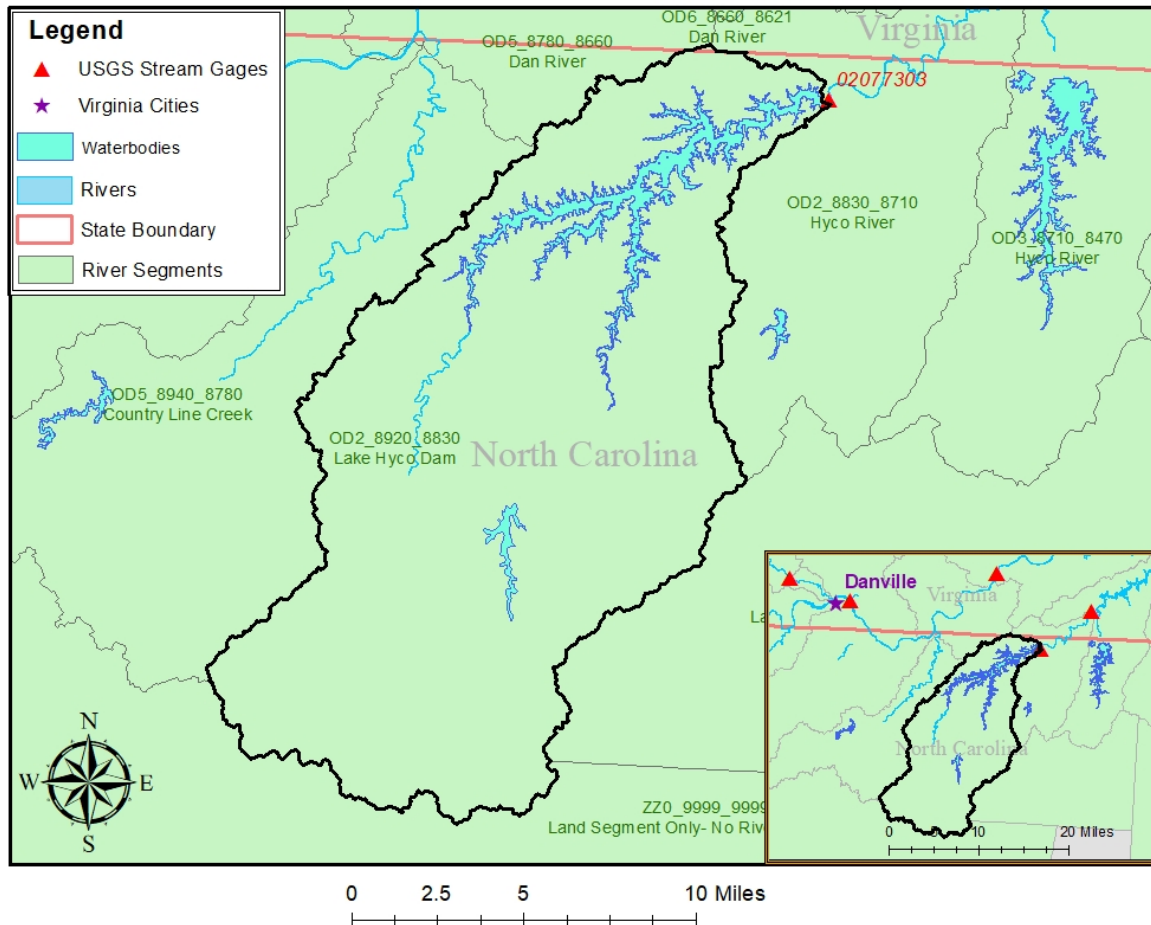


# 02077303 vs. OD2\_8920\_8830

*Daniel Hildebrand, Hailey Alsbaugh, and Kelsey Reitz*

*July 11, 2018*



This river segment follows part of the flow of the Hyco River, a tributary of the Dan River. The gage is located in Person County, NC (Lat 36°31'21", Long 78°58'51") approximately 24 miles southeast of Danville, VA. Drainage area is 202 sq. miles. This gage started taking data in 1973 and is still taking data. It is regulated by the Afterbay Dam which is 200ft upstream of the gage. The cities of Roxboro and Oxford use the Dam in cases of emergency to supply their citizens with water. The average daily discharge error between the model and gage data for the 20 year timespan was -33.1%, with 68.3% of its rolling three month time spans above 20% error.

**Table 1: Monthly Low Flows**

	USGS Gage	Model	Pct. Error
Jan. Low Flow	16	15	6.25
Feb. Low Flow	13	54.5	-319
Mar. Low Flow	15	92.2	-515
Apr. Low Flow	18	149	-728
May Low Flow	57	223	-291
Jun. Low Flow	54	183	-239
Jul. Low Flow	20	174	-770
Aug. Low Flow	16.5	12.9	21.8
Sep. Low Flow	15	31.7	-111
Oct. Low Flow	13	18.2	-40
Nov. Low Flow	14	12.9	7.86
Dec. Low Flow	14.4	12.9	10.4

**Table 2: Monthly Average Flows**

	USGS Gage	Model	Pct. Error
Overall Mean Flow	148	197	-33.1
Jan. Mean Flow	253	328	-29.6
Feb. Mean Flow	271	333	-22.9
Mar. Mean Flow	385	425	-10.4
Apr. Mean Flow	231	337	-45.9
May Mean Flow	106	114	-7.55
Jun. Mean Flow	82.3	132	-60.4
Jul. Mean Flow	45.1	73.2	-62.3
Aug. Mean Flow	64.5	65.3	-1.24
Sep. Mean Flow	89.9	151	-68
Oct. Mean Flow	60.7	126	-108
Nov. Mean Flow	75.6	120	-58.7
Dec. Mean Flow	118	172	-45.8

**Table 3: Monthly High Flows**

	USGS Gage	Model	Pct. Error
Jan. High Flow	25	95.8	-283
Feb. High Flow	18	190	-956
Mar. High Flow	355	256	27.9
Apr. High Flow	983	495	49.6
May High Flow	940	495	47.3
Jun. High Flow	1490	711	52.3
Jul. High Flow	1120	574	48.8
Aug. High Flow	188	285	-51.6
Sep. High Flow	35	90.6	-159
Oct. High Flow	36	58.3	-61.9
Nov. High Flow	36	33.9	5.83
Dec. High Flow	26	63.4	-144

**Table 4: Period Low Flows**

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	0.27	12.9	-4680
Med. 1 Day Min	8.8	12.9	-46.6
Min. 3 Day Min	0.33	12.9	-3770
Med. 3 Day Min	8.8	12.9	-46.6
Min. 7 Day Min	0.45	12.9	-2790
Med. 7 Day Min	9.03	12.9	-42.9
Min. 30 Day Min	0.8	12.9	-1510
Med. 30 Day Min	13.5	13	3.7
Min. 90 Day Min	4.12	12.9	-213
Med. 90 Day Min	17.1	24	-40.4
7Q10	1.77	13.2	-646
Year of 90-Day Min. Flow	2002	1986	100
Drought Year Mean	5.11	47.5	-830
Mean Baseflow	40	118	-195

**Table 5: Period High Flows**

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	7000	11000	-57.1
Med. 1 Day Max	3280	1580	51.8
Max. 3 Day Max	4570	6100	-33.5
Med. 3 Day Max	2500	1290	48.4
Max. 7 Day Max	2650	3620	-36.6
Med. 7 Day Max	1540	1090	29.2
Max. 30 Day Max	1250	1290	-3.2
Med. 30 Day Max	578	500	13.5
Max. 90 Day Max	772	825	-6.87
Med. 90 Day Max	274	369	-34.7

**Table 6: Non-Exceedance Flows**

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	1.99	12.9	-548
5% Non-Exceedance	4.21	12.9	-206
50% Non-Exceedance	23	117	-409
95% Non-Exceedance	697	669	4.02
99% Non-Exceedance	2000	1360	32
Sept. 10% Non-Exceedance	12.9	6.49	49.7

**Fig. 1: Hydrograph**

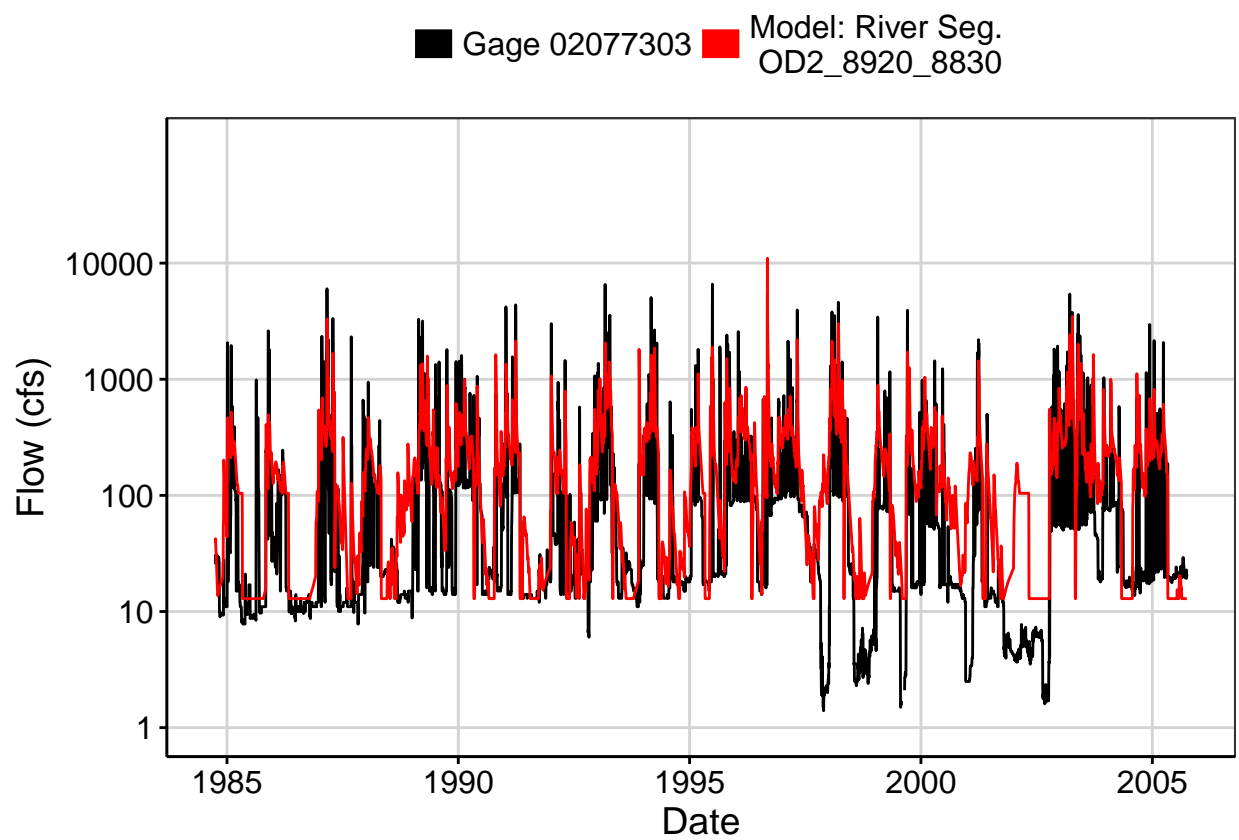


Fig. 2: Zoomed Hydrograph

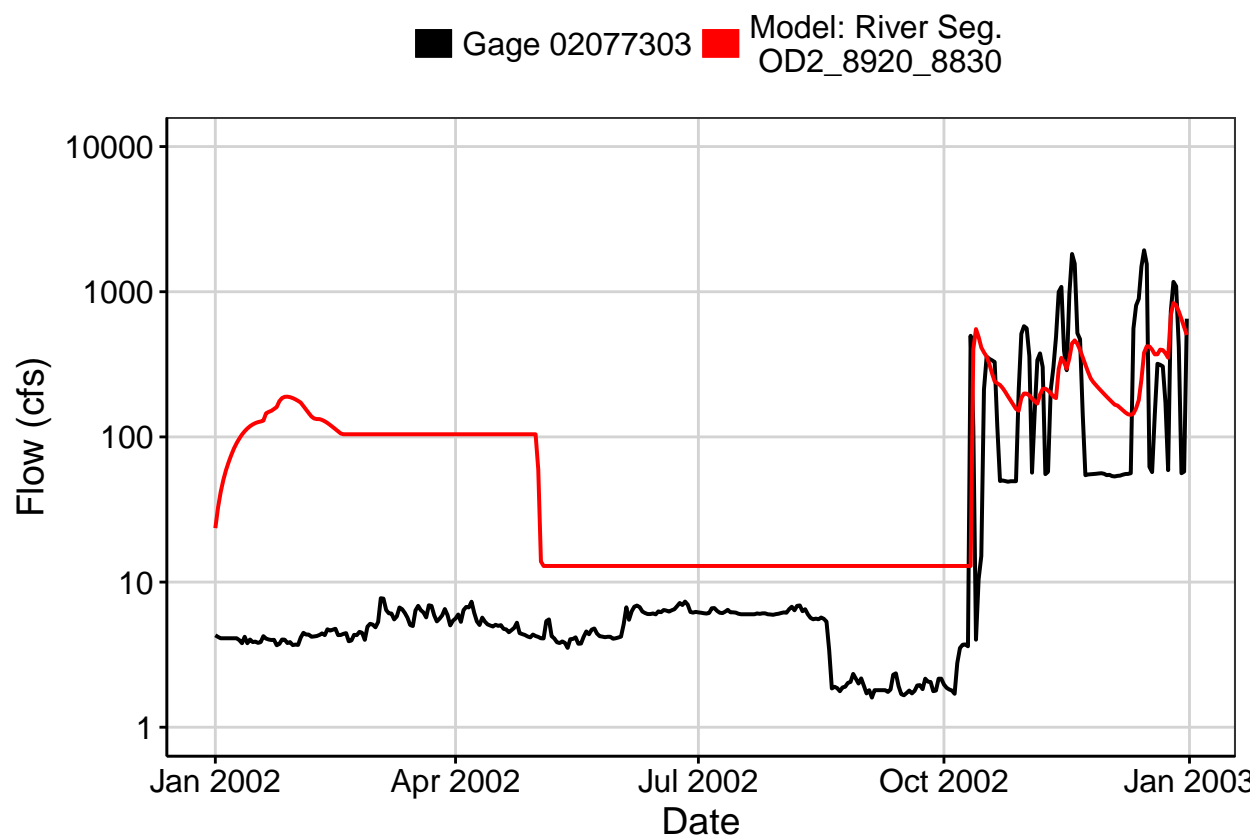


Fig. 3: Flow Exceedance

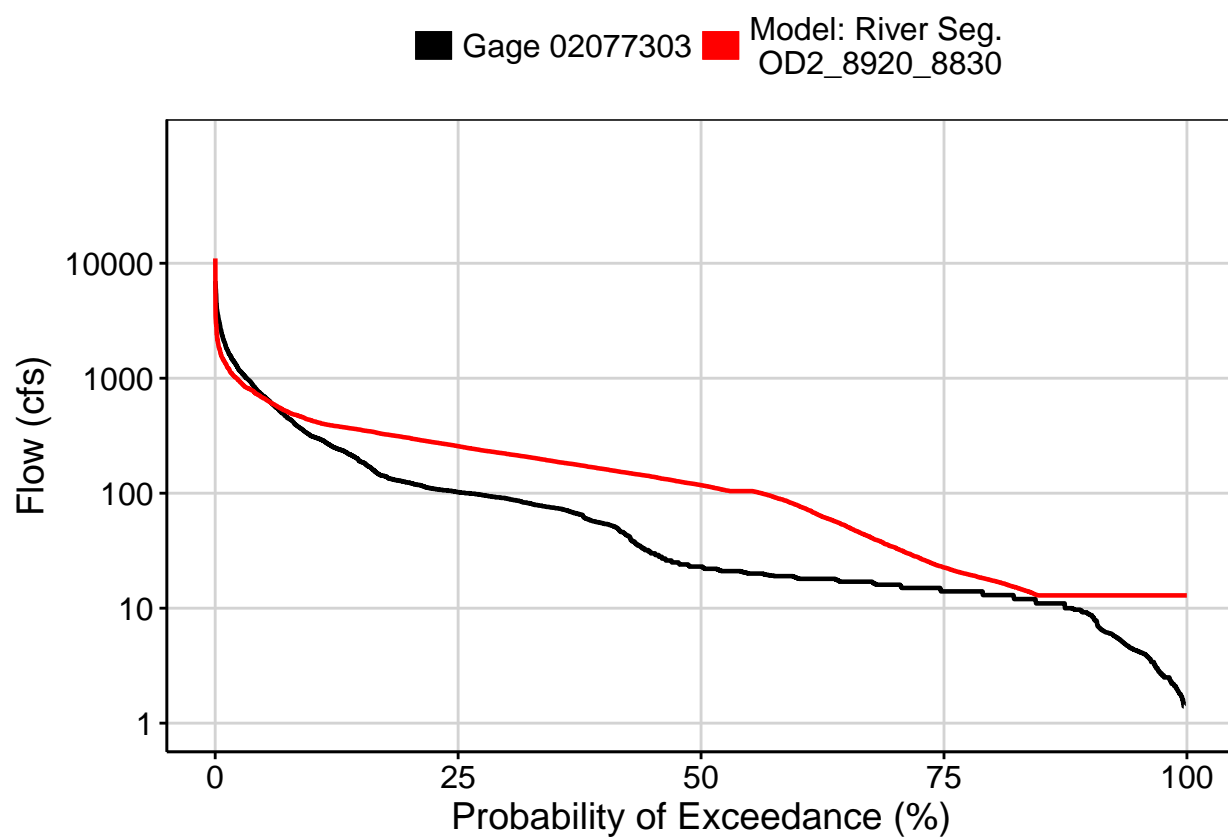


Fig. 4: Baseflow

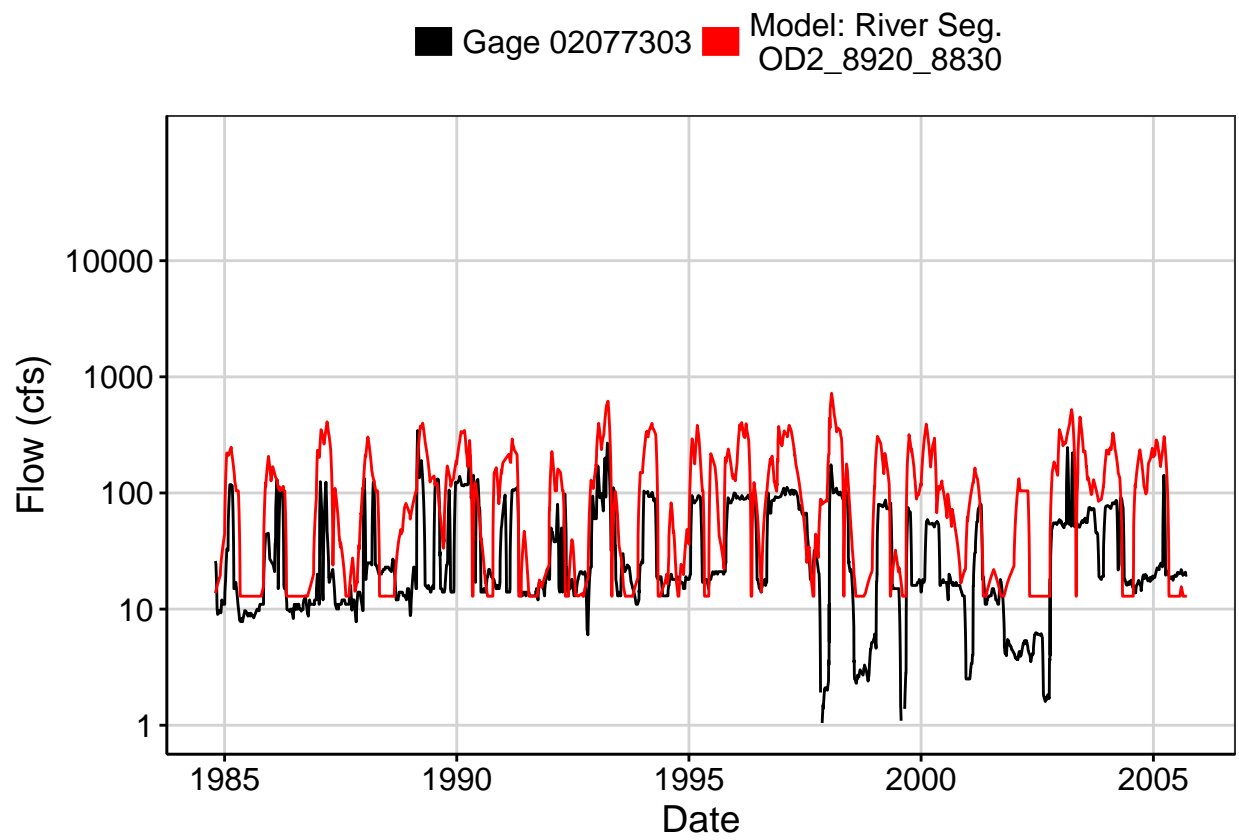


Fig. 5: Combined Baseflow

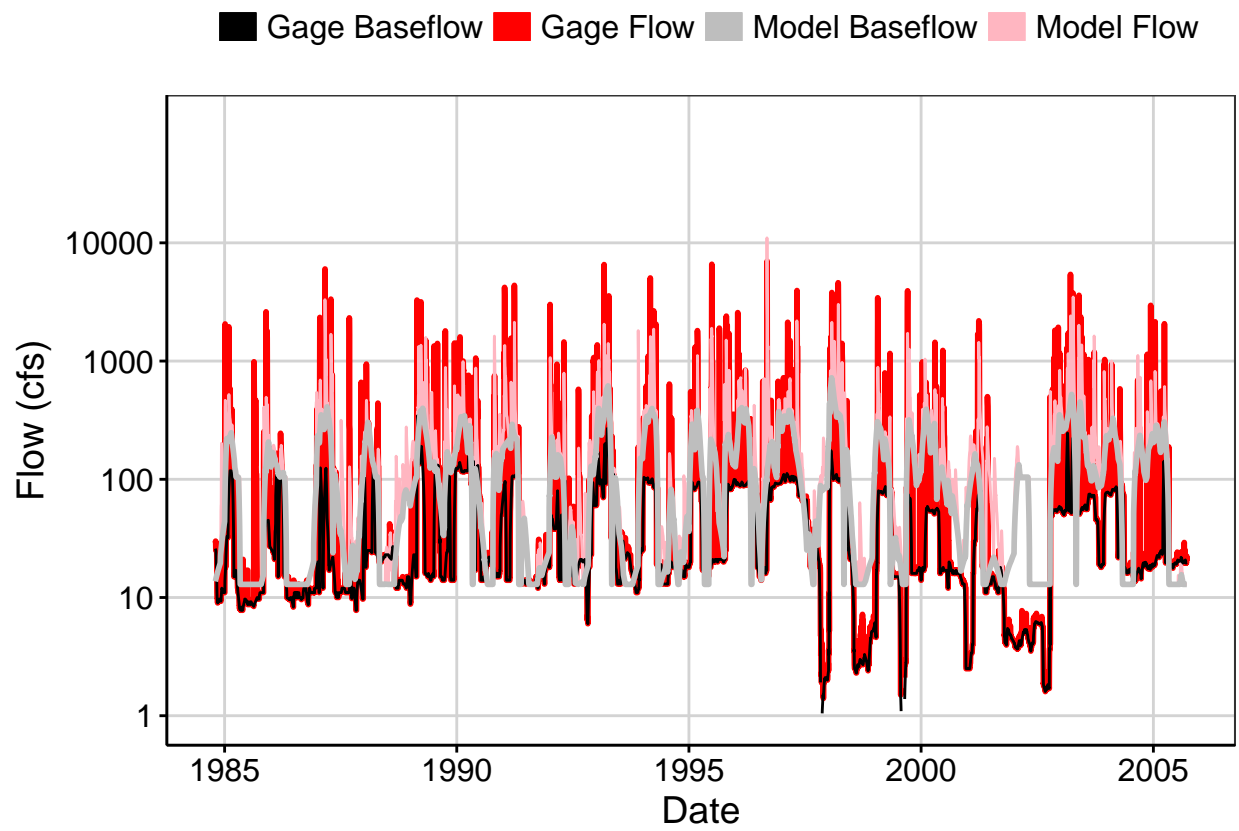




Fig. 6: Largest Error Segment

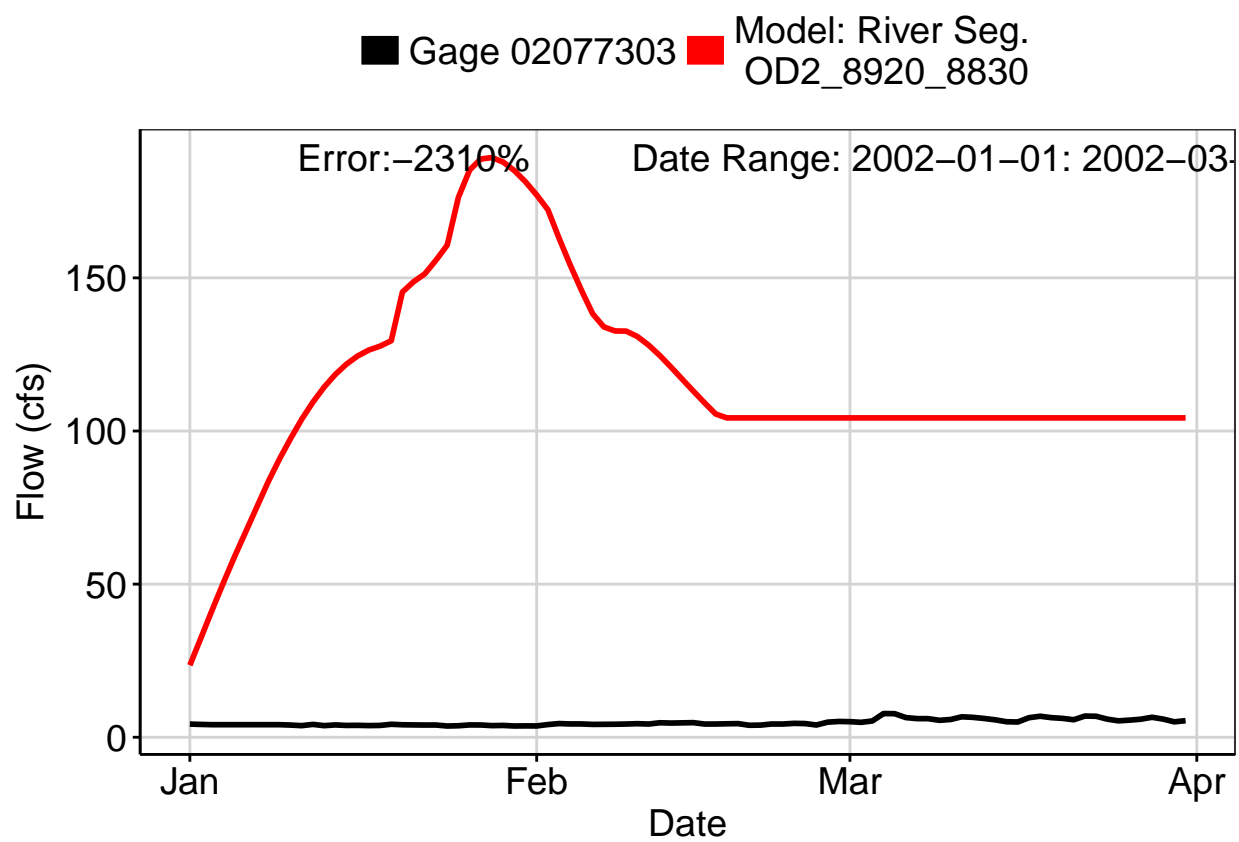


Fig. 7: Second Largest Error Segment

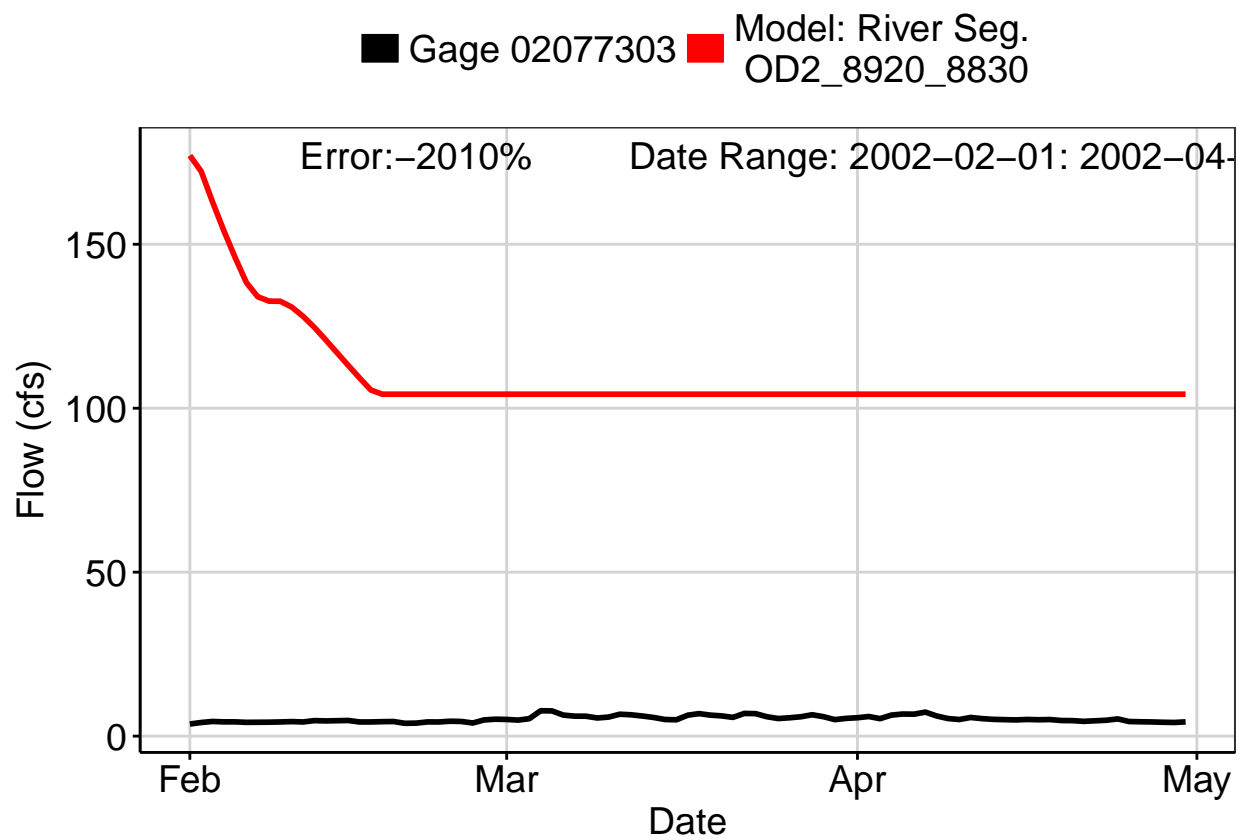


Fig. 8: Third Largest Error Segment

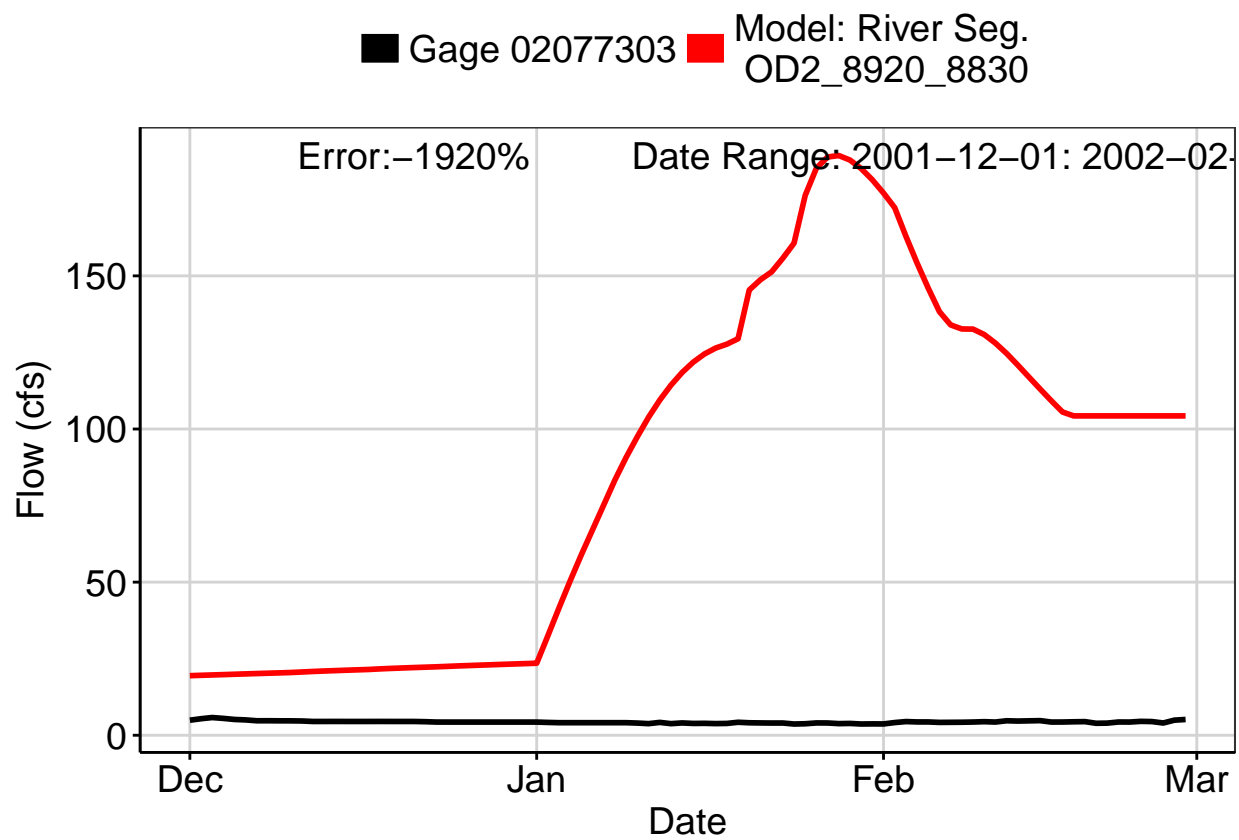


Fig. 9: Residuals Plot

