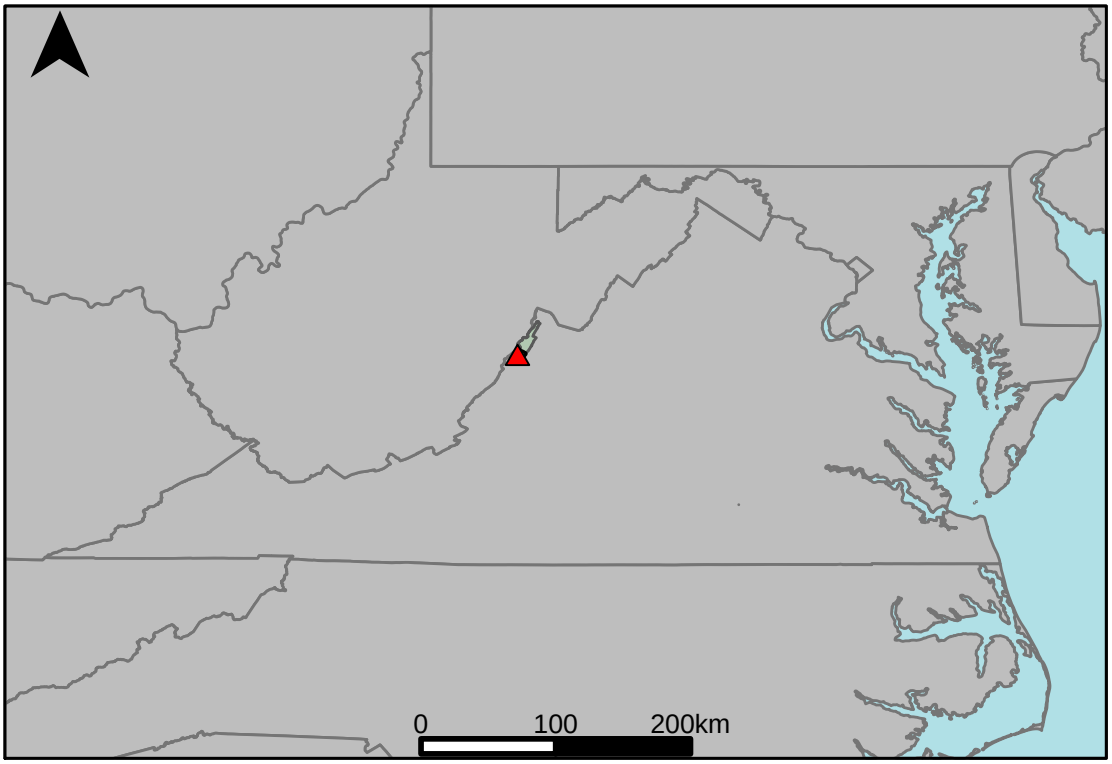
Appendix A.3: USGS Gage 02011470 vs. JU1_6590_6600 Upper James River



This river segment follows part of the flow of the Back Creek, a tributary of the James. The gage is located in Bath County (Lat. 38°11'25.4", Long. -79°48'42.2"), approximately 20 miles southwest of Monterey, VA. Drainage area is 75.6 sq. miles. This gage started taking data in 1984 and is still taking data. Flow has been regulated since October 1984 by Back Creek Lake 0.5 mi upstream, amount unknown. The average daily discharge error between the model and gage data for the 20 year timespan was -5.13%, 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	14	20.8	48.6
Feb. Low Flow	14	28.7	105
Mar. Low Flow	18	54.8	204
Apr. Low Flow	21.5	50.5	135
May Low Flow	34	52	52.9
Jun. Low Flow	54.2	89.3	64.8
Jul. Low Flow	37	61.3	65.7
Aug. Low Flow	25.3	38.4	51.8
Sep. Low Flow	14	17.2	22.9
Oct. Low Flow	14	15.8	12.9
Nov. Low Flow	14	15.7	12.1
Dec. Low Flow	14	15.2	8.57

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	117	123	5.13
Jan. Mean Flow	162	152	-6.17
Feb. Mean Flow	165	176	6.67
Mar. Mean Flow	252	249	-1.19
Apr. Mean Flow	186	176	-5.38
May Mean Flow	179	141	-21.2
Jun. Mean Flow	87.9	82.5	-6.14
Jul. Mean Flow	40.1	51.8	29.2
Aug. Mean Flow	33.4	56.4	68.9
Sep. Mean Flow	46.2	79	71
Oct. Mean Flow	36.1	63.6	76.2
Nov. Mean Flow	96.3	131	36
Dec. Mean Flow	124	119	-4.03

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	18	127	606
Feb. High Flow	352	279	-20.7
Mar. High Flow	784	293	-62.6
Apr. High Flow	705	358	-49.2
May High Flow	475	404	-14.9
Jun. High Flow	941	457	-51.4
Jul. High Flow	467	382	-18.2
Aug. High Flow	705	383	-45.7
Sep. High Flow	207	190	-8.21
Oct. High Flow	124	154	24.2
Nov. High Flow	29	95.6	230
Dec. High Flow	20	187	835

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	1.7	14.1	729
Med. 1 Day Min	13	14.1	8.46
Min. 3 Day Min	1.8	14.1	683
Med. 3 Day Min	13	14.1	8.46
Min. 7 Day Min	1.91	14.1	638
Med. 7 Day Min	13.3	14.2	6.77
Min. 30 Day Min	2.49	14.1	466
Med. 30 Day Min	14	19.2	37.1
Min. 90 Day Min	5.64	18	219
Med. 90 Day Min	21.7	39.9	83.9
7Q10	5.49	14.2	159
Year of 90-Day Min. Flow	1999	1999	0
Drought Year Mean	47.9	85.2	77.9
Mean Baseflow	38.3	61.1	59.5

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	4890	7480	53
Med. 1 Day Max	2240	618	-72.4
Max. 3 Day Max	2590	3790	46.3
Med. 3 Day Max	1310	590	-55
Max. 7 Day Max	1410	2170	53.9
Med. 7 Day Max	823	533	-35.2
Max. 30 Day Max	680	724	6.47
Med. 30 Day Max	396	342	-13.6
Max. 90 Day Max	404	428	5.94
Med. 90 Day Max	236	232	-1.69

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	7.51	14.1	87.7
5% Non-Exceedance	12	14.4	20
50% Non-Exceedance	43.1	71	64.7
95% Non-Exceedance	437	432	-1.14
99% Non-Exceedance	1100	598	-45.6
Sept. 10% Non-Exceedance	13	14.1	8.46

Fig. 1: Hydrograph

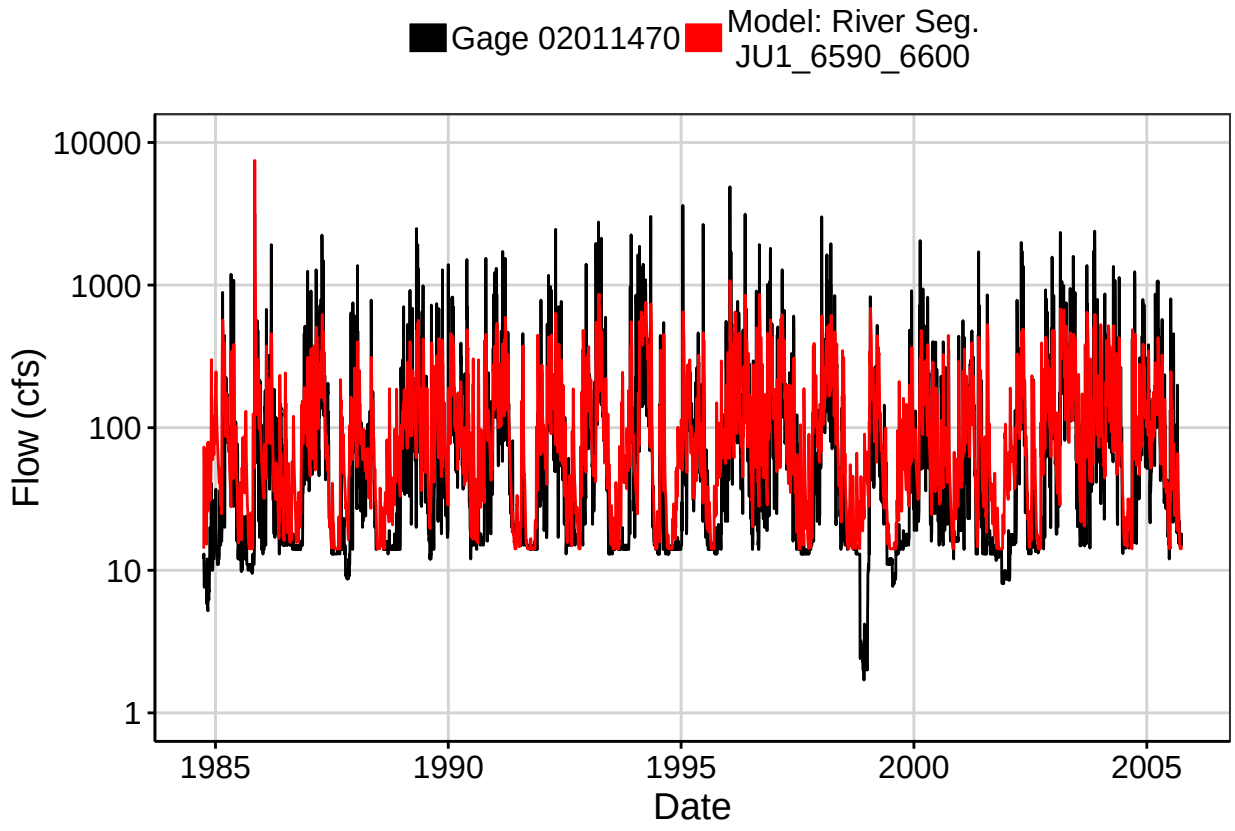


Fig. 2: Zoomed Hydrograph

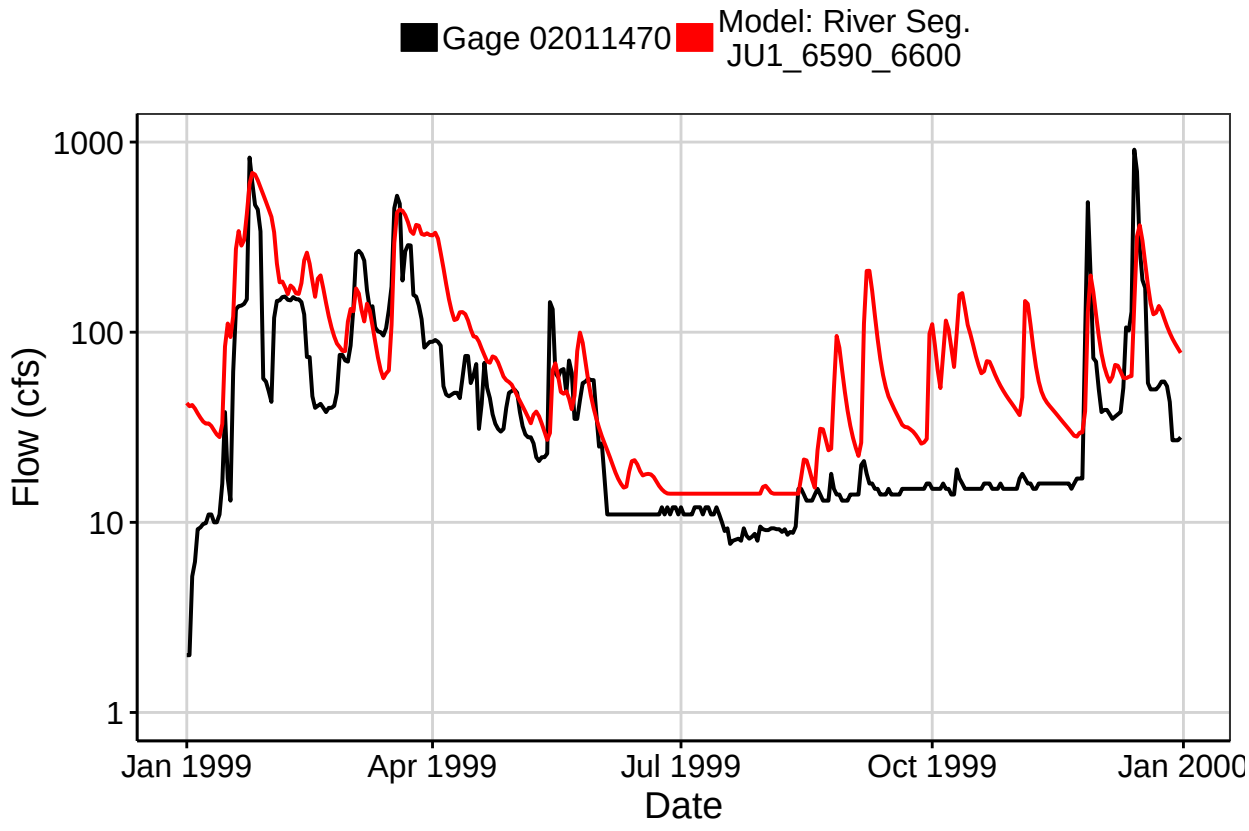


Fig. 3: Flow Exceedance

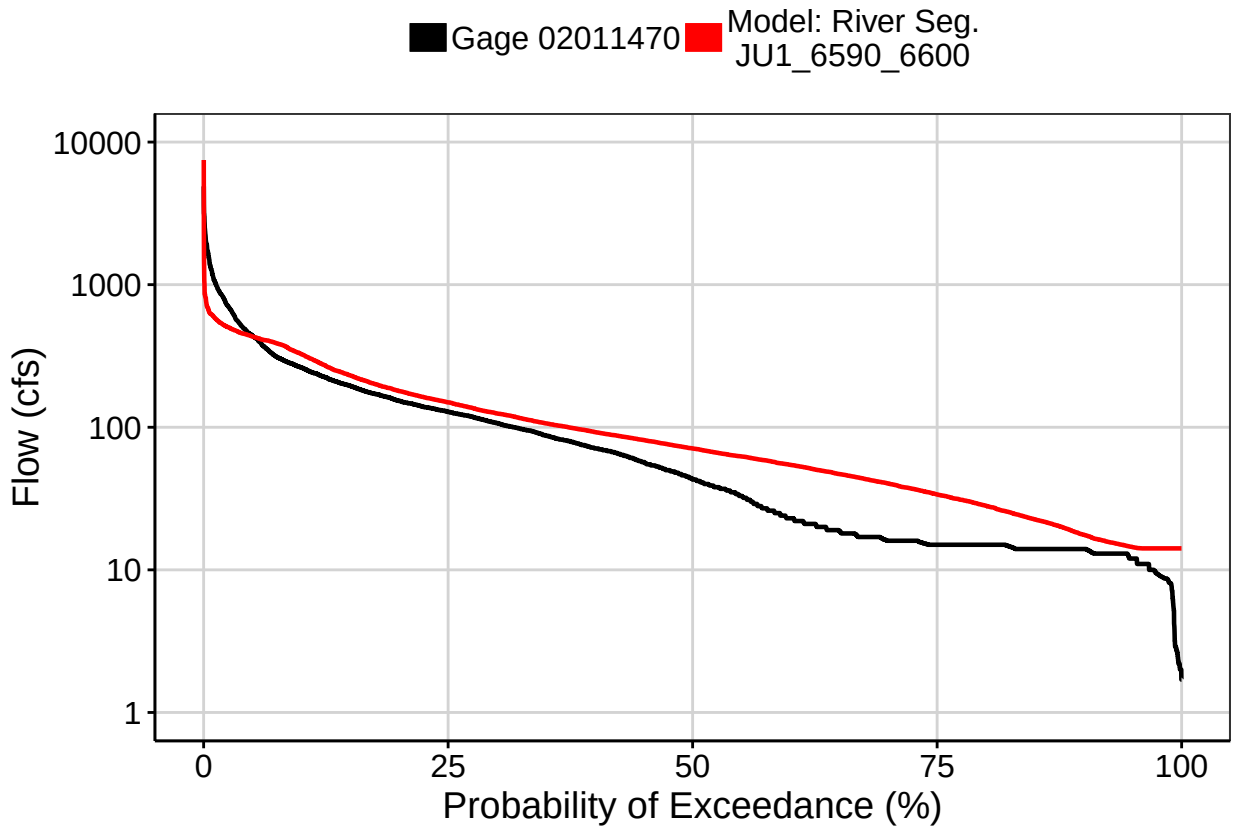


Fig. 4: Baseflow

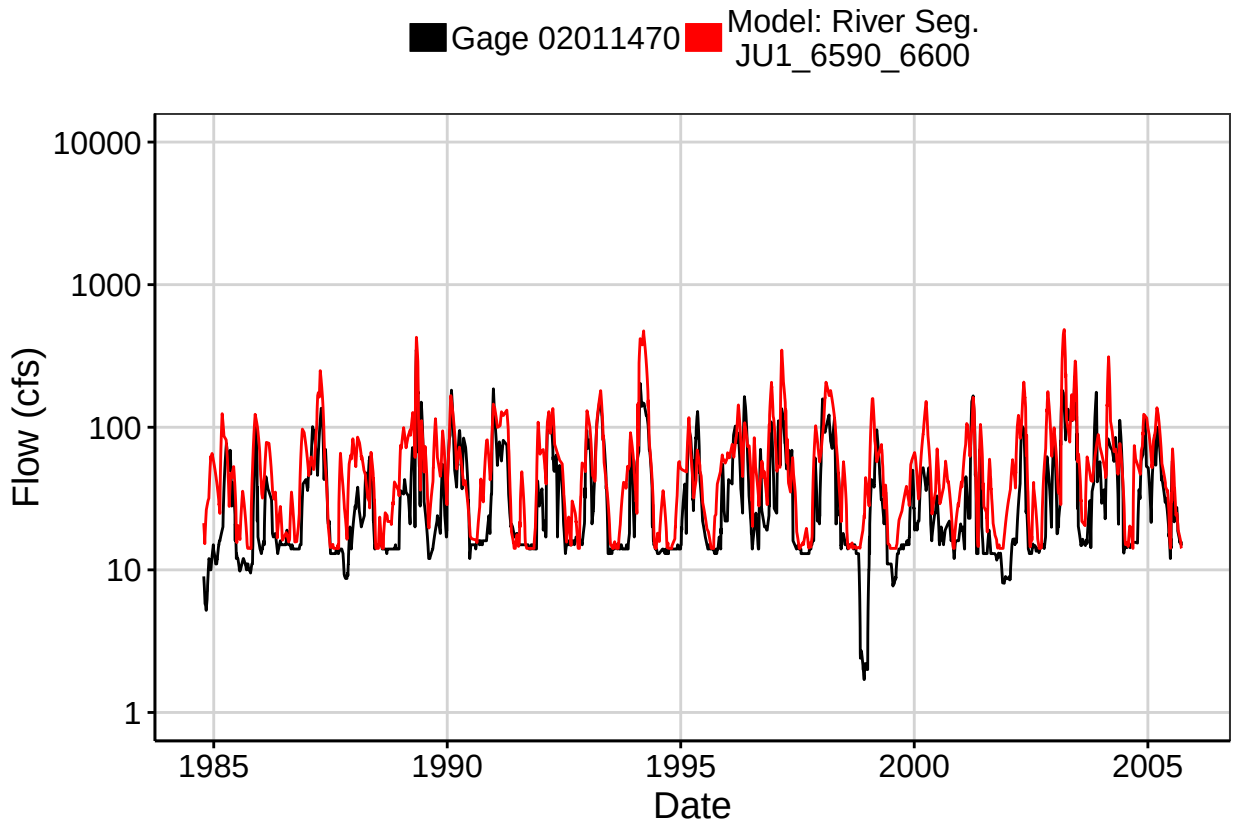


Fig. 5: Combined Baseflow

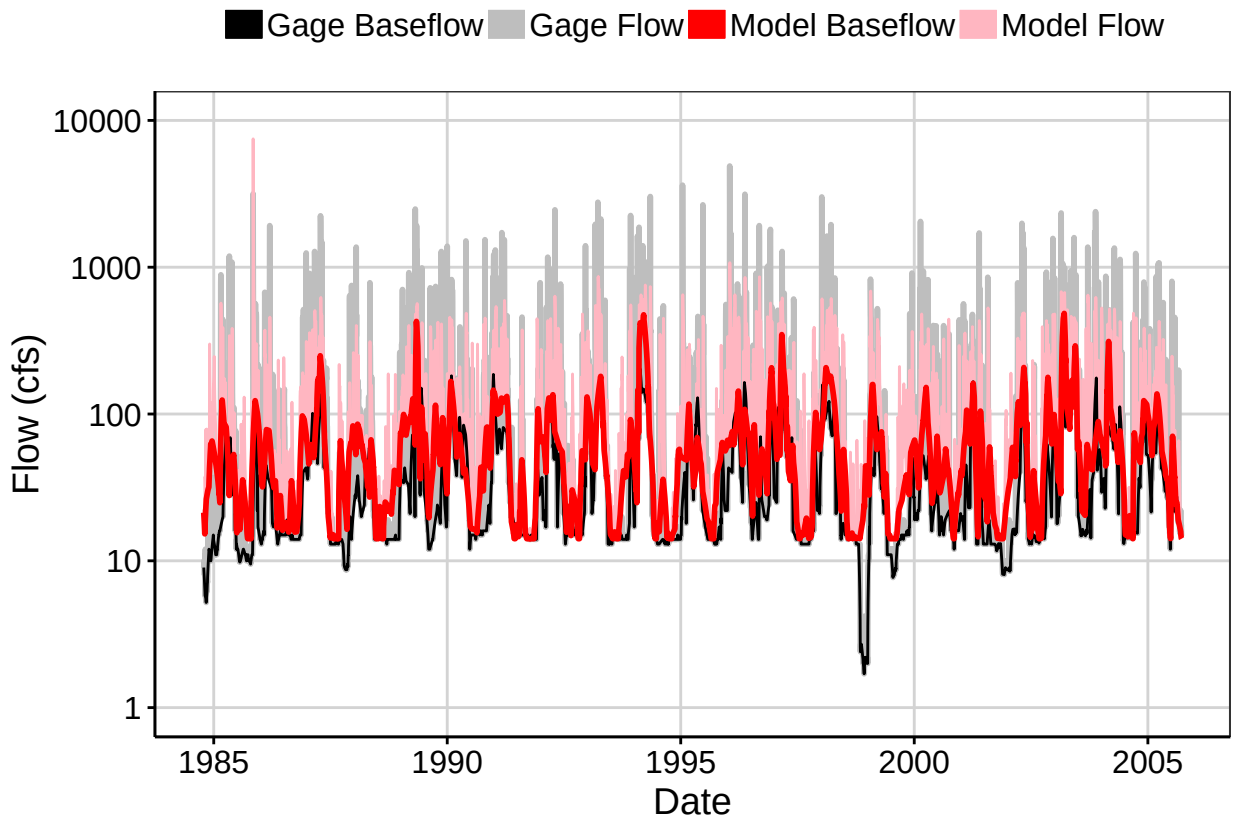


Fig. 6: Largest Error Segment

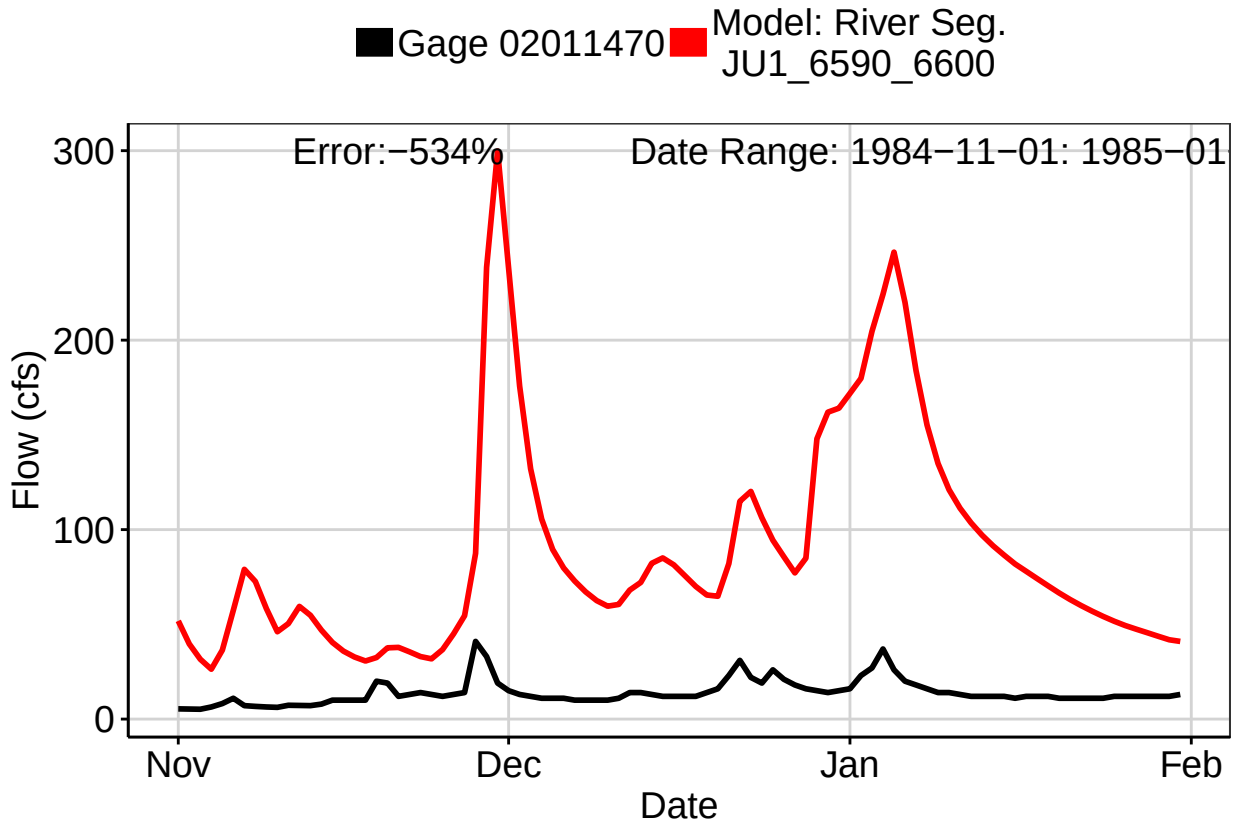


Fig. 7: Second Largest Error Segment

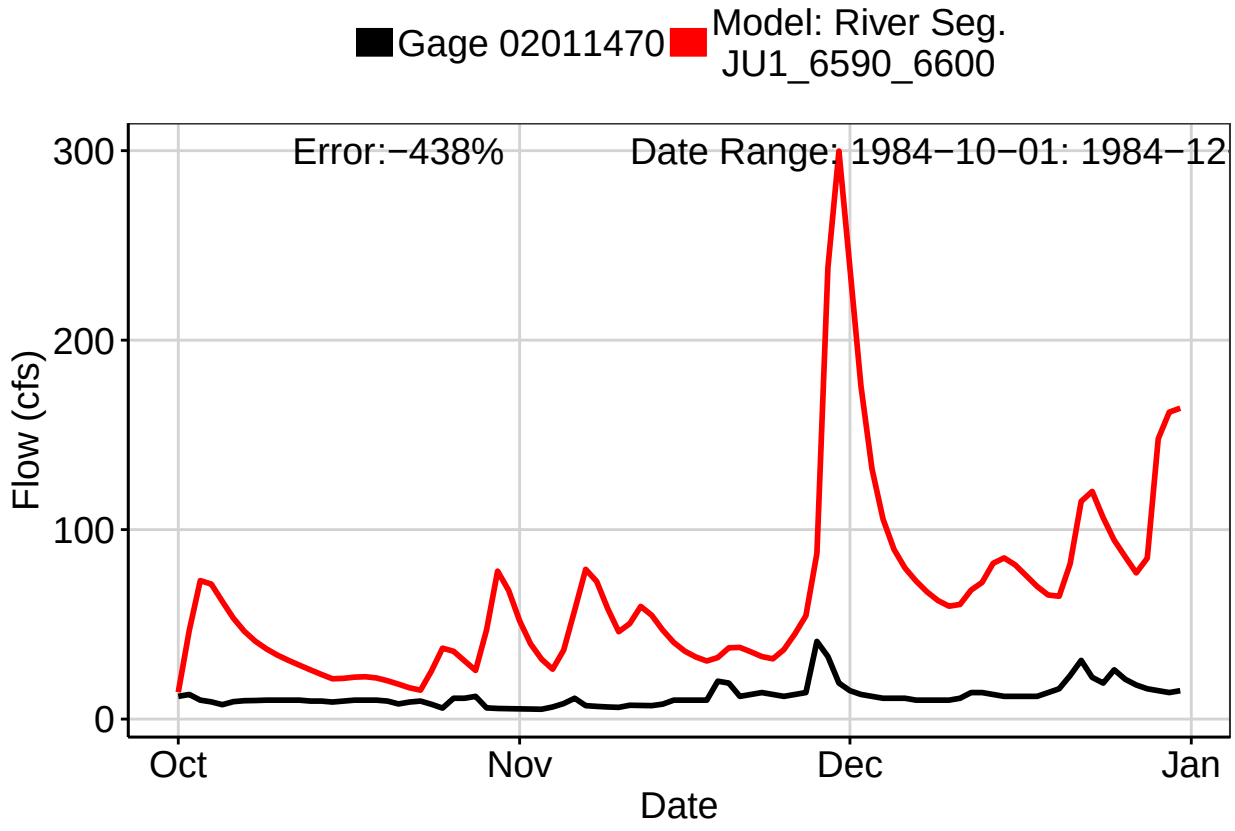


Fig. 8: Third Largest Error Segment

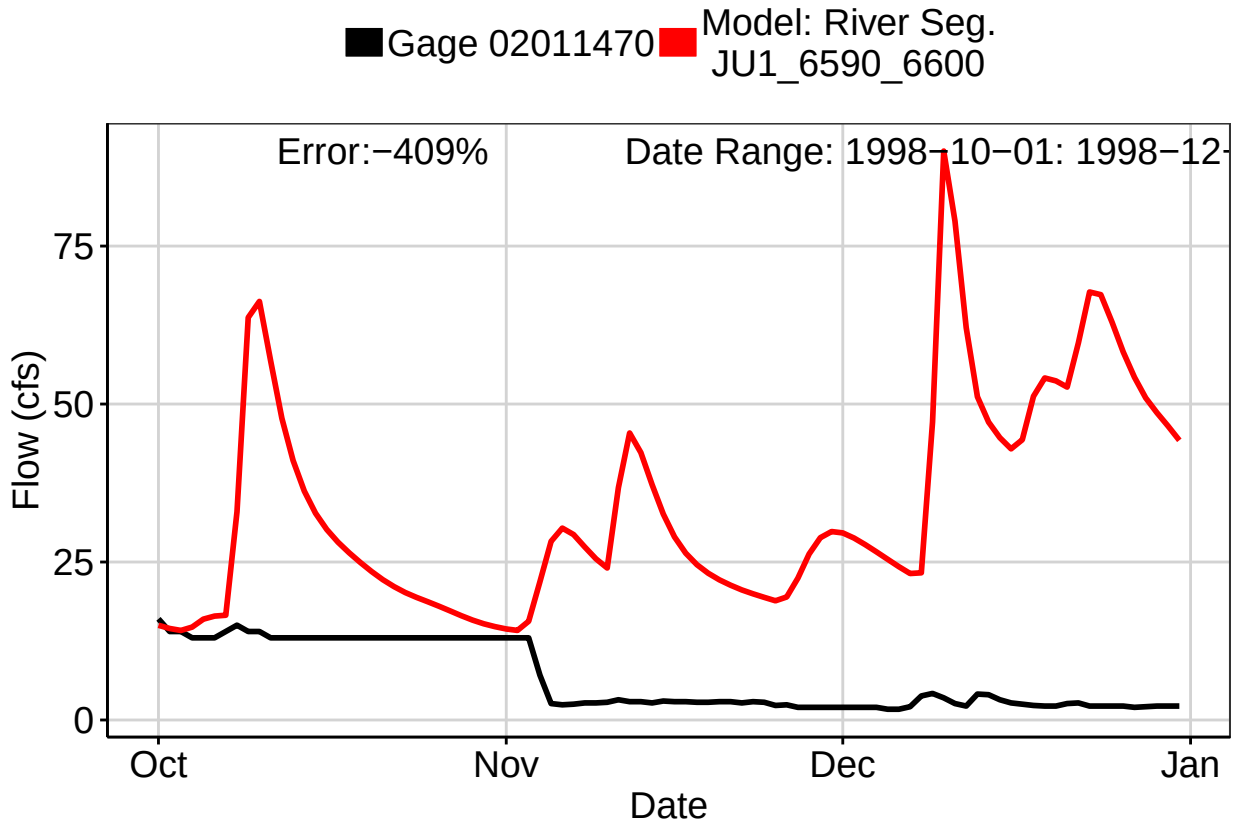


Fig. 9: Residuals Plot