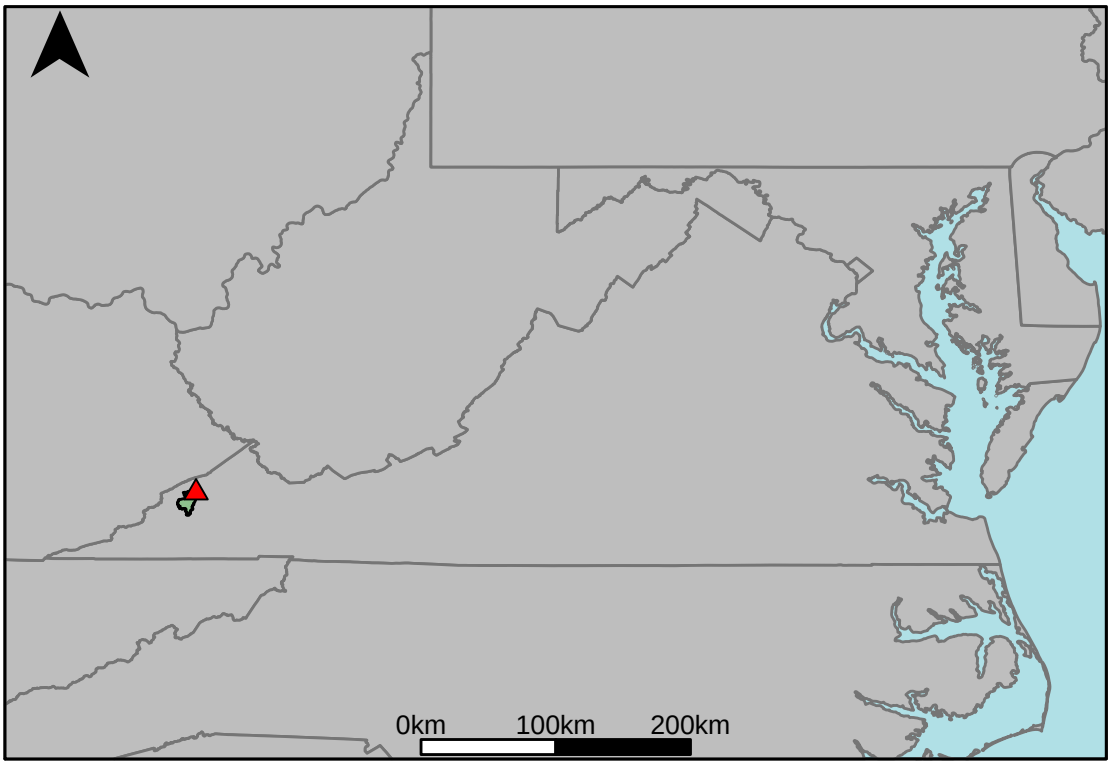
Appendix A: Big Sandy River Gages
Appendix A.1: USGS Gage 03208950 vs. BS1_8730_8540



This river segment follows part of the flow of the Cranes Nest River, a tributary of the Big Sandy River. The gage is located in Dickenson County, VA (Lat 3707'26", Long 8226'20") approximately 17 miles northeast of Norton, VA. Drainage area is 66.5 sq. miles. This gage started taking data in 1963 and is still taking data. This area is not regulated and should not have any man-made alterations that could affect flow conditions. The average daily discharge error between the model and gage data for the 20 year timespan was -12%, with 55% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	8.3	7.8	-6.02
Feb. Low Flow	12	21	75
Mar. Low Flow	16	25.9	61.9
Apr. Low Flow	30	44.3	47.7
May Low Flow	48	57.6	20
Jun. Low Flow	54	52.8	-2.22
Jul. Low Flow	54	38.3	-29.1
Aug. Low Flow	32.6	24.3	-25.5
Sep. Low Flow	19	14.4	-24.2
Oct. Low Flow	14	11.8	-15.7
Nov. Low Flow	11	14.4	30.9
Dec. Low Flow	9.4	8.35	-11.2

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	77.6	86.9	12
Jan. Mean Flow	102	124	21.6
Feb. Mean Flow	156	185	18.6
Mar. Mean Flow	156	162	3.85
Apr. Mean Flow	134	117	-12.7
May Mean Flow	90.1	84.6	-6.1
Jun. Mean Flow	61.1	56.8	-7.04
Jul. Mean Flow	39.5	38.2	-3.29
Aug. Mean Flow	33.8	37.5	10.9
Sep. Mean Flow	25.3	35.9	41.9
Oct. Mean Flow	25	42	68
Nov. Mean Flow	39.2	63.6	62.2
Dec. Mean Flow	75	103	37.3

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	36	73.2	103
Feb. High Flow	163	209	28.2
Mar. High Flow	231	249	7.79
Apr. High Flow	380	322	-15.3
May High Flow	596	584	-2.01
Jun. High Flow	411	417	1.46
Jul. High Flow	255	277	8.63
Aug. High Flow	243	346	42.4
Sep. High Flow	97	80.5	-17
Oct. High Flow	118	77.9	-34
Nov. High Flow	79	75.5	-4.43
Dec. High Flow	55	55.4	0.73

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	3	0	-100
Med. 1 Day Min	7.4	4.95	-33.1
Min. 3 Day Min	3.33	0.01	-99.6
Med. 3 Day Min	7.53	5.45	-27.6
Min. 7 Day Min	4.41	0.35	-92.2
Med. 7 Day Min	7.84	6.51	-17
Min. 30 Day Min	5.1	4.32	-15.3
Med. 30 Day Min	11.2	12.9	15.2
Min. 90 Day Min	8.91	9.05	1.57
Med. 90 Day Min	18.7	24.9	33.2
7Q10	5.15	1.41	-72.6
Year of 90-Day Min. Flow	1999	1988	100
Drought Year Mean	46.3	56.2	21.4
Mean Baseflow	35.5	40.9	15.2

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	3750	3220	-14.1
Med. 1 Day Max	1020	1350	32.4
Max. 3 Day Max	1710	1870	9.36
Med. 3 Day Max	755	710	-5.96
Max. 7 Day Max	873	1170	34
Med. 7 Day Max	477	483	1.26
Max. 30 Day Max	451	550	22
Med. 30 Day Max	247	265	7.29
Max. 90 Day Max	320	408	27.5
Med. 90 Day Max	162	178	9.88

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	5.7	3.46	-39.3
5% Non-Exceedance	8.3	8.22	-0.96
50% Non-Exceedance	39.9	49.1	23.1
95% Non-Exceedance	247	264	6.88
99% Non-Exceedance	607	696	14.7
Sept. 10% Non-Exceedance	5.89	7.6	29

Fig. 1: Hydrograph

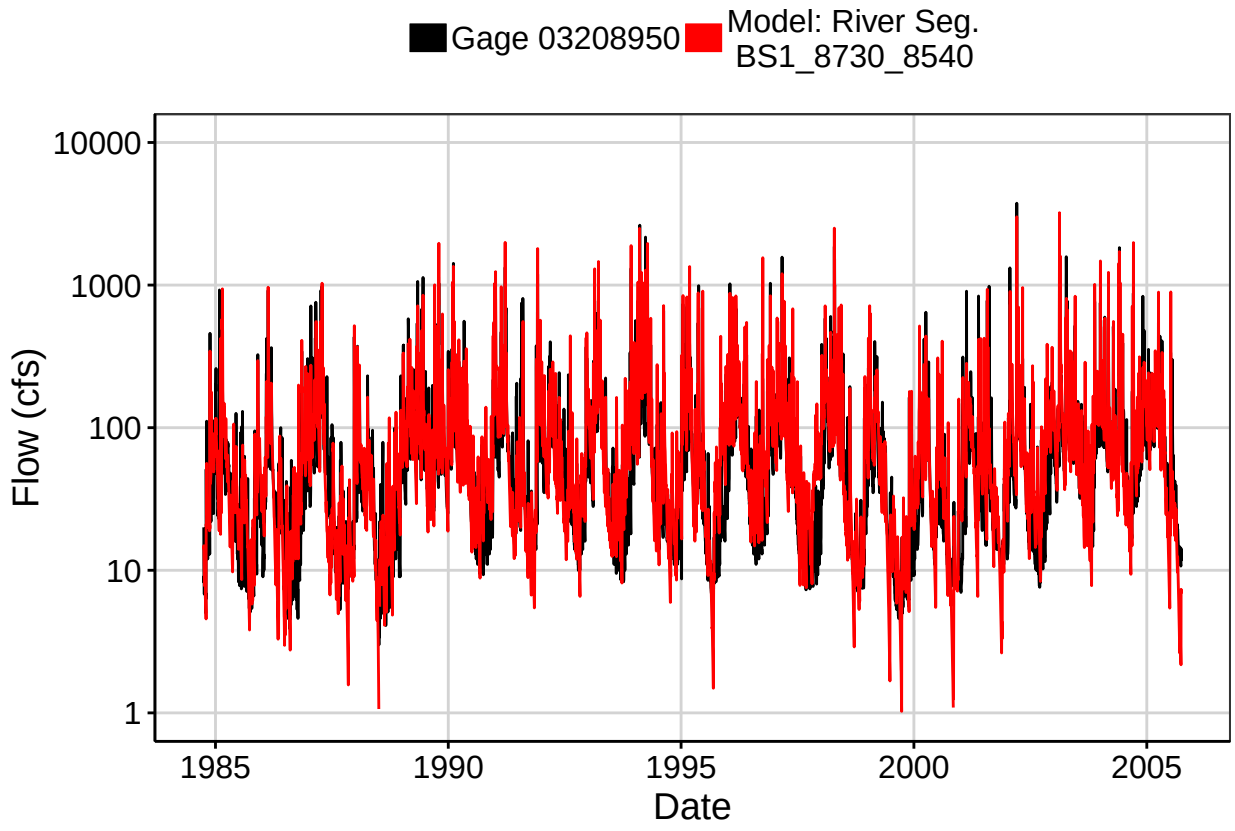


Fig. 2: Zoomed Hydrograph

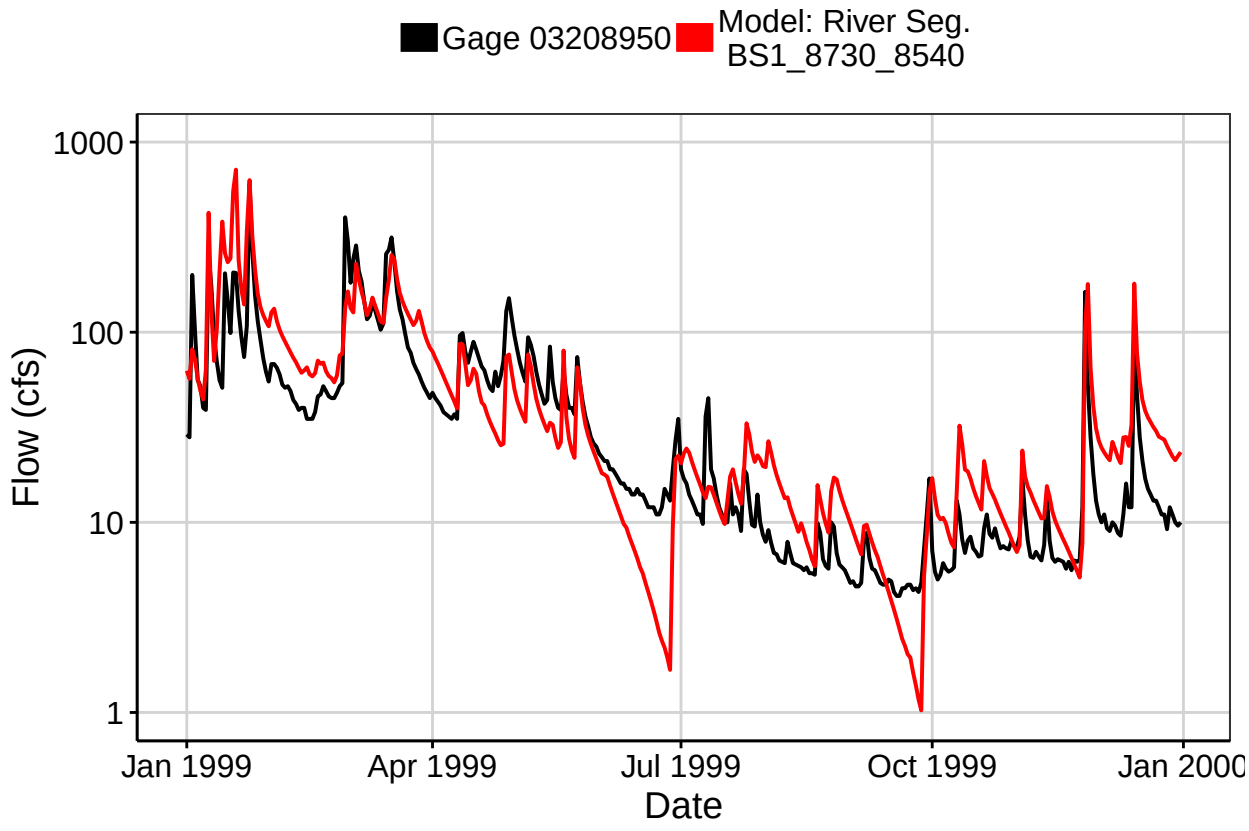


Fig. 3: Flow Exceedance

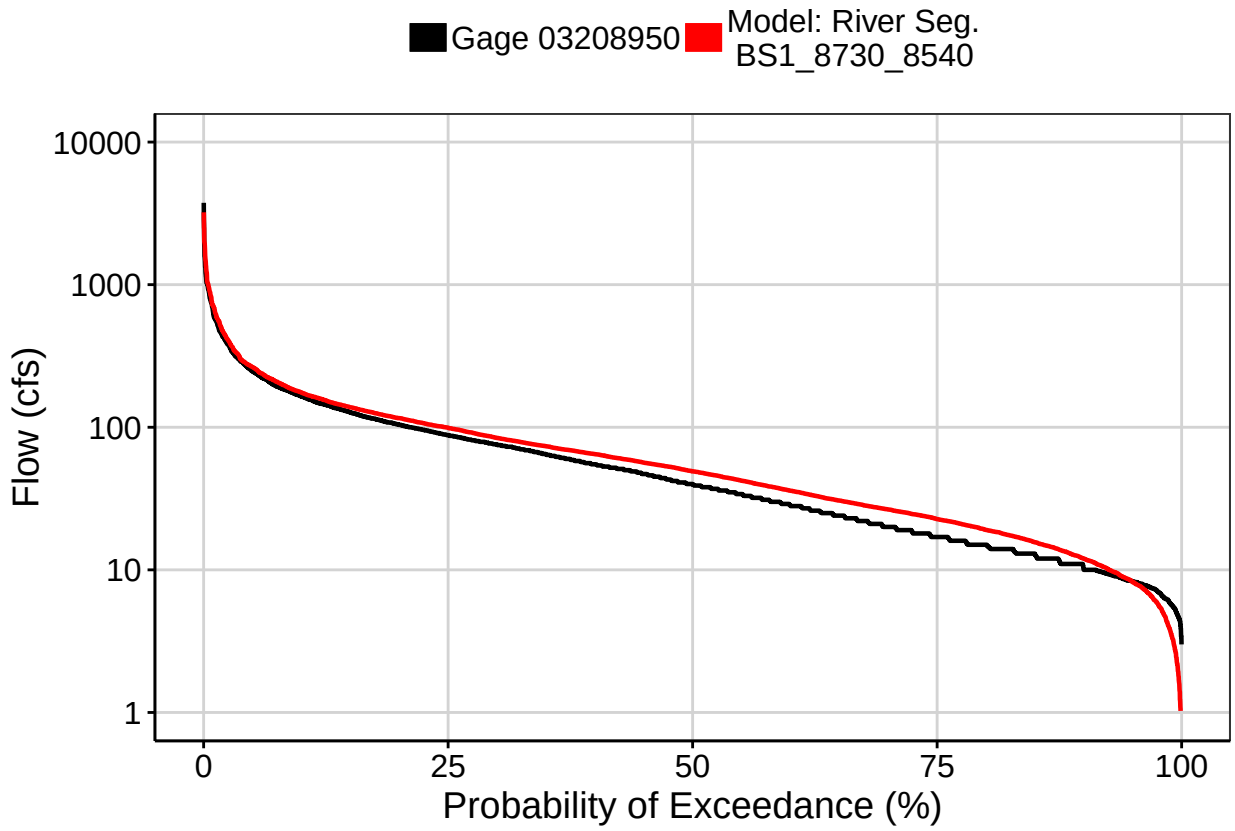


Fig. 4: Baseflow

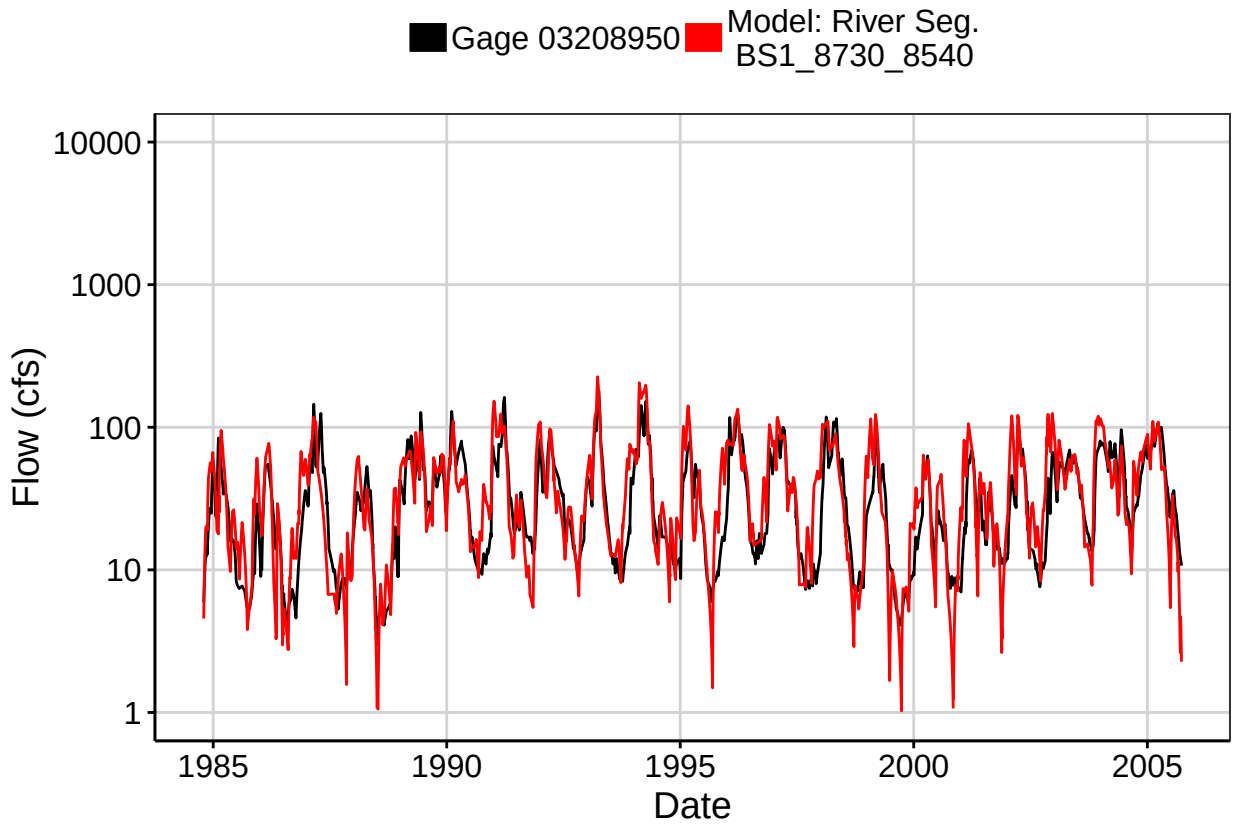


Fig. 5: Combined Baseflow

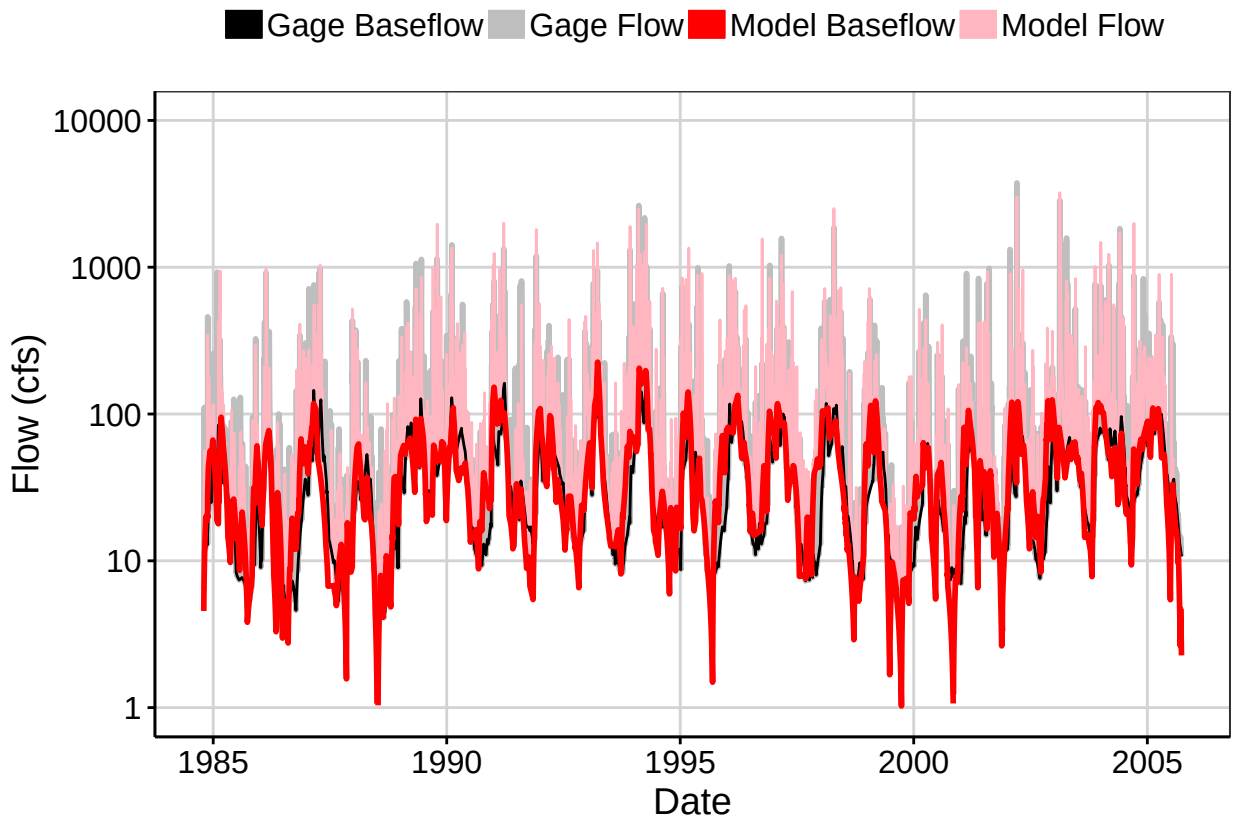


Fig. 6: Largest Error Segment

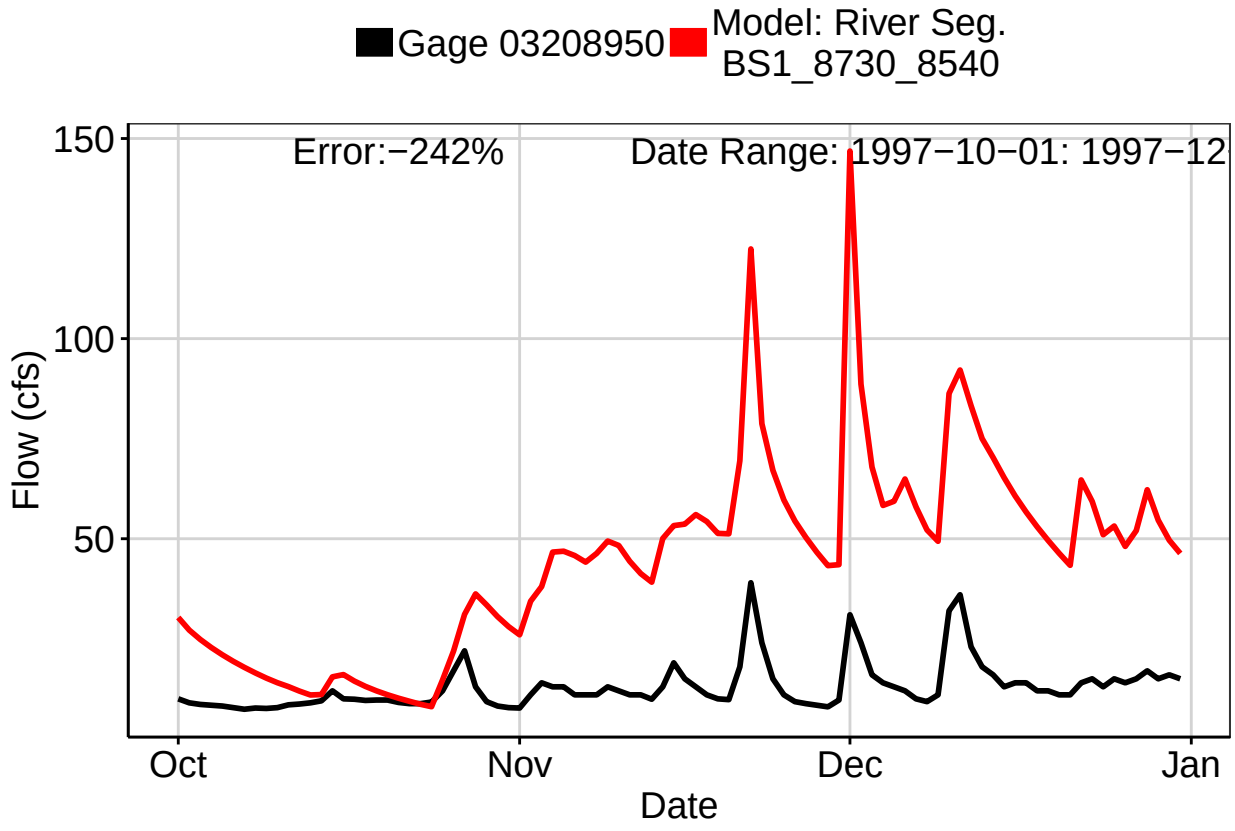


Fig. 7: Second Largest Error Segment

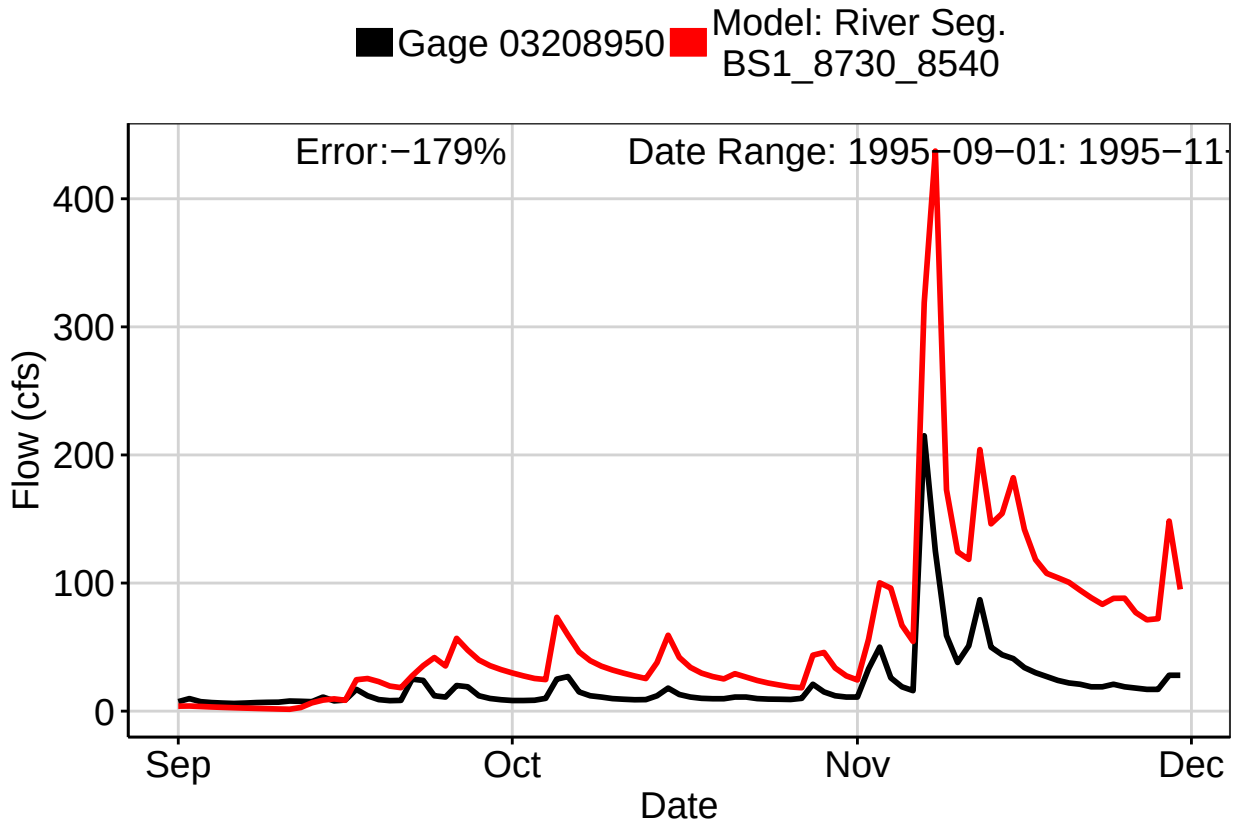


Fig. 8: Third Largest Error Segment

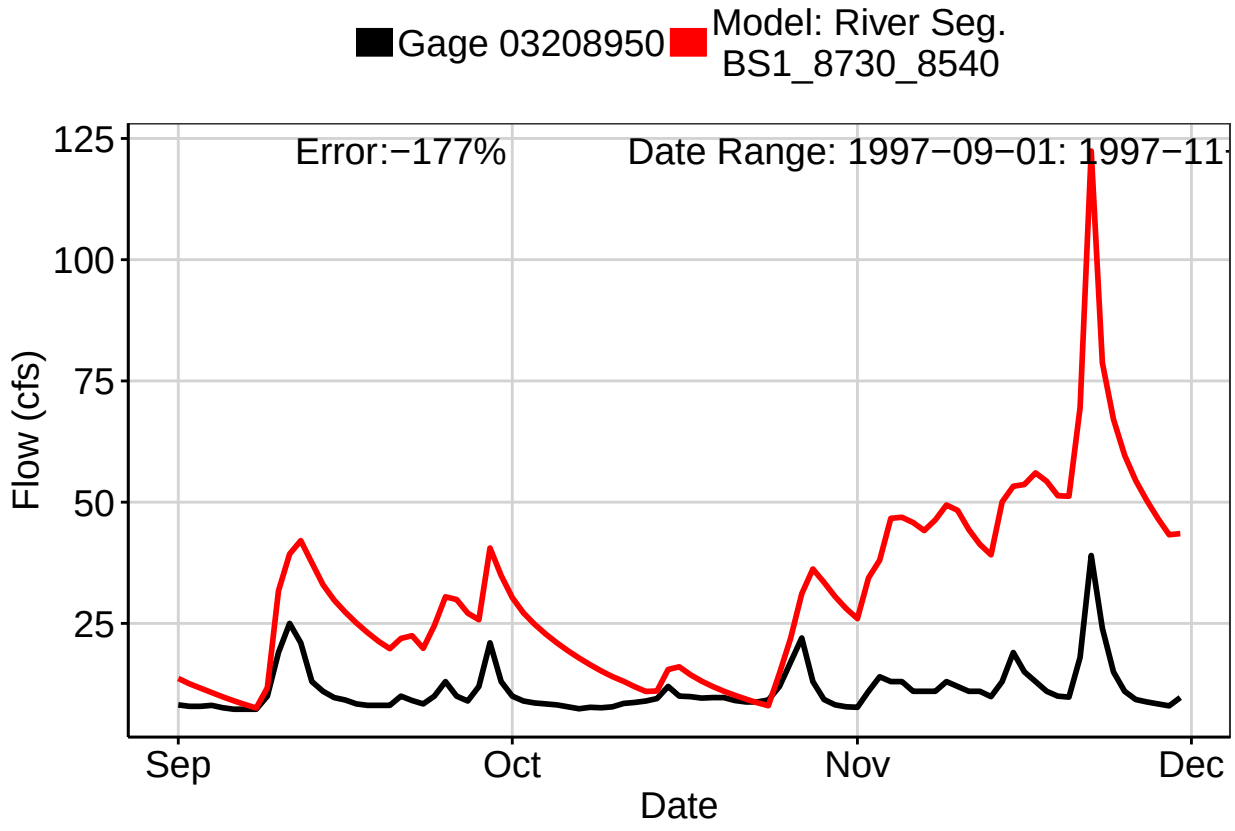


Fig. 9: Residuals Plot