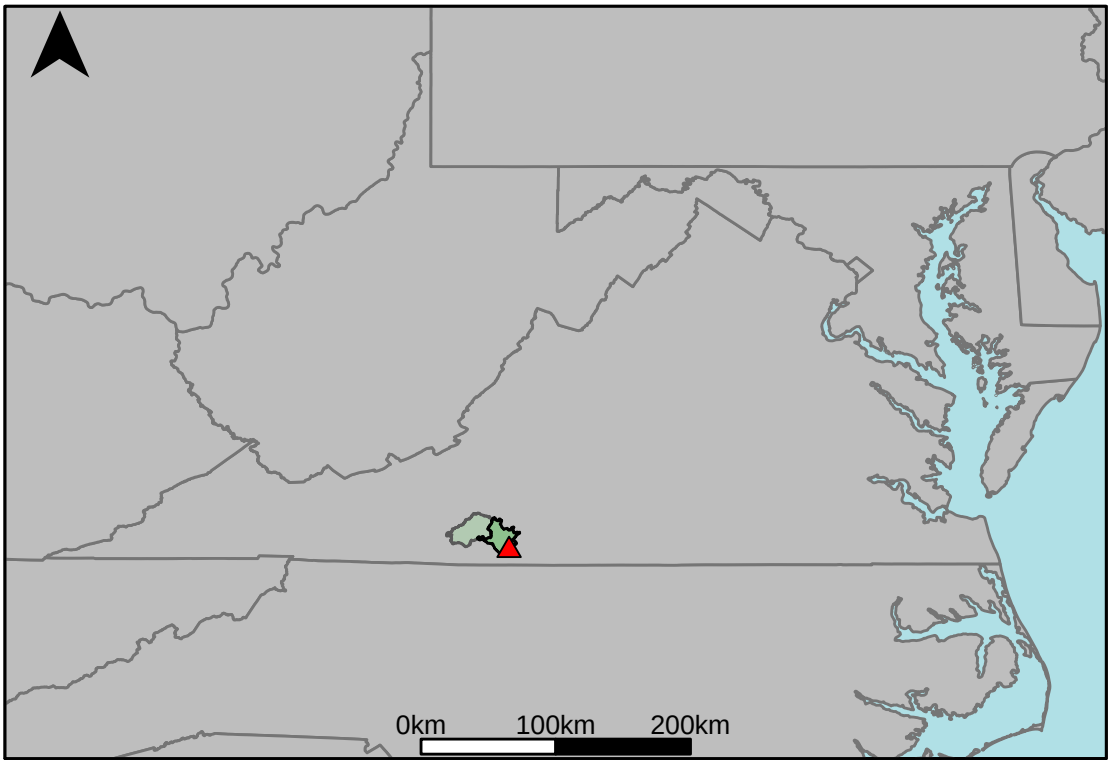
Appendix C.6: USGS Gage 02073000 vs. OD3_8630_8720



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 14.1%, with 61.7% 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	-44.1
Feb. Low Flow	127	71.9	-43.4
Mar. Low Flow	133	102	-23.3
Apr. Low Flow	147	130	-11.6
May Low Flow	155	201	29.7
Jun. Low Flow	160	195	21.9
Jul. Low Flow	179	121	-32.4
Aug. Low Flow	152	103	-32.2
Sep. Low Flow	195	67.9	-65.2
Oct. Low Flow	143	55.2	-61.4
Nov. Low Flow	116	59.3	-48.9
Dec. Low Flow	123	60.7	-50.7

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	526	452	-14.1
Jan. Mean Flow	552	480	-13
Feb. Mean Flow	525	592	12.8
Mar. Mean Flow	665	770	15.8
Apr. Mean Flow	685	682	-0.44
May Mean Flow	561	481	-14.3
Jun. Mean Flow	576	428	-25.7
Jul. Mean Flow	506	294	-41.9
Aug. Mean Flow	481	285	-40.7
Sep. Mean Flow	529	360	-31.9
Oct. Mean Flow	394	329	-16.5
Nov. Mean Flow	409	346	-15.4
Dec. Mean Flow	430	394	-8.37

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	506	448	-11.5
Feb. High Flow	667	922	38.2
Mar. High Flow	906	960	5.96
Apr. High Flow	1210	986	-18.5
May High Flow	1080	891	-17.5
Jun. High Flow	1400	2330	66.4
Jul. High Flow	1460	1140	-21.9
Aug. High Flow	1260	855	-32.1
Sep. High Flow	1010	699	-30.8
Oct. High Flow	945	473	-49.9
Nov. High Flow	880	360	-59.1
Dec. High Flow	884	282	-68.1

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	54	22.4	-58.5
Med. 1 Day Min	75.5	45.3	-40
Min. 3 Day Min	69.4	36.9	-46.8
Med. 3 Day Min	161	66.2	-58.9
Min. 7 Day Min	82.5	60.1	-27.2
Med. 7 Day Min	216	109	-49.5
Min. 30 Day Min	94.9	68.4	-27.9
Med. 30 Day Min	252	126	-50
Min. 90 Day Min	110	82.9	-24.6
Med. 90 Day Min	287	166	-42.2
7Q10	127	74.9	-41
Year of 90-Day Min. Flow	2002	1985	100
Drought Year Mean	187	182	-2.67
Mean Baseflow	179	144	-19.6

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	11300	8450	-25.2
Med. 1 Day Max	3760	4400	17
Max. 3 Day Max	8320	5850	-29.7
Med. 3 Day Max	2890	2790	-3.46
Max. 7 Day Max	4890	3700	-24.3
Med. 7 Day Max	2010	1870	-6.97
Max. 30 Day Max	2220	2270	2.25
Med. 30 Day Max	1160	1050	-9.48
Max. 90 Day Max	1550	1500	-3.23
Med. 90 Day Max	816	787	-3.55

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	83.8	45.5	-45.7
5% Non-Exceedance	130	72.5	-44.2
50% Non-Exceedance	378	290	-23.3
95% Non-Exceedance	1360	1250	-8.09
99% Non-Exceedance	2620	2460	-6.11
Sept. 10% Non-Exceedance	80.2	146	82

Fig. 1: Hydrograph

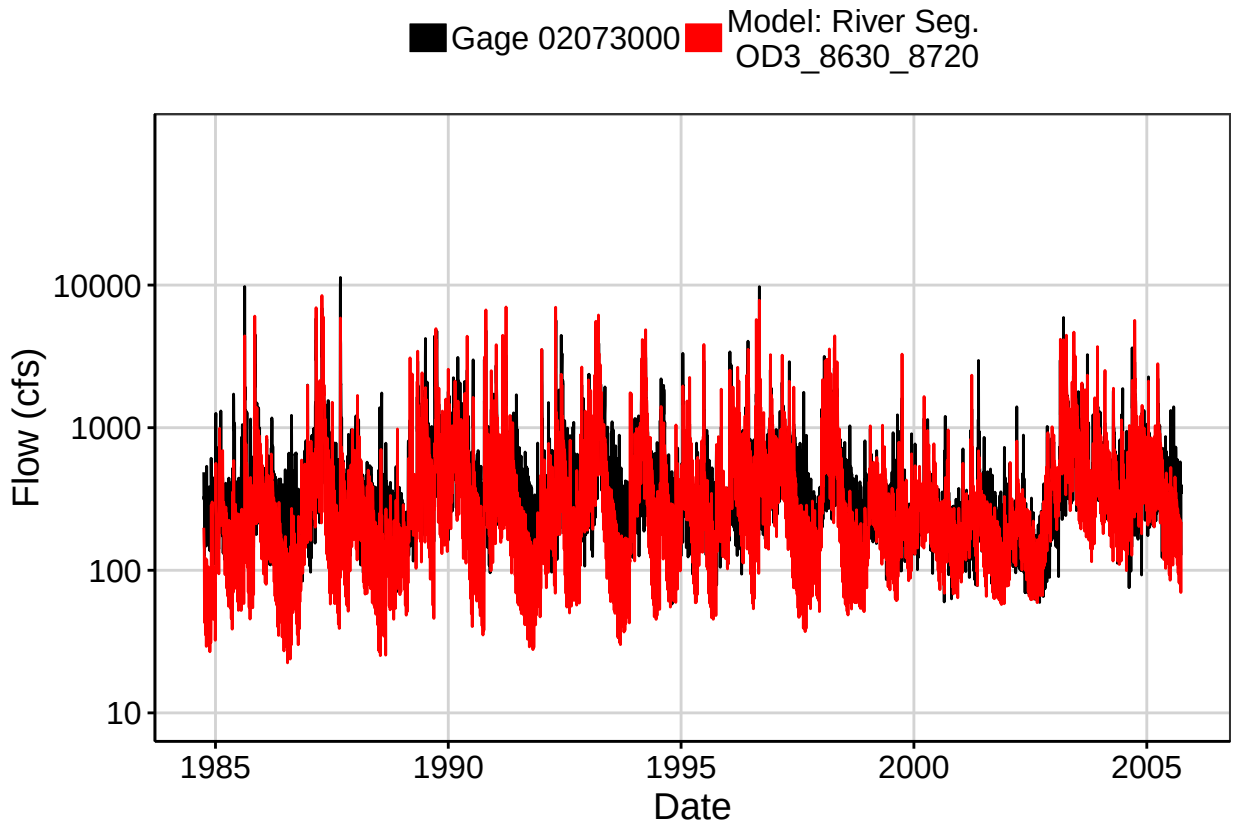


Fig. 2: Zoomed Hydrograph

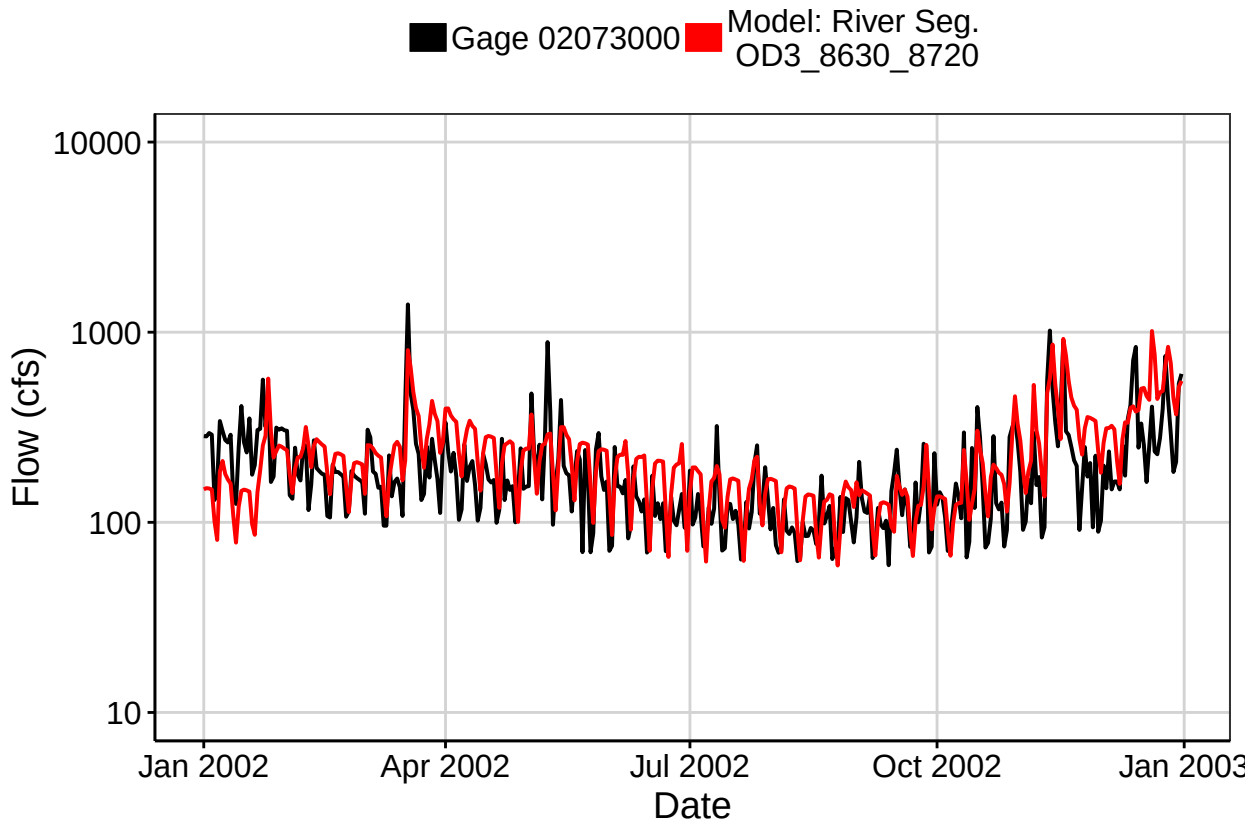


Fig. 3: Flow Exceedance

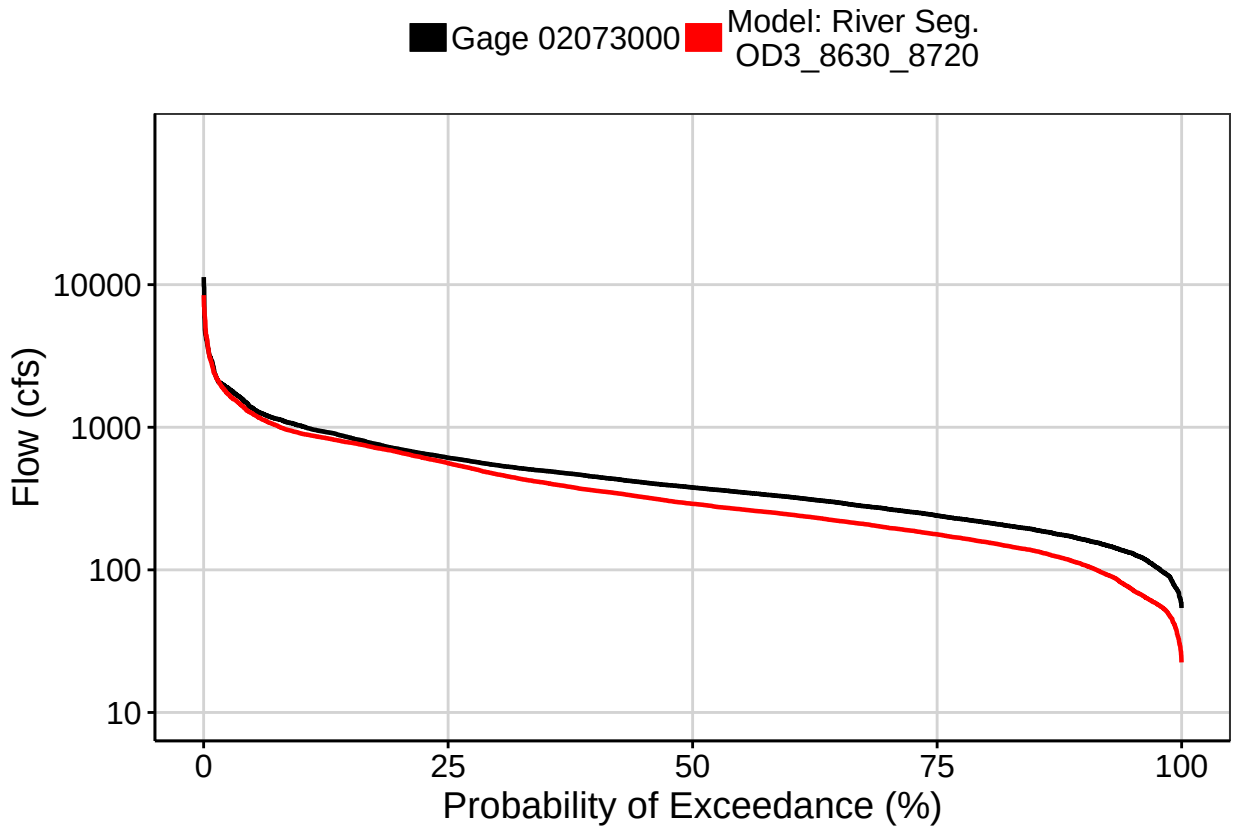


Fig. 4: Baseflow

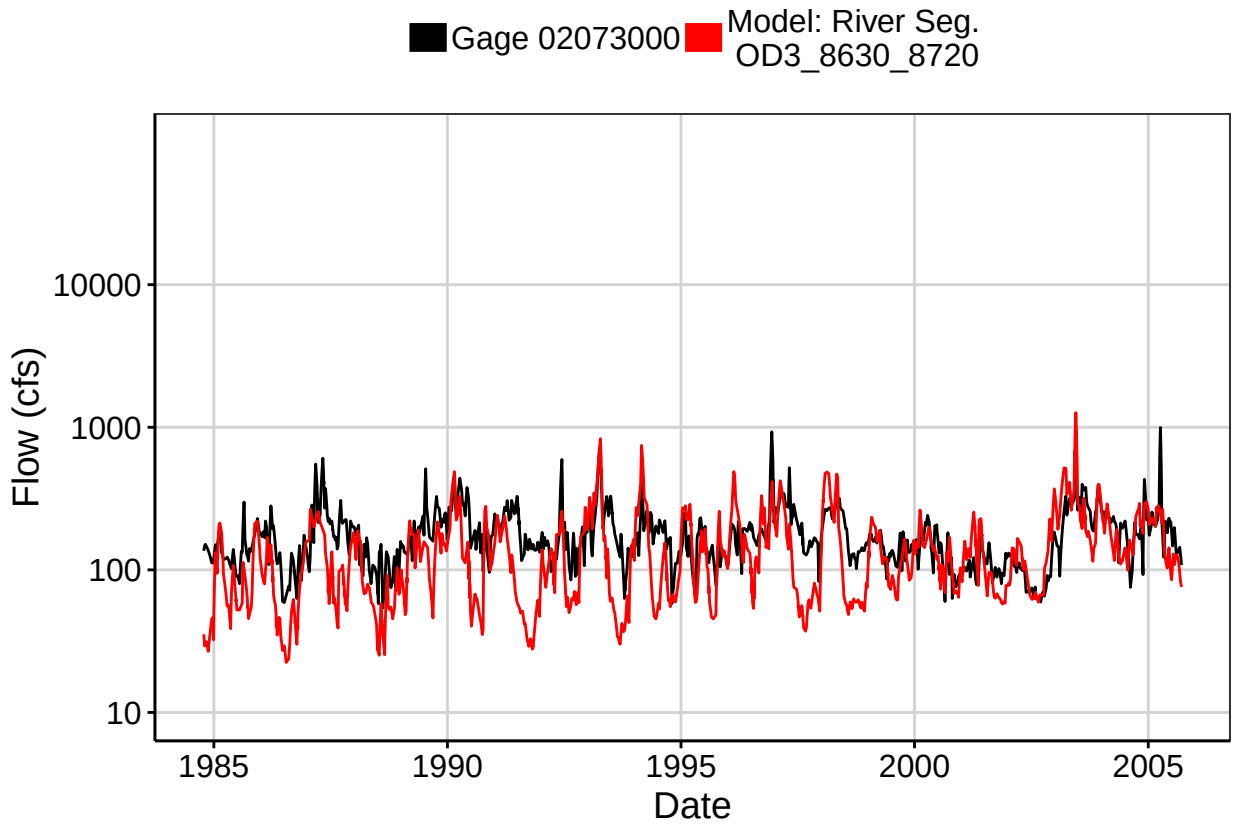


Fig. 5: Combined Baseflow

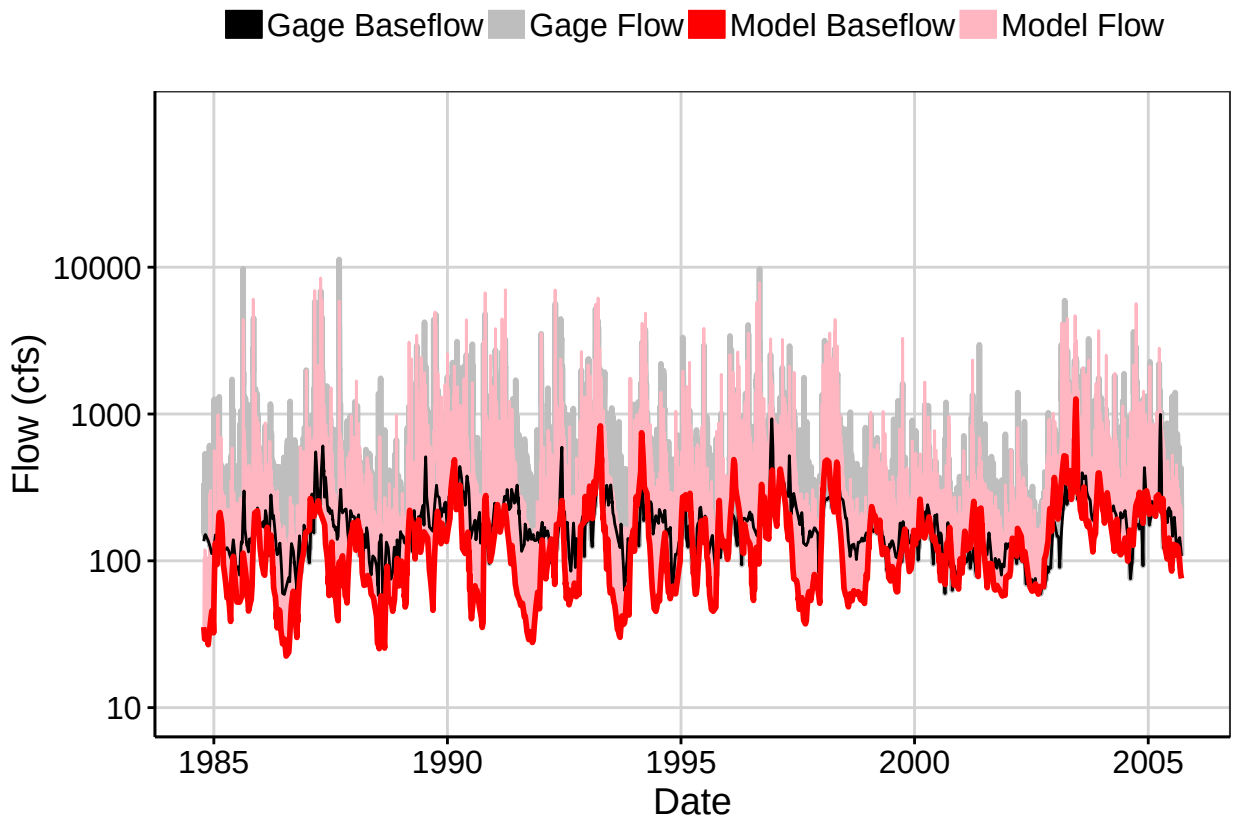


Fig. 6: Largest Error Segment

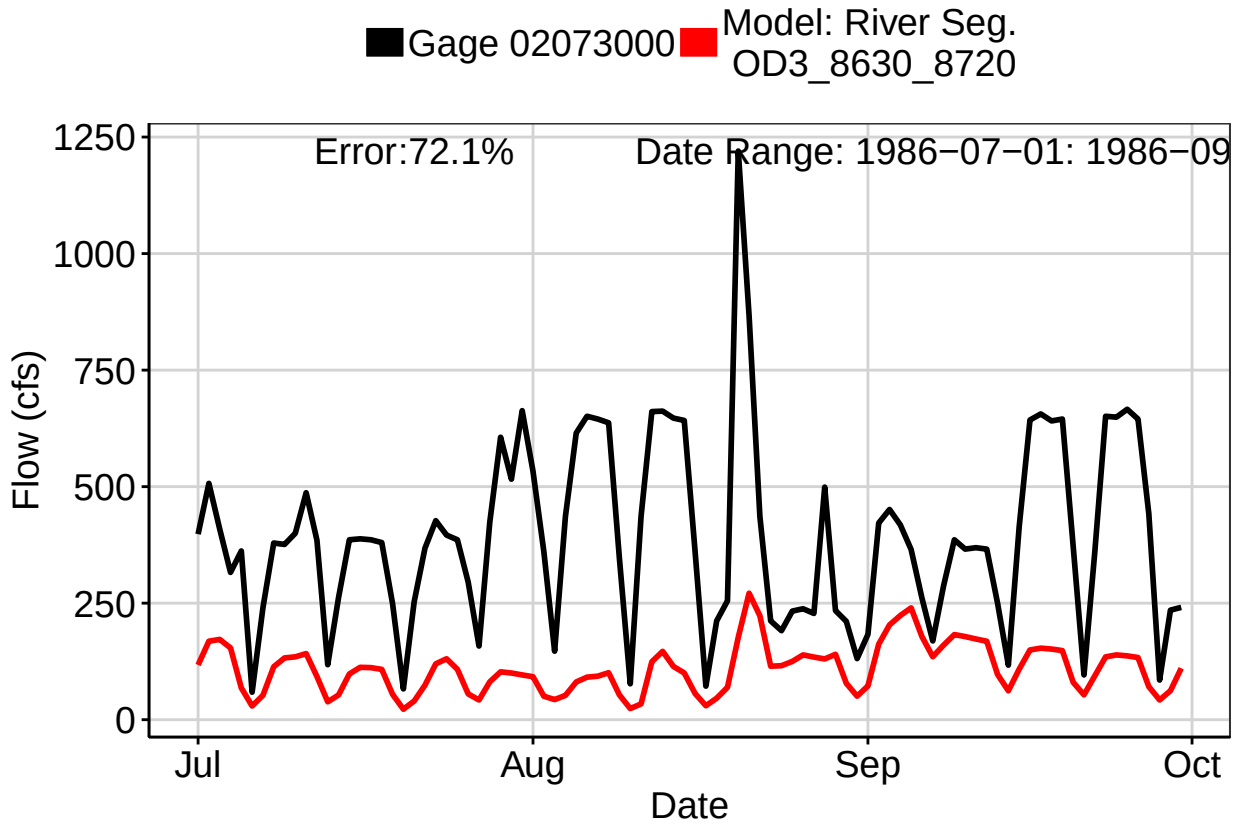


Fig. 7: Second Largest Error Segment

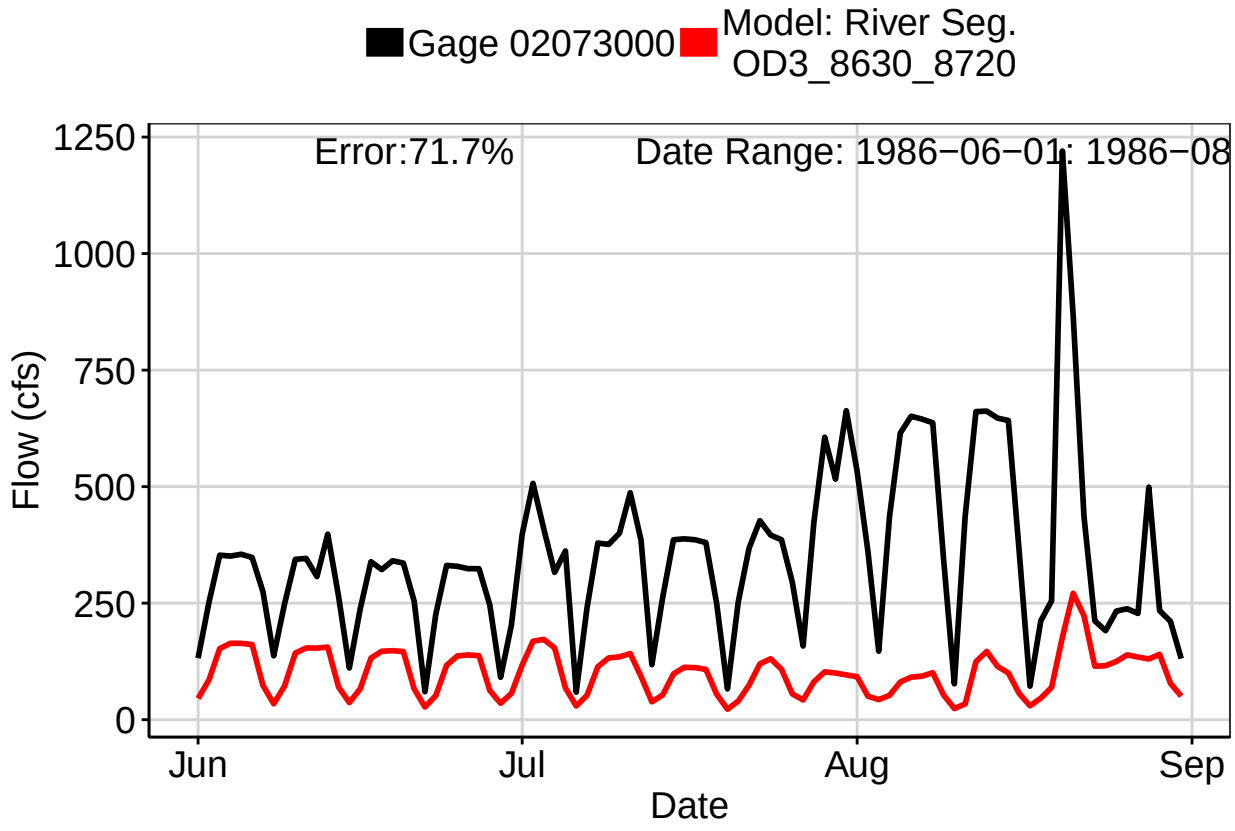


Fig. 8: Third Largest Error Segment

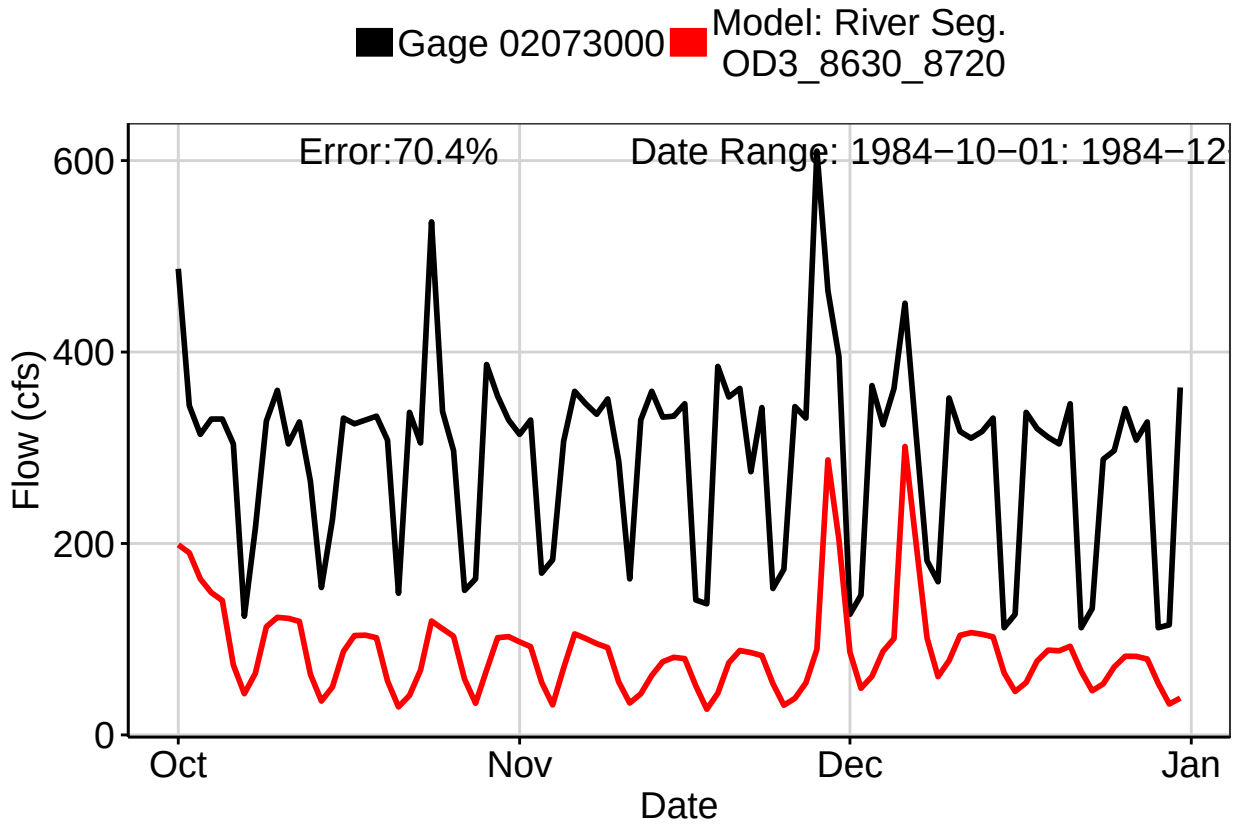


Fig. 9: Residuals Plot