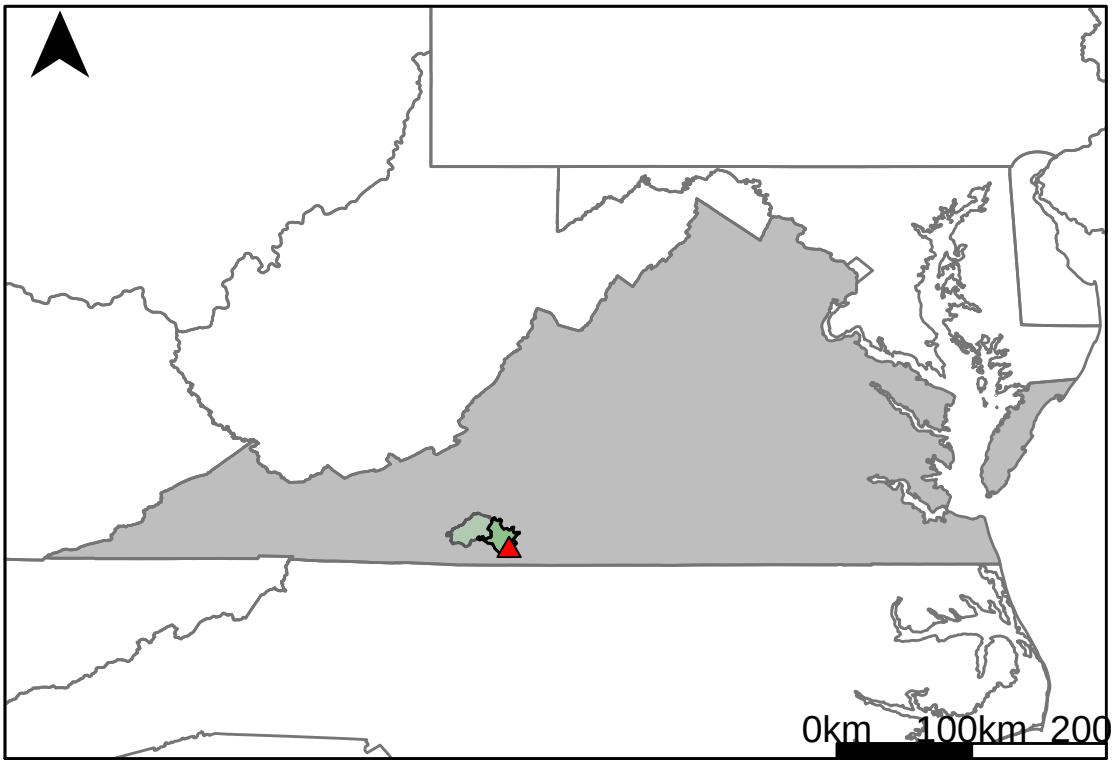
Appendix C.6: USGS Gage 02073000 vs. OD3_8630_8720



This river segment follows part of the flow of the Smith River, a tributary of the Dan River. The gage is located in Henry County, VA (Lat 3639'40", Long 7952'51") approximately 2 miles south of Martinsville, VA. Drainage area is 379 sq. miles. This gage started taking data in 1929 and is still taking data. The flow of this area has been regulated since August of 1950 by the Philpott Lake, approximately 20 miles upstream. Additional regulations have since been put in place since the addition of a power plant 1,000 ft upstream. The average daily discharge error between the model and gage data for the 20 year timespan was 13.7%, with 61.3% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	102	57.2	43.9
Feb. Low Flow	127	72.2	43.1
Mar. Low Flow	133	103	22.6
Apr. Low Flow	147	130	11.6
May Low Flow	155	202	-30.3
Jun. Low Flow	160	196	-22.5
Jul. Low Flow	179	121	32.4
Aug. Low Flow	152	104	31.6
Sep. Low Flow	195	68.2	65
Oct. Low Flow	143	55.5	61.2
Nov. Low Flow	116	59.6	48.6
Dec. Low Flow	123	61	50.4

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	526	454	13.7
Jan. Mean Flow	552	482	12.7
Feb. Mean Flow	525	595	-13.3
Mar. Mean Flow	665	773	-16.2
Apr. Mean Flow	685	685	0
May Mean Flow	561	483	13.9
Jun. Mean Flow	576	430	25.3
Jul. Mean Flow	506	295	41.7
Aug. Mean Flow	481	287	40.3
Sep. Mean Flow	529	362	31.6
Oct. Mean Flow	394	331	16
Nov. Mean Flow	409	348	14.9
Dec. Mean Flow	430	395	8.14

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	506	450	11.1
Feb. High Flow	667	926	-38.8
Mar. High Flow	906	964	-6.4
Apr. High Flow	1210	991	18.1
May High Flow	1080	895	17.1
Jun. High Flow	1400	2340	-67.1
Jul. High Flow	1460	1150	21.2
Aug. High Flow	1260	859	31.8
Sep. High Flow	1010	702	30.5
Oct. High Flow	945	475	49.7
Nov. High Flow	880	361	59
Dec. High Flow	884	283	68

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	54	22.5	58.3
Med. 1 Day Min	75.5	45.5	39.7
Min. 3 Day Min	69.4	37.1	46.5
Med. 3 Day Min	161	66.5	58.7
Min. 7 Day Min	82.5	60.3	26.9
Med. 7 Day Min	216	110	49.1
Min. 30 Day Min	94.9	68.7	27.6
Med. 30 Day Min	252	127	49.6
Min. 90 Day Min	110	83.3	24.3
Med. 90 Day Min	287	167	41.8
7Q10	127	75.2	40.8
Year of 90-Day Min. Flow	2002	1985	100
Drought Year Mean	187	454	-143
Mean Baseflow	179	145	19

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	11300	8480	25
Med. 1 Day Max	3760	4420	-17.6
Max. 3 Day Max	8320	5880	29.3
Med. 3 Day Max	2890	2800	3.11
Max. 7 Day Max	4890	3720	23.9
Med. 7 Day Max	2010	1880	6.47
Max. 30 Day Max	2220	2280	-2.7
Med. 30 Day Max	1160	1050	9.48
Max. 90 Day Max	1550	1510	2.58
Med. 90 Day Max	816	790	3.19

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	83.8	45.7	45.5
5% Non-Exceedance	130	72.8	44
50% Non-Exceedance	378	292	22.8
95% Non-Exceedance	1360	1250	8.09
99% Non-Exceedance	2620	2470	5.73
Sept. 10% Non-Exceedance	80.7	80.5	0.25

Fig. 1: Hydrograph

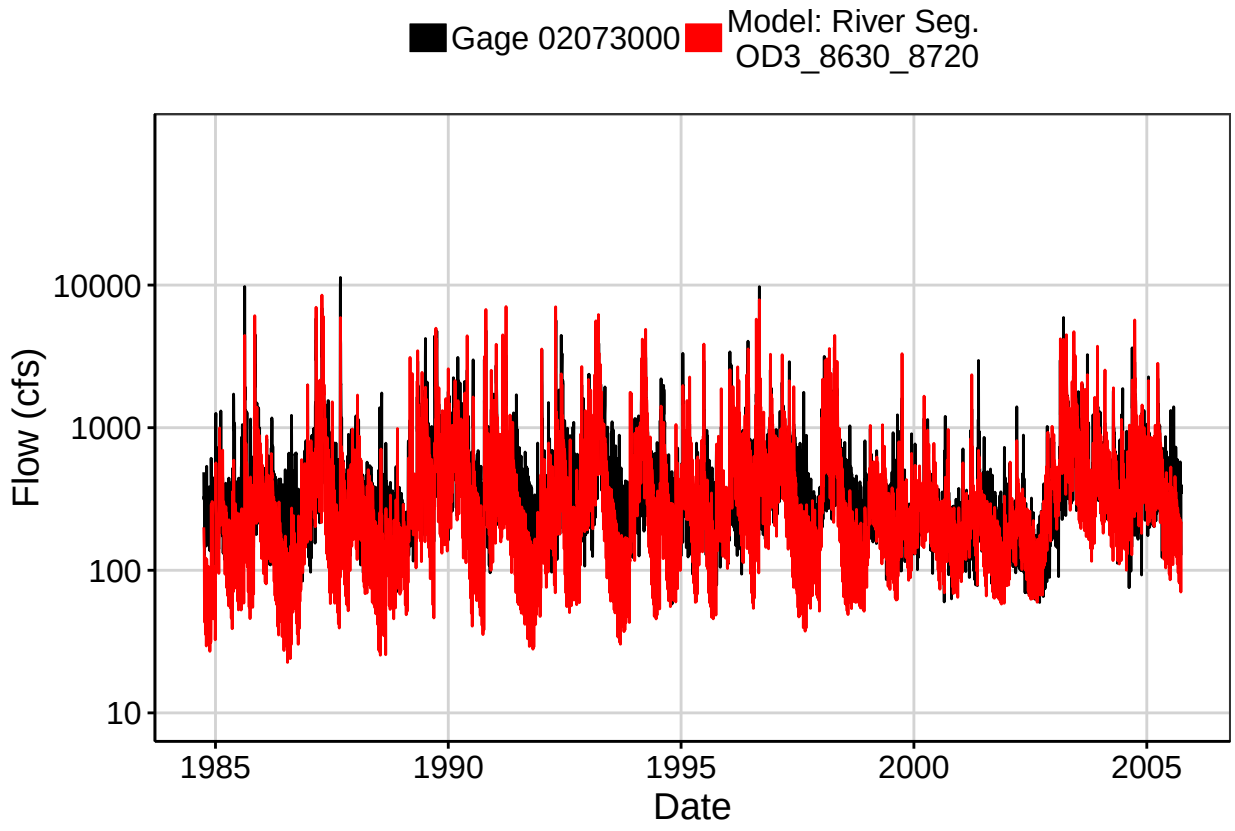


Fig. 2: Zoomed Hydrograph

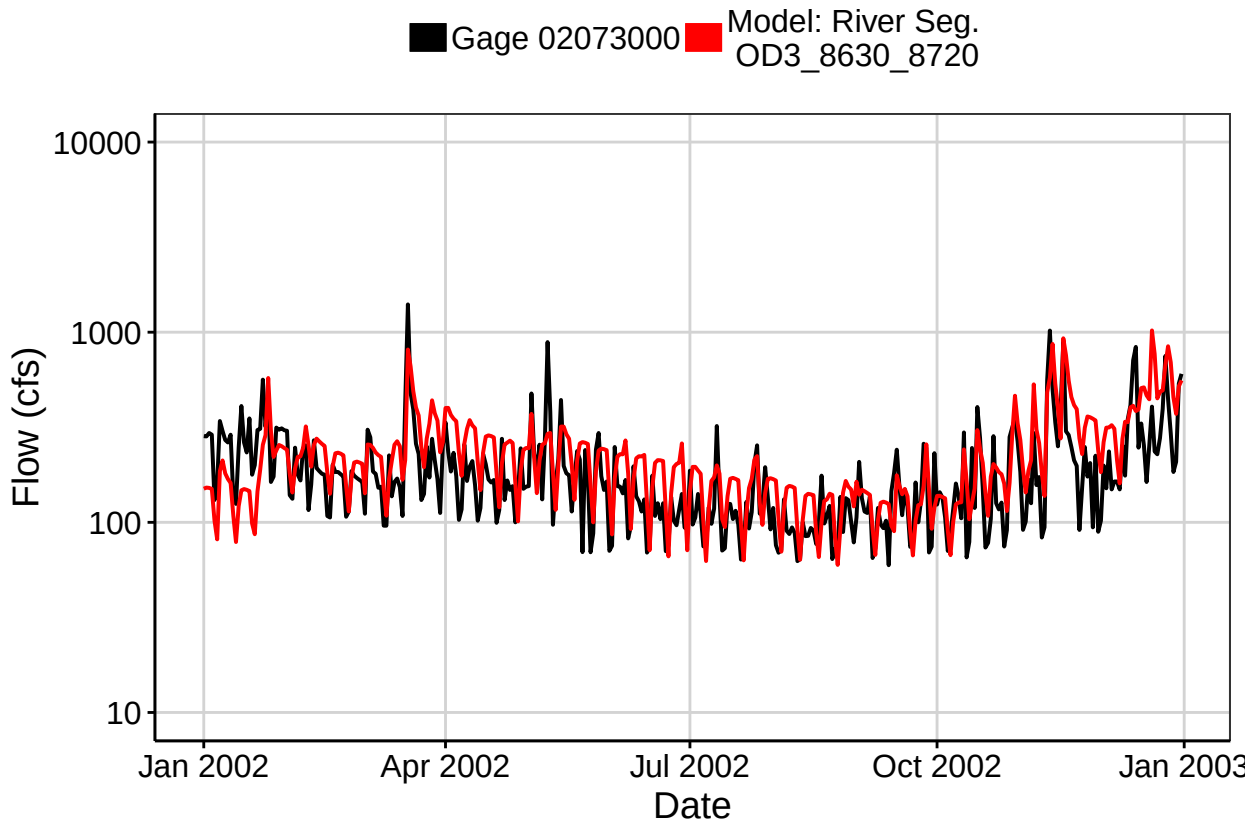


Fig. 3: Flow Exceedance

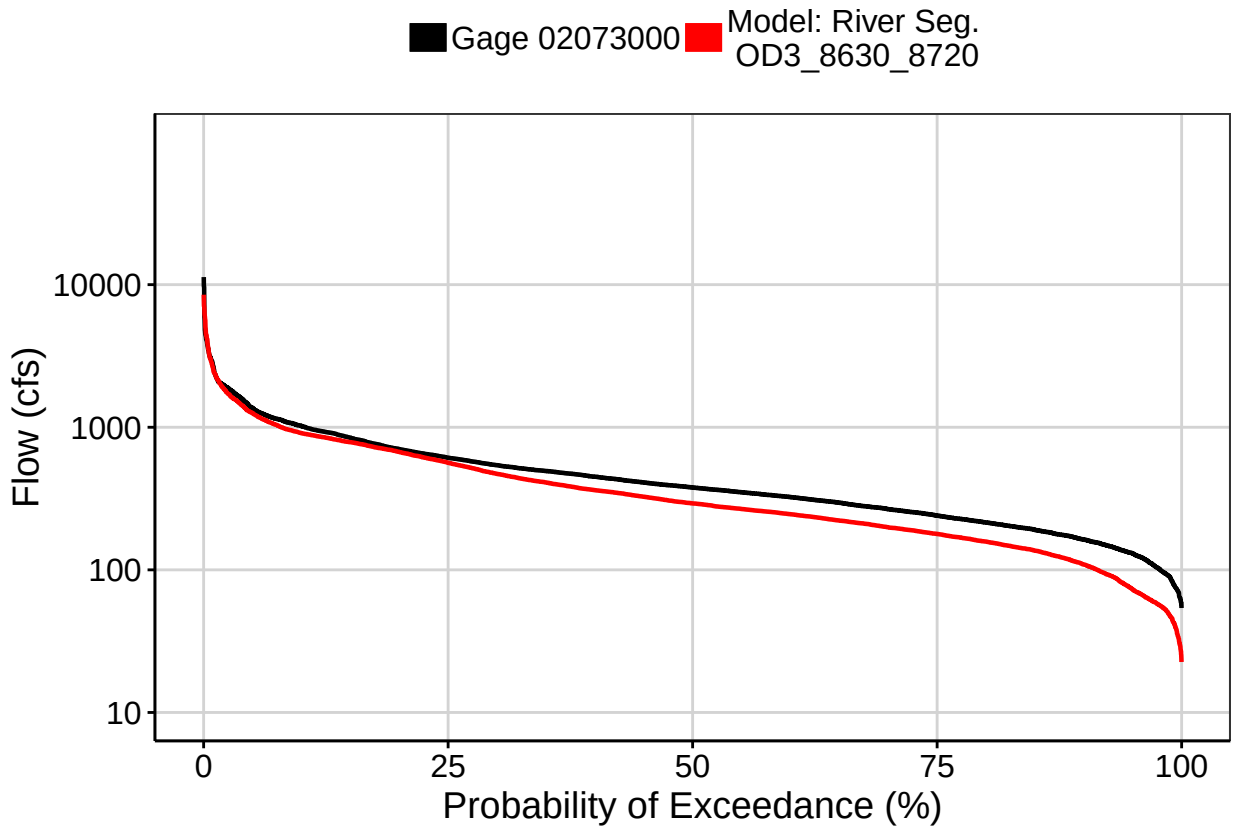


Fig. 4: Baseflow

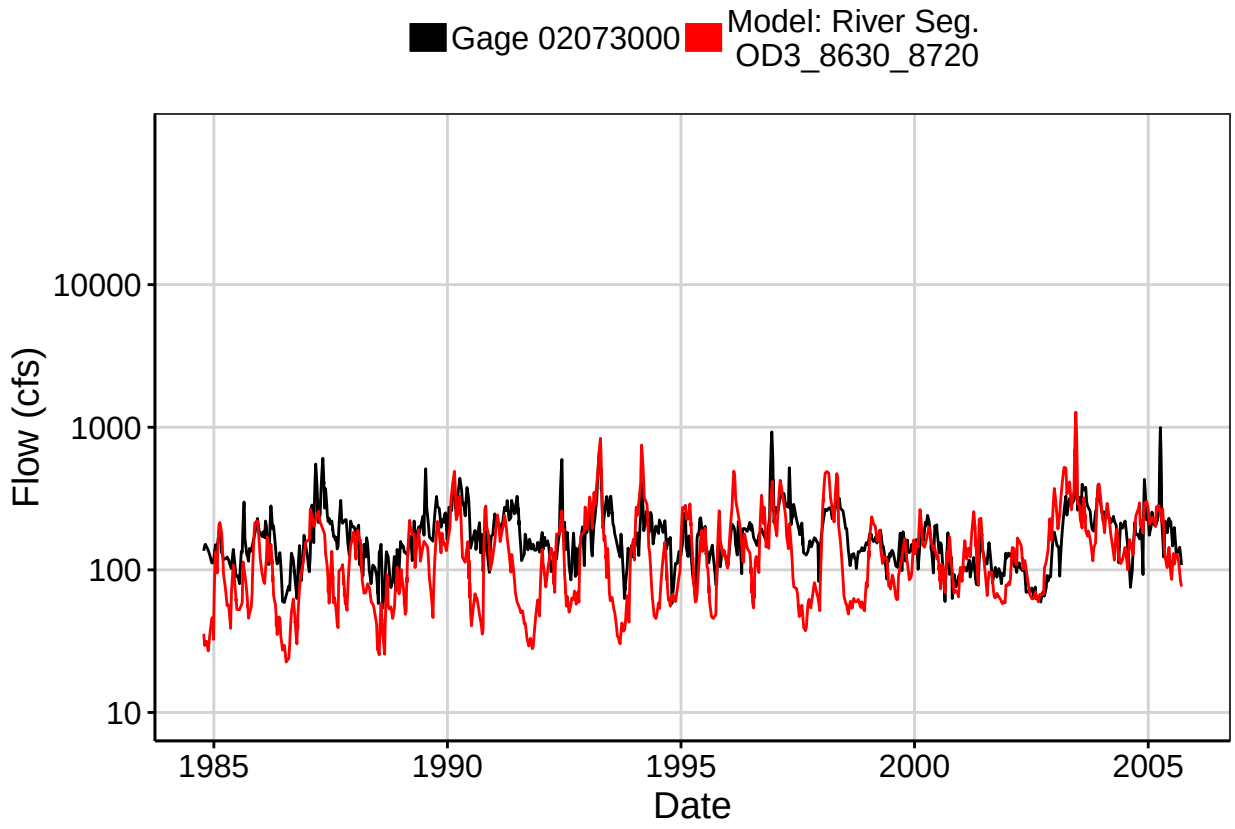


Fig. 5: Combined Baseflow

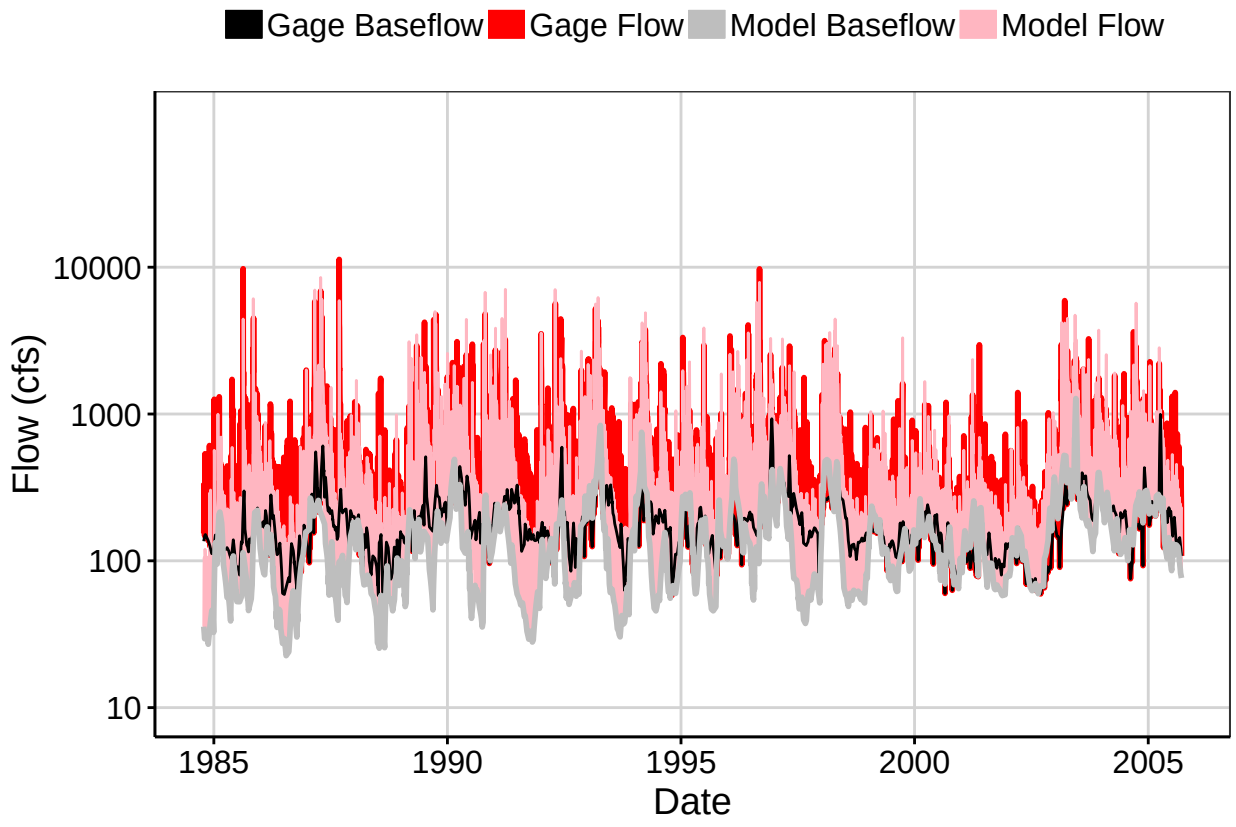


Fig. 6: Largest Error Segment

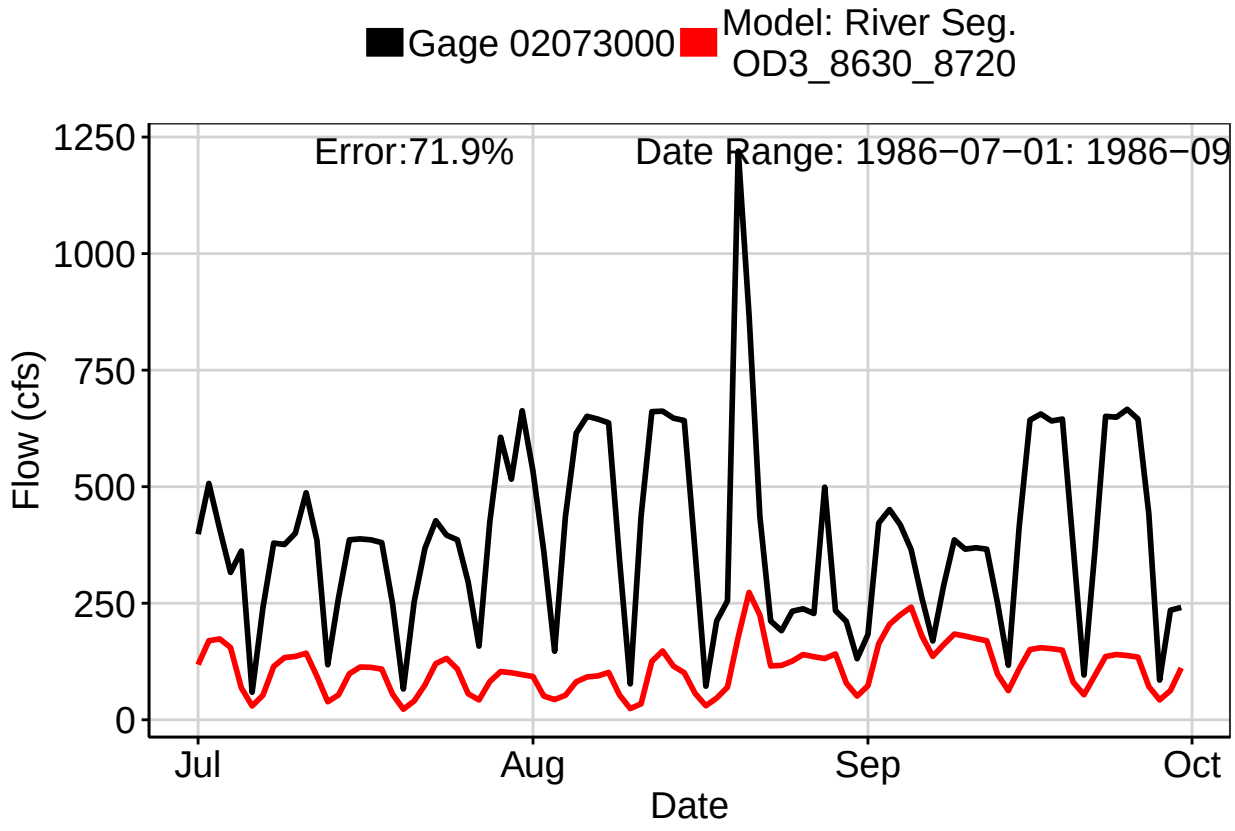


Fig. 7: Second Largest Error Segment

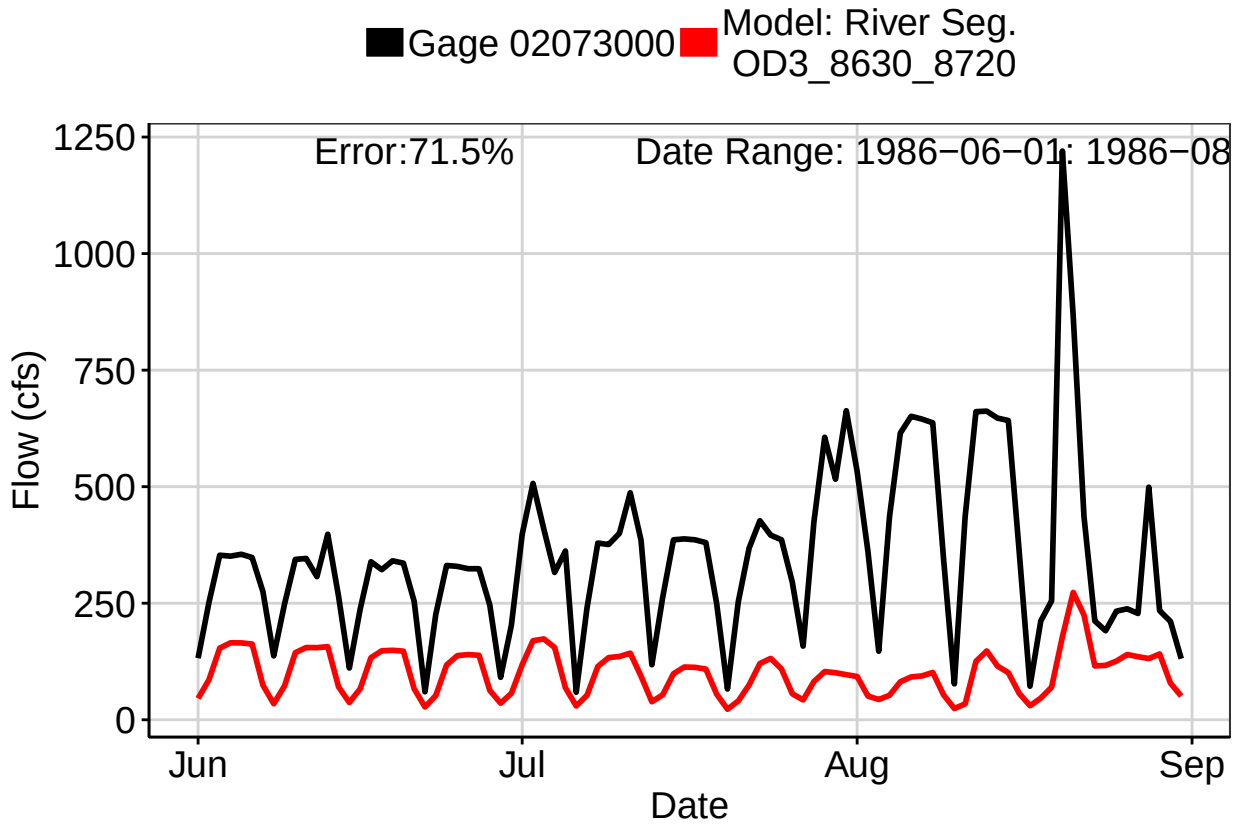


Fig. 8: Third Largest Error Segment

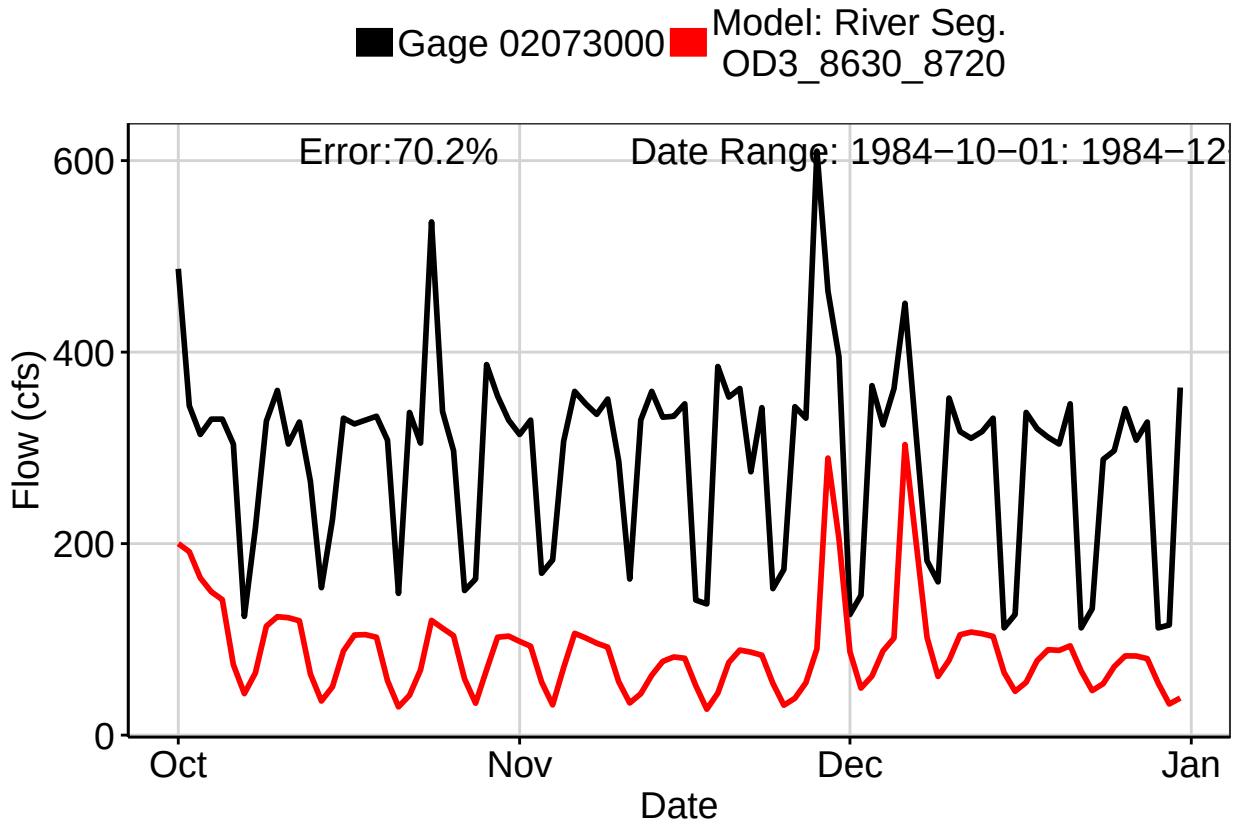


Fig. 9: Residuals Plot