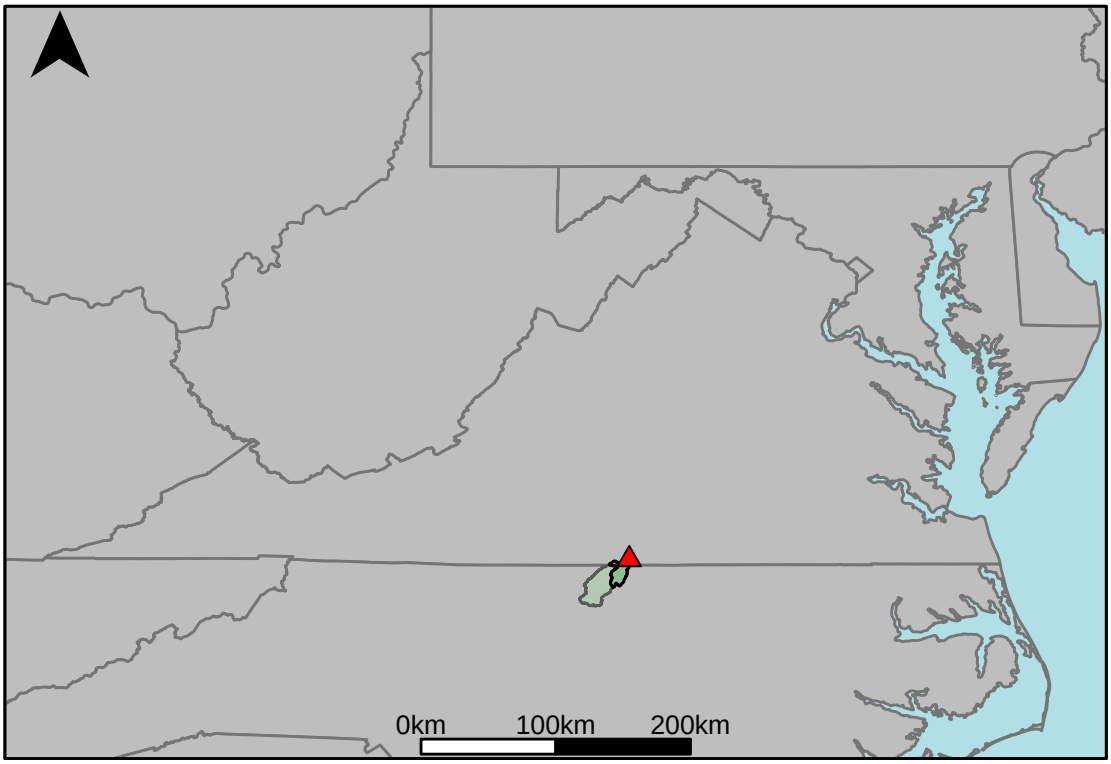
Appendix C.12: USGS Gage 02077500 vs. OD2_8830_8710



This river segment follows part of the flow of the Hyco River, a tributary of the Dan River. The gage is located in Halifax County, VA (Lat 3635'16", Long 7853'56") approximately 30 miles east of Danville, VA. Drainage area is 288 sq. miles. This gage started taking data in 1929 but was decommissioned in March of 2014. There is a small diurnal fluctuation caused by a gristmill approximately 15 miles upstream that will likely effect low-flow conditions. The Hyco Lake is 15.7 miles upstream which is home to the Roxboro Stream Electric Generating Plant and Afterbay Reservoir. The average daily discharge error between the model and gage data for the 20 year timespan was -2.29%, with 53.8% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	21	8.38	-60.1
Feb. Low Flow	26	69.7	168
Mar. Low Flow	35	106	203
Apr. Low Flow	50	176	252
May Low Flow	101	268	165
Jun. Low Flow	116	224	93.1
Jul. Low Flow	96	209	118
Aug. Low Flow	36	31.1	-13.6
Sep. Low Flow	26	35	34.6
Oct. Low Flow	21	18.3	-12.9
Nov. Low Flow	24	6.37	-73.5
Dec. Low Flow	20.9	7.69	-63.2

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	262	268	2.29
Jan. Mean Flow	418	425	1.67
Feb. Mean Flow	461	456	-1.08
Mar. Mean Flow	634	600	-5.36
Apr. Mean Flow	414	451	8.94
May Mean Flow	201	177	-11.9
Jun. Mean Flow	157	179	14
Jul. Mean Flow	87.9	91.9	4.55
Aug. Mean Flow	122	86.3	-29.3
Sep. Mean Flow	176	207	17.6
Oct. Mean Flow	112	165	47.3
Nov. Mean Flow	144	163	13.2
Dec. Mean Flow	224	230	2.68

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	112	123	9.82
Feb. High Flow	224	309	37.9
Mar. High Flow	515	426	-17.3
Apr. High Flow	1360	745	-45.2
May High Flow	1410	811	-42.5
Jun. High Flow	2100	1160	-44.8
Jul. High Flow	1410	1040	-26.2
Aug. High Flow	392	326	-16.8
Sep. High Flow	138	121	-12.3
Oct. High Flow	119	84.4	-29.1
Nov. High Flow	102	186	82.4
Dec. High Flow	130	130	0

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	2.5	0	-100
Med. 1 Day Min	17	2.86	-83.2
Min. 3 Day Min	2.97	0	-100
Med. 3 Day Min	17.3	3.1	-82.1
Min. 7 Day Min	3.43	0	-100
Med. 7 Day Min	18	3.19	-82.3
Min. 30 Day Min	4.64	0.16	-96.6
Med. 30 Day Min	22.3	9.33	-58.2
Min. 90 Day Min	10	3.56	-64.4
Med. 90 Day Min	31.2	24.7	-20.8
7Q10	7.29	0	-100
Year of 90-Day Min. Flow	2002	1986	100
Drought Year Mean	21.5	52.4	144
Mean Baseflow	75.9	149	96.3

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	9240	13300	43.9
Med. 1 Day Max	3930	3410	-13.2
Max. 3 Day Max	7520	9520	26.6
Med. 3 Day Max	3370	2160	-35.9
Max. 7 Day Max	4470	5360	19.9
Med. 7 Day Max	2390	1670	-30.1
Max. 30 Day Max	2330	1880	-19.3
Med. 30 Day Max	945	729	-22.9
Max. 90 Day Max	1450	1180	-18.6
Med. 90 Day Max	501	528	5.39

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	7.6	0	-100
5% Non-Exceedance	14	3.39	-75.8
50% Non-Exceedance	65	151	132
95% Non-Exceedance	1270	932	-26.6
99% Non-Exceedance	3020	2050	-32.1
Sept. 10% Non-Exceedance	1	14	1300

Fig. 1: Hydrograph

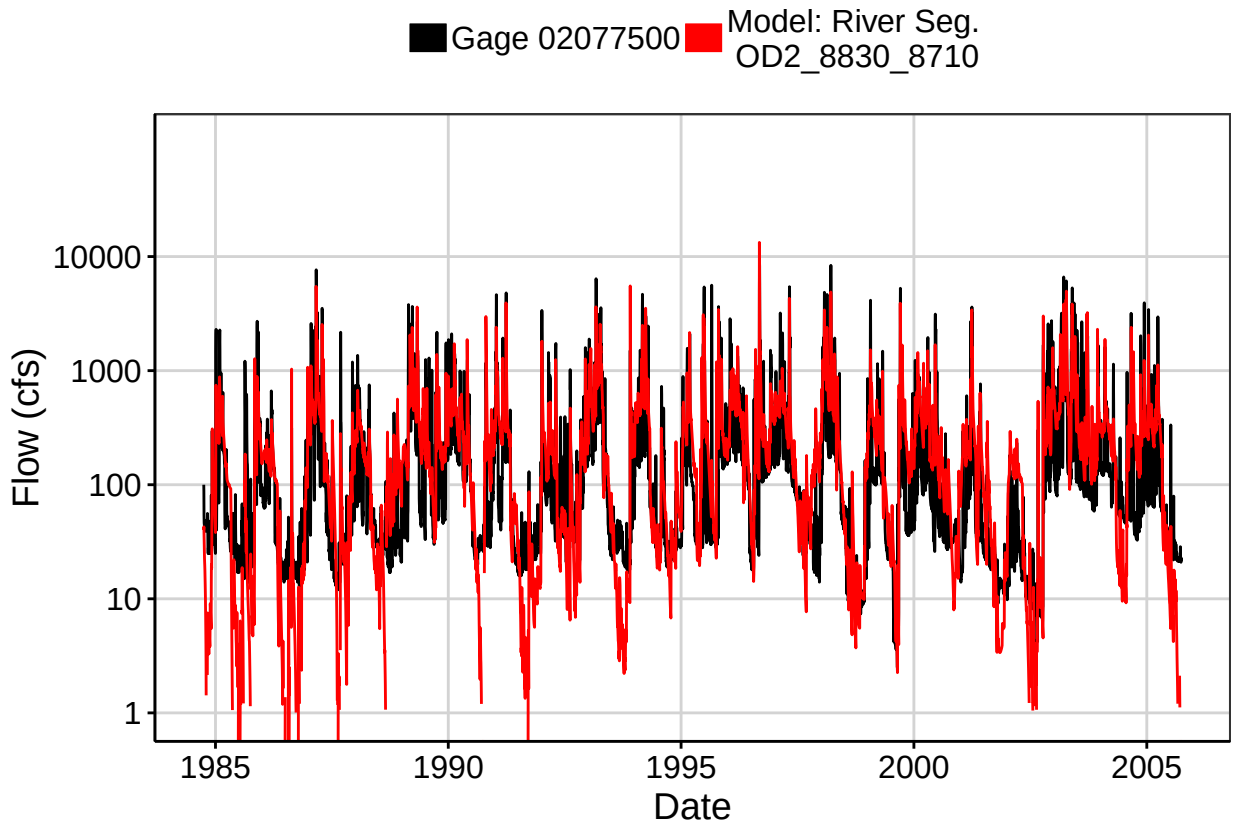


Fig. 2: Zoomed Hydrograph

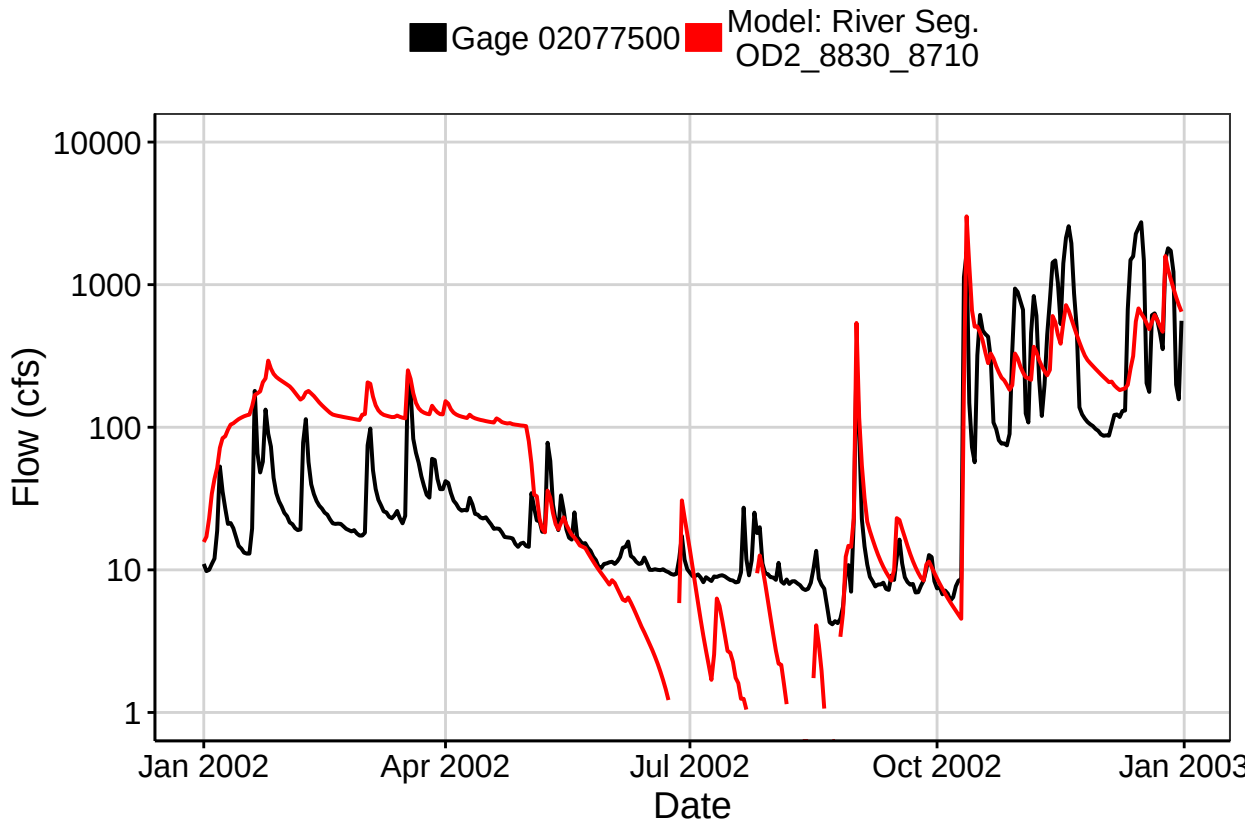


Fig. 3: Flow Exceedance

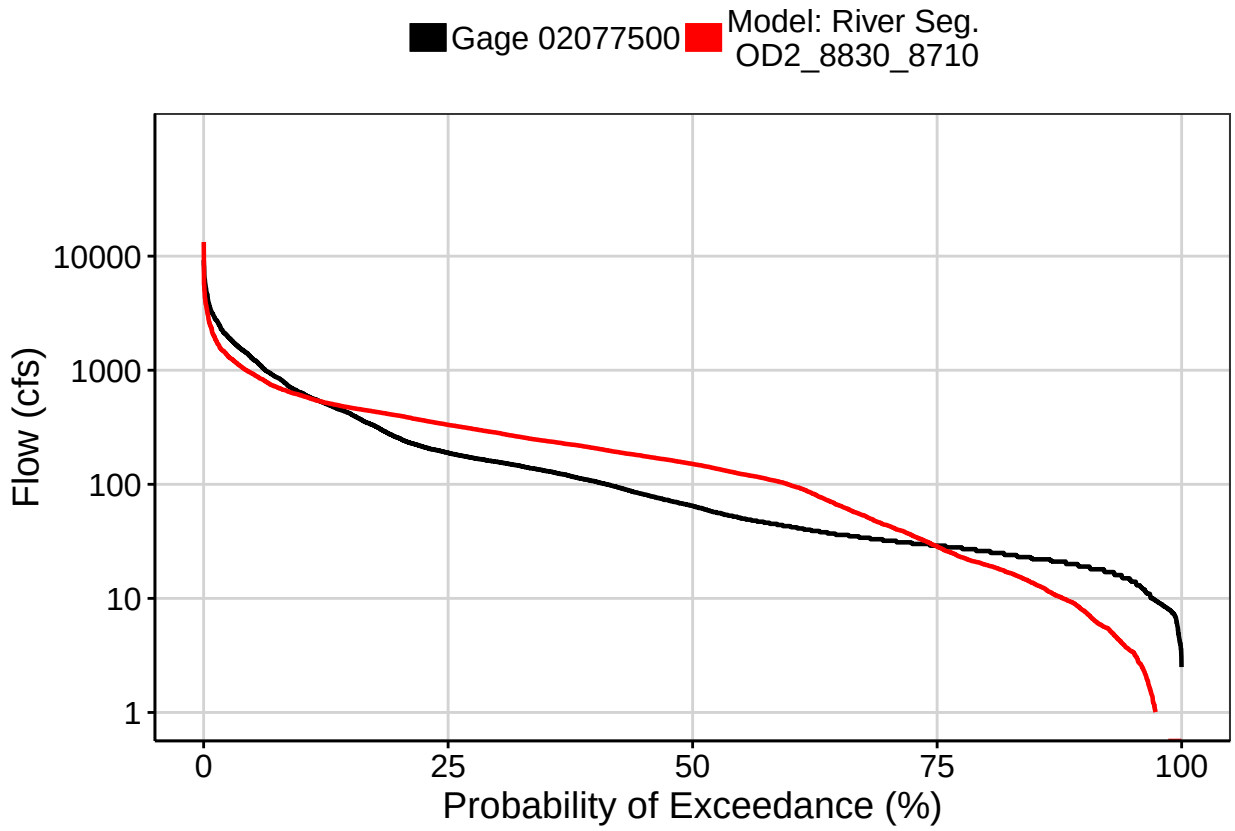


Fig. 4: Baseflow

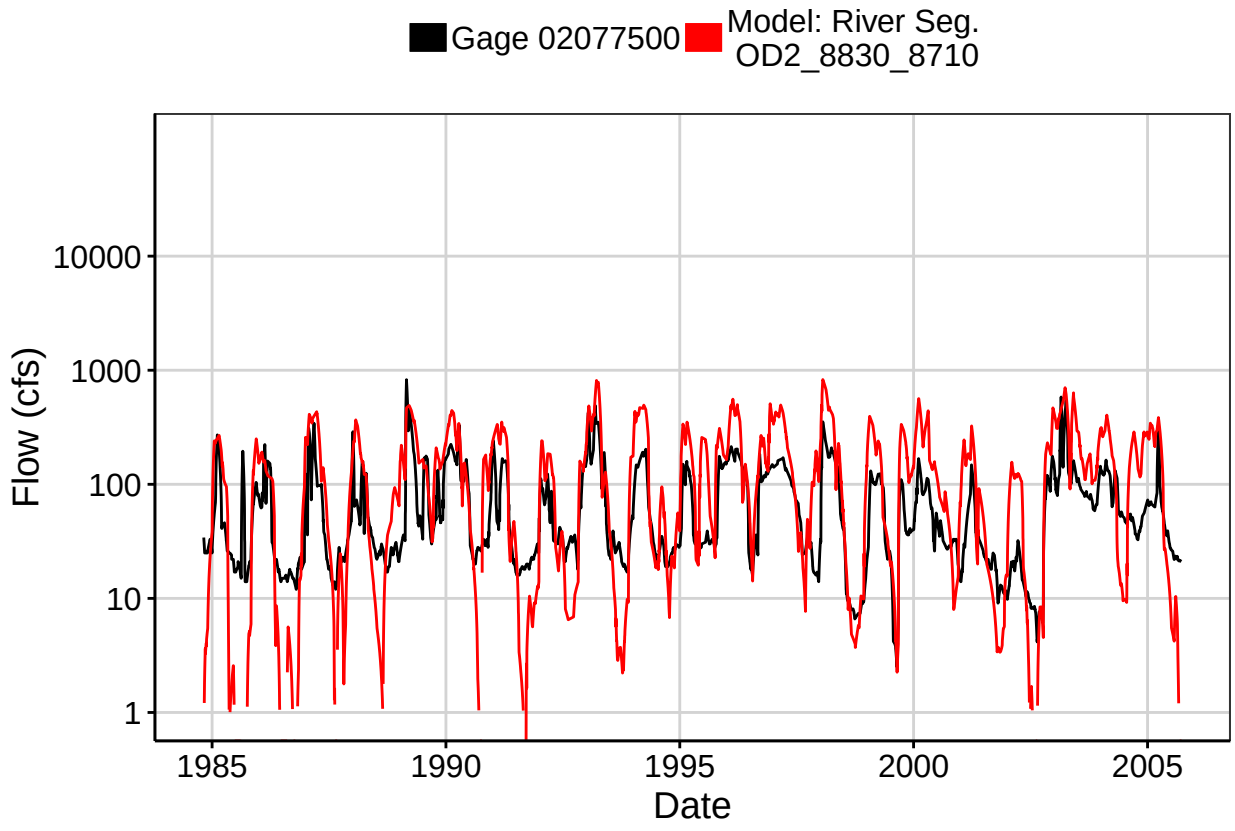


Fig. 5: Combined Baseflow

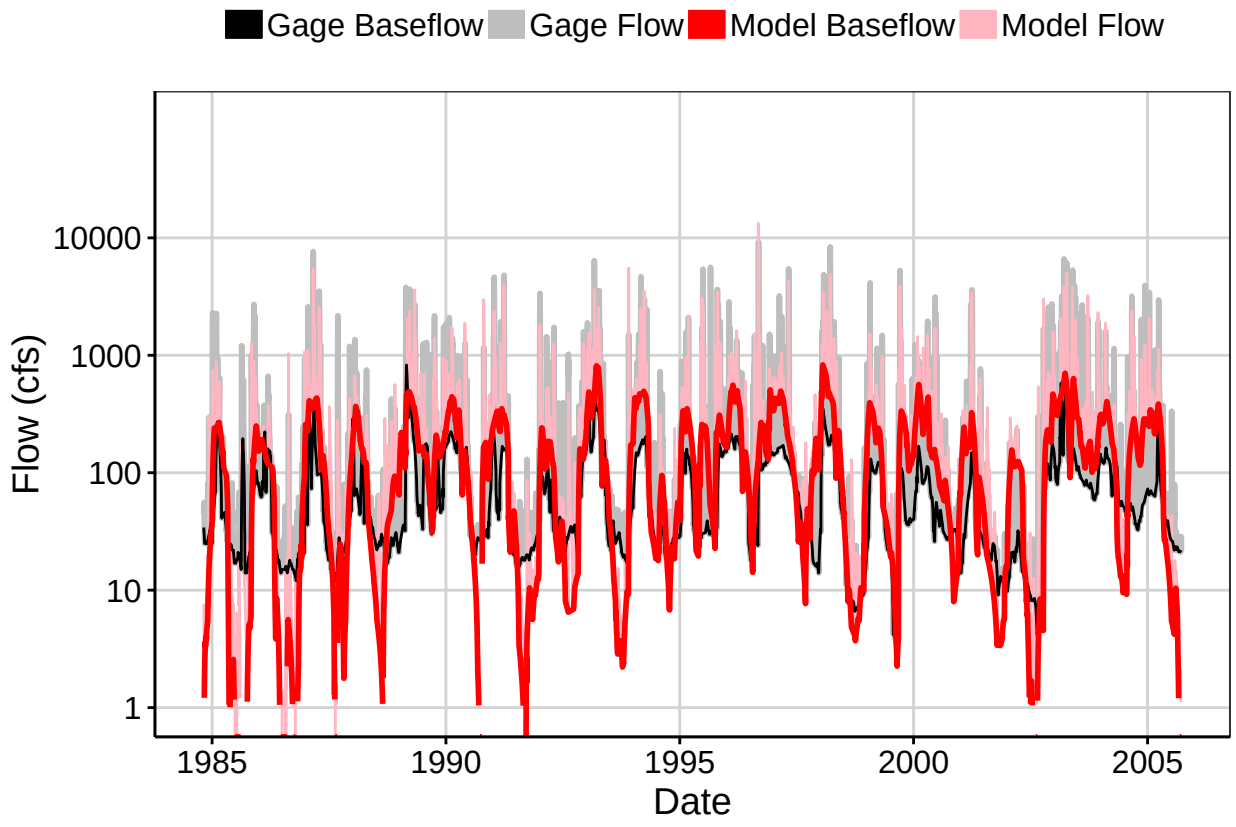


Fig. 6: Largest Error Segment

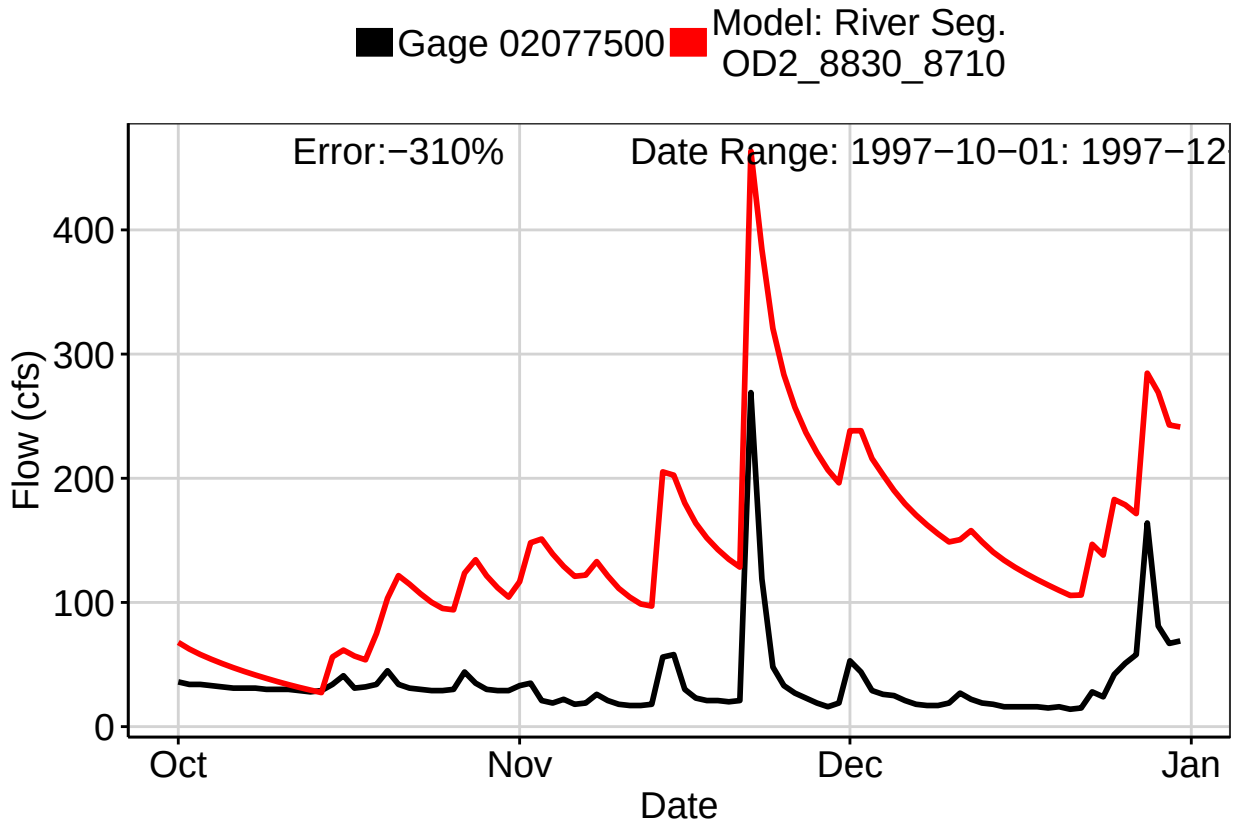


Fig. 7: Second Largest Error Segment

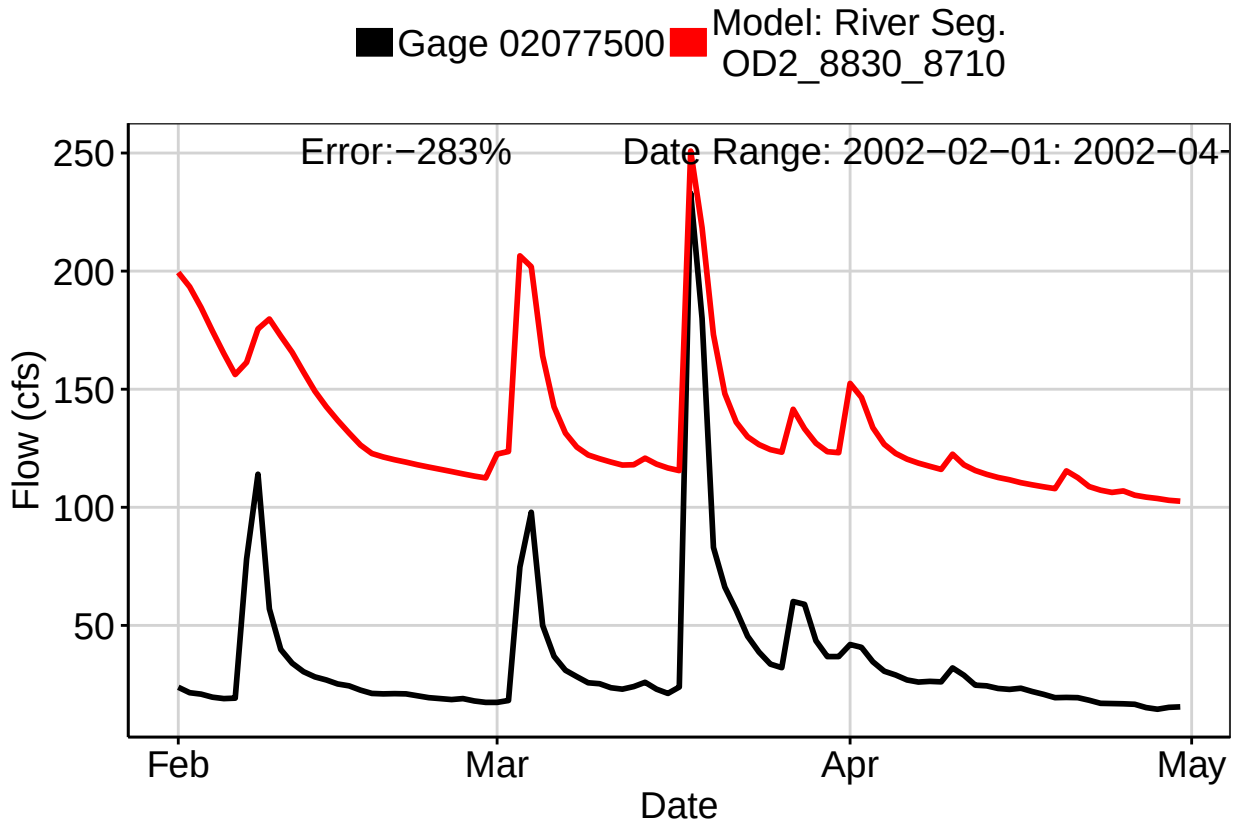


Fig. 8: Third Largest Error Segment

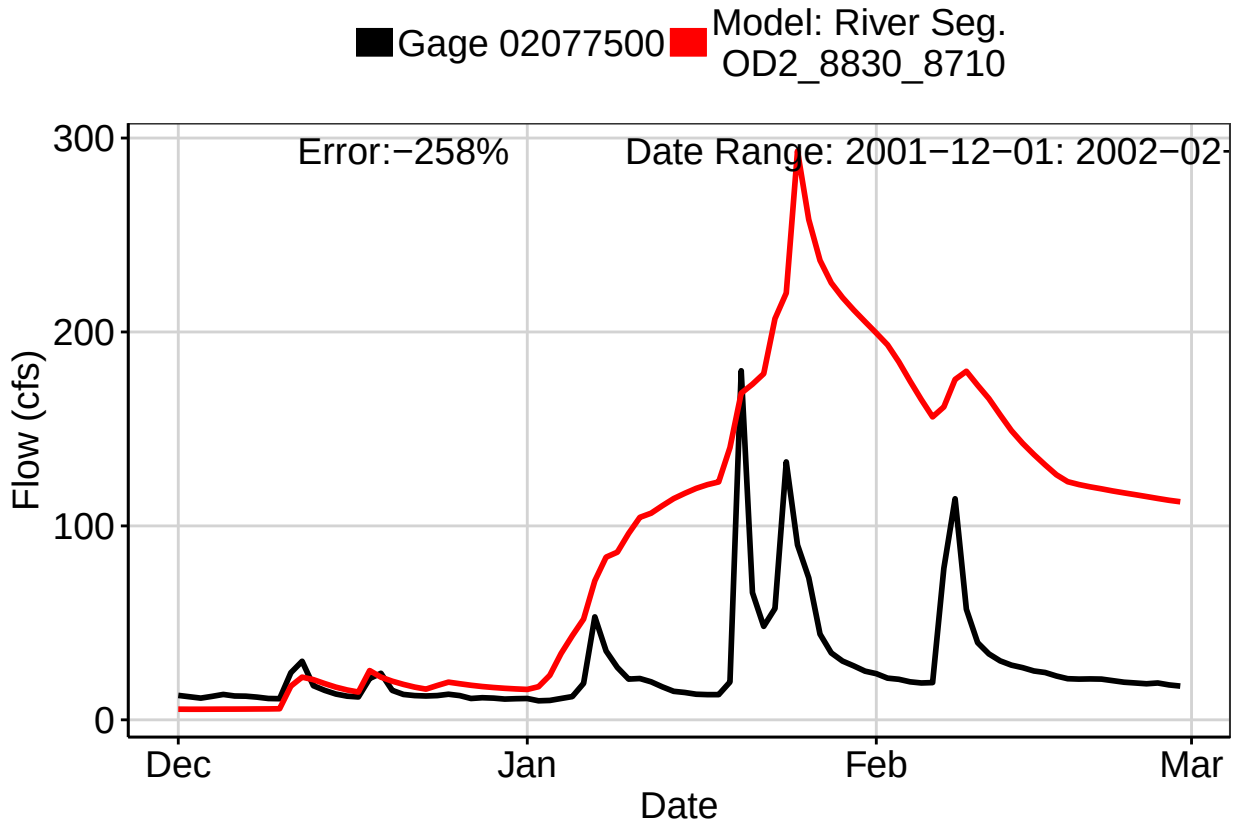


Fig. 9: Residuals Plot