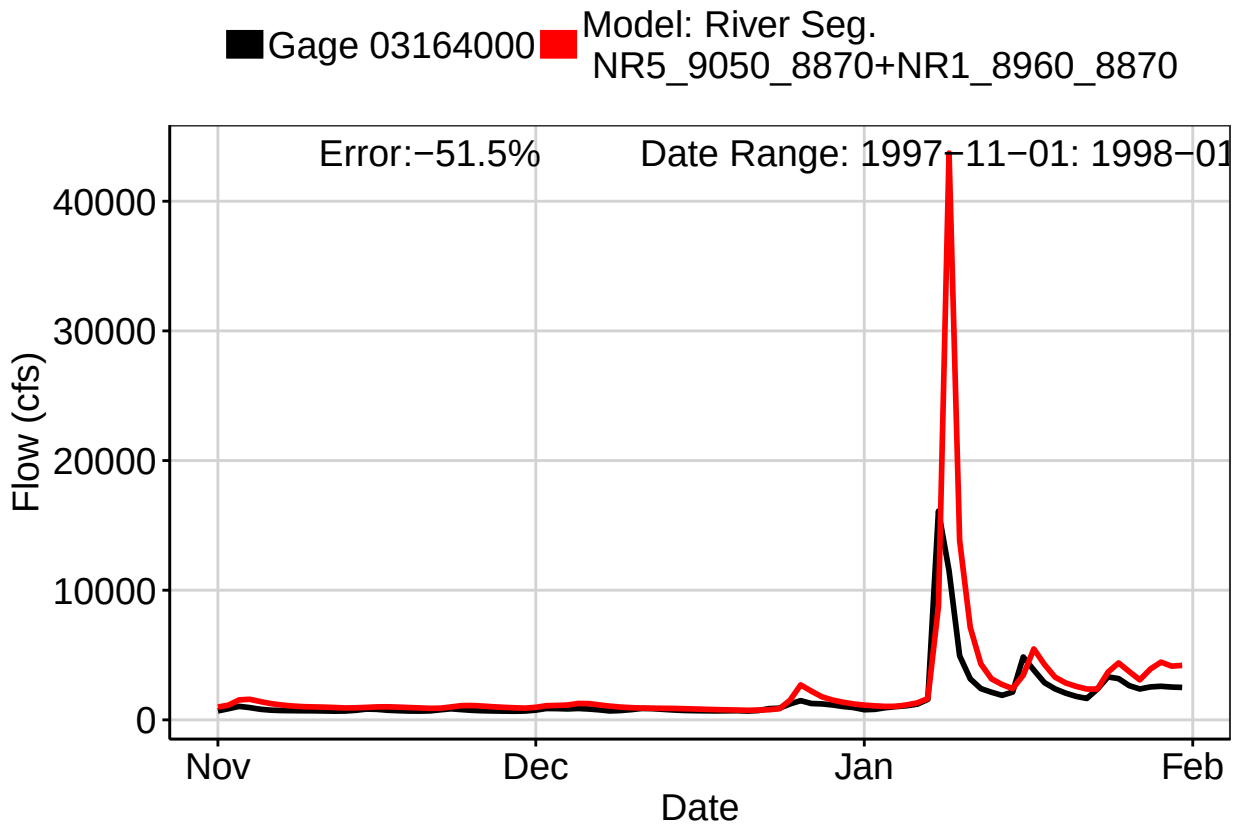


Fig. 7: Second Largest Error Segment

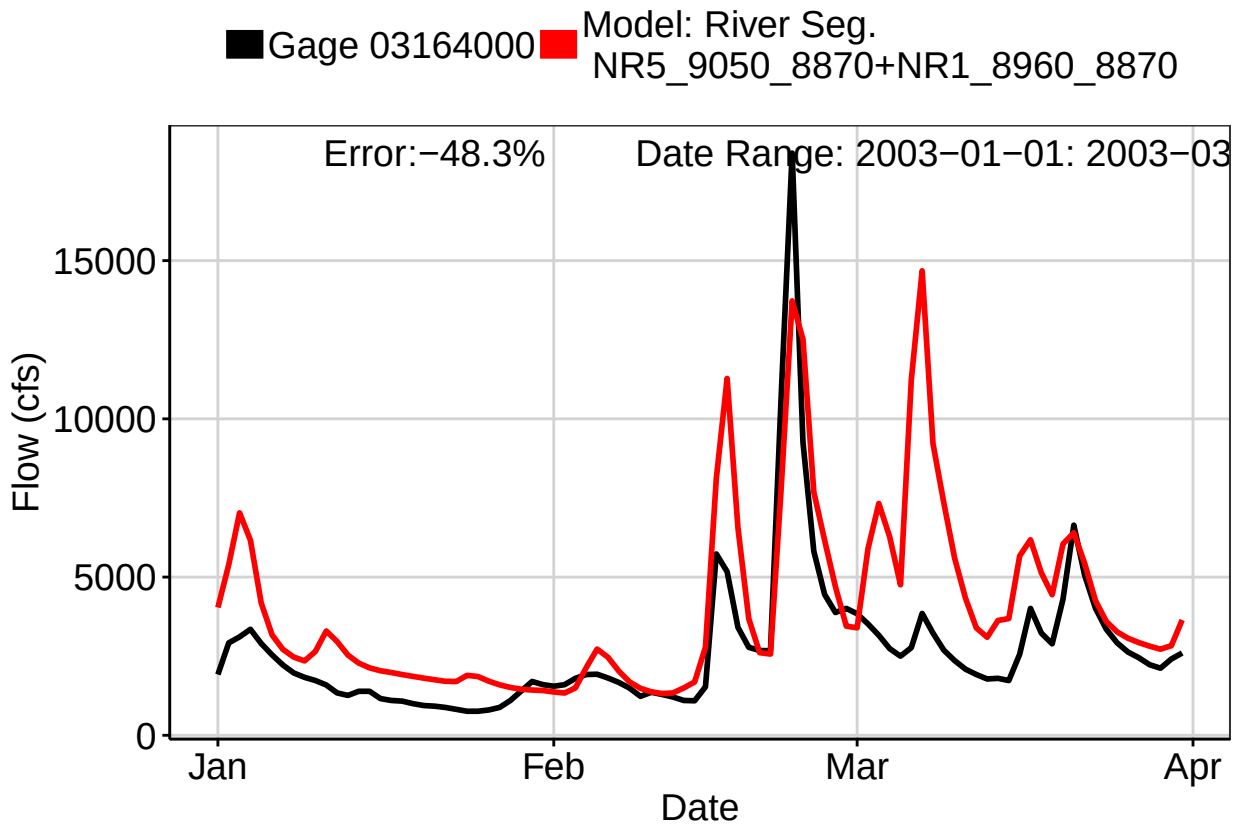


Fig. 8: Third Largest Error Segment

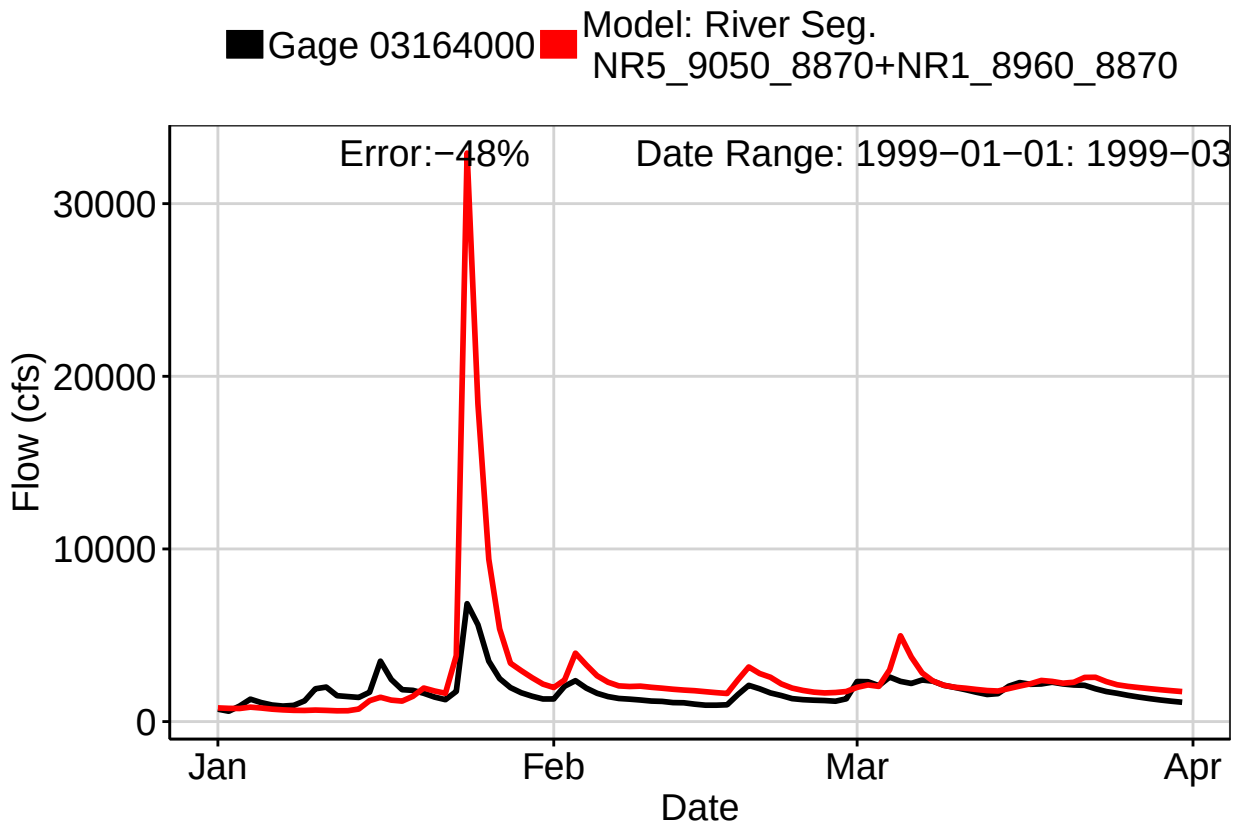


Fig. 9: Residuals Plot