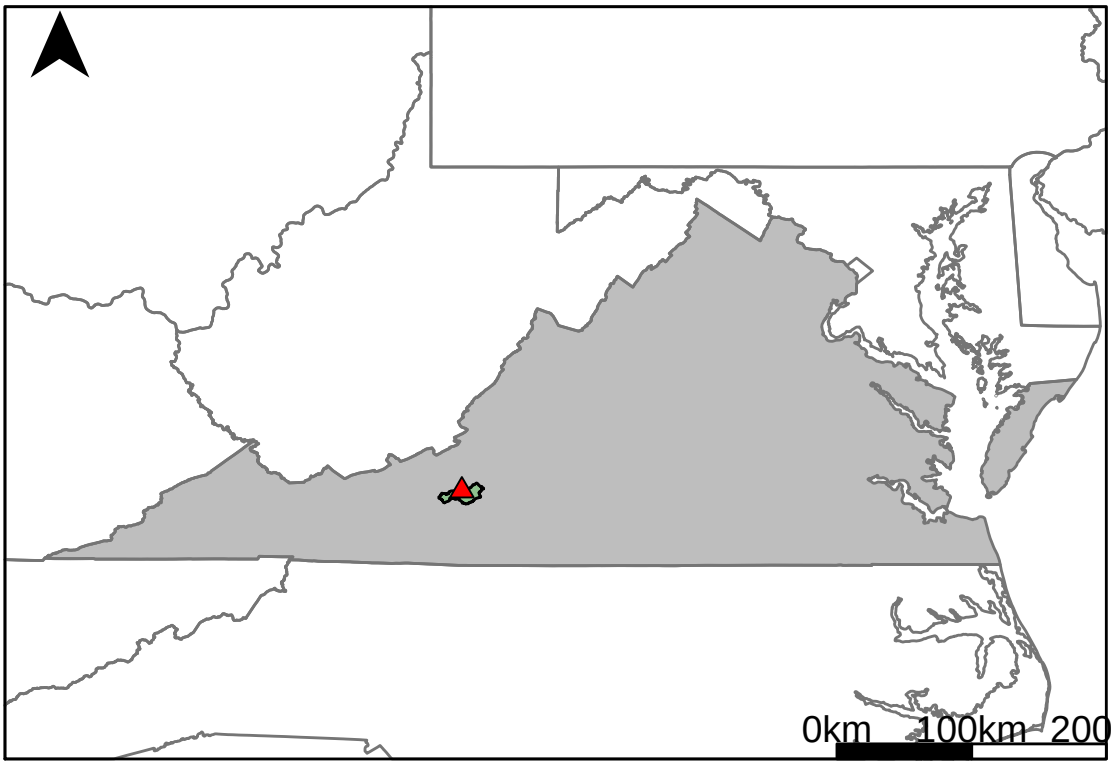
Appendix H: Roanoke River Gages
Appendix H.1: USGS Gage 02053800 vs. OR1_8280_8020



This river segment follows part of the flow of the South Fork of the Roanoke River. The gage is located in Montgomery County, VA (Lat 3708'24", Long 8016'00") approximately 17 miles east of Radford, VA. Drainage area is 109 sq. miles. This gage started taking data in 1960 and is still taking data. There are no known anthropogenic alterations in this area that would affect the flow conditions. The average daily discharge error between the model and gage data for the 20 year timespan was 5.88%, with 37.5% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	29	22.1	23.8
Feb. Low Flow	38	22.7	40.3
Mar. Low Flow	44	49.9	-13.4
Apr. Low Flow	45	52.8	-17.3
May Low Flow	66	94.7	-43.5
Jun. Low Flow	91	107	-17.6
Jul. Low Flow	76	81.5	-7.24
Aug. Low Flow	68	67.5	0.74
Sep. Low Flow	51	52.6	-3.14
Oct. Low Flow	39	32.4	16.9
Nov. Low Flow	31	24.8	20
Dec. Low Flow	28	21.9	21.8

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	119	112	5.88
Jan. Mean Flow	141	138	2.13
Feb. Mean Flow	174	173	0.57
Mar. Mean Flow	205	202	1.46
Apr. Mean Flow	183	176	3.83
May Mean Flow	136	128	5.88
Jun. Mean Flow	107	109	-1.87
Jul. Mean Flow	71.1	67.8	4.64
Aug. Mean Flow	58.8	54.7	6.97
Sep. Mean Flow	93.4	73.2	21.6
Oct. Mean Flow	62.9	56.1	10.8
Nov. Mean Flow	97.7	83.5	14.5
Dec. Mean Flow	98.5	88.7	9.95

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	101	59.5	41.1
Feb. High Flow	222	203	8.56
Mar. High Flow	239	117	51
Apr. High Flow	378	463	-22.5
May High Flow	338	317	6.21
Jun. High Flow	631	697	-10.5
Jul. High Flow	341	356	-4.4
Aug. High Flow	301	276	8.31
Sep. High Flow	172	187	-8.72
Oct. High Flow	117	97.6	16.6
Nov. High Flow	80	70.3	12.1
Dec. High Flow	72	68	5.56

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	6.95	3.87	44.3
Med. 1 Day Min	22	13.8	37.3
Min. 3 Day Min	7.19	3.9	45.8
Med. 3 Day Min	22	14.1	35.9
Min. 7 Day Min	7.52	4.01	46.7
Med. 7 Day Min	23.3	14.8	36.5
Min. 30 Day Min	12.2	5.35	56.1
Med. 30 Day Min	29.9	19.8	33.8
Min. 90 Day Min	15.6	14.3	8.33
Med. 90 Day Min	42.4	31.3	26.2
7Q10	13.3	7.63	42.6
Year of 90-Day Min. Flow	2002	2002	0
Drought Year Mean	38.8	112	-189
Mean Baseflow	64.9	69.7	-7.4

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	4270	4330	-1.41
Med. 1 Day Max	1920	1400	27.1
Max. 3 Day Max	2460	1860	24.4
Med. 3 Day Max	1300	954	26.6
Max. 7 Day Max	1340	1050	21.6
Med. 7 Day Max	757	591	21.9
Max. 30 Day Max	768	598	22.1
Med. 30 Day Max	327	300	8.26
Max. 90 Day Max	477	389	18.4
Med. 90 Day Max	205	203	0.98

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	14.1	9.79	30.6
5% Non-Exceedance	22	16.3	25.9
50% Non-Exceedance	71	69.3	2.39
95% Non-Exceedance	313	314	-0.32
99% Non-Exceedance	847	791	6.61
Sept. 10% Non-Exceedance	15.3	14.9	2.61

Fig. 1: Hydrograph

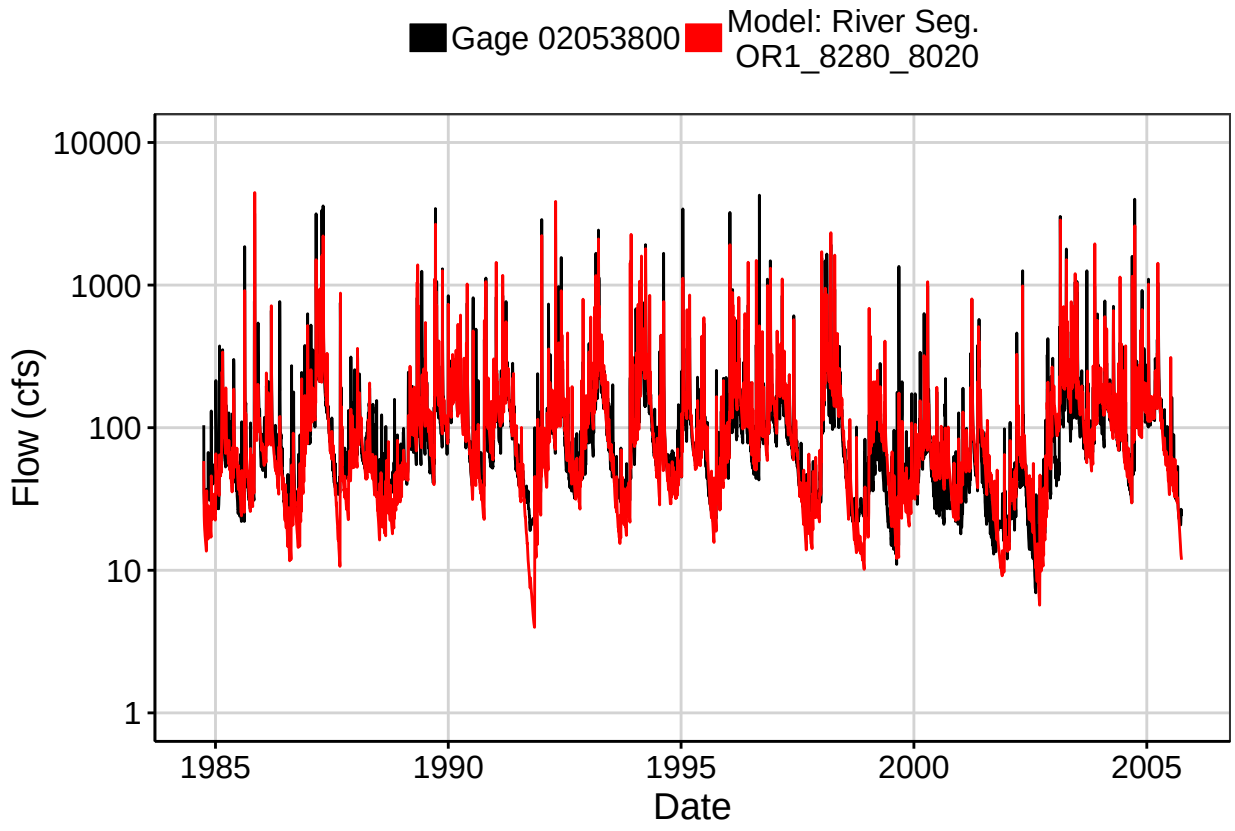


Fig. 2: Zoomed Hydrograph

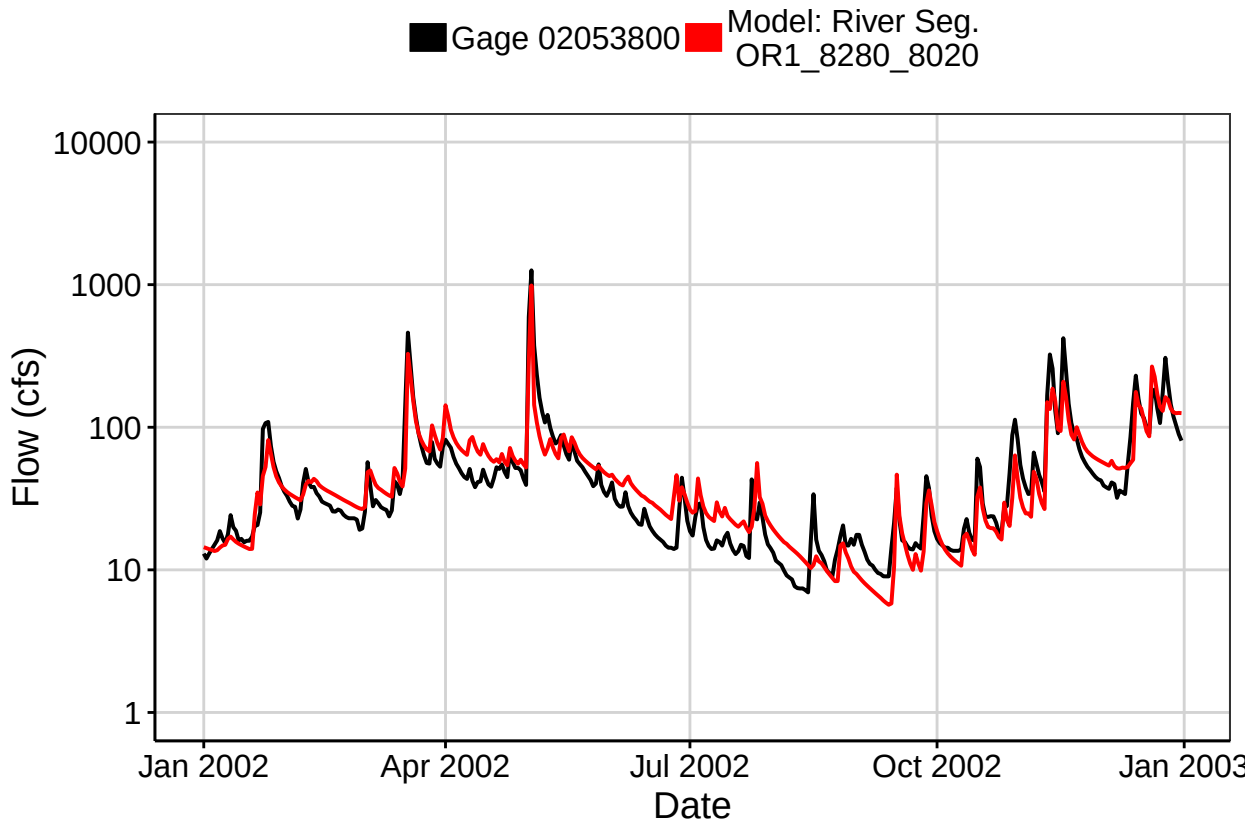


Fig. 3: Flow Exceedance

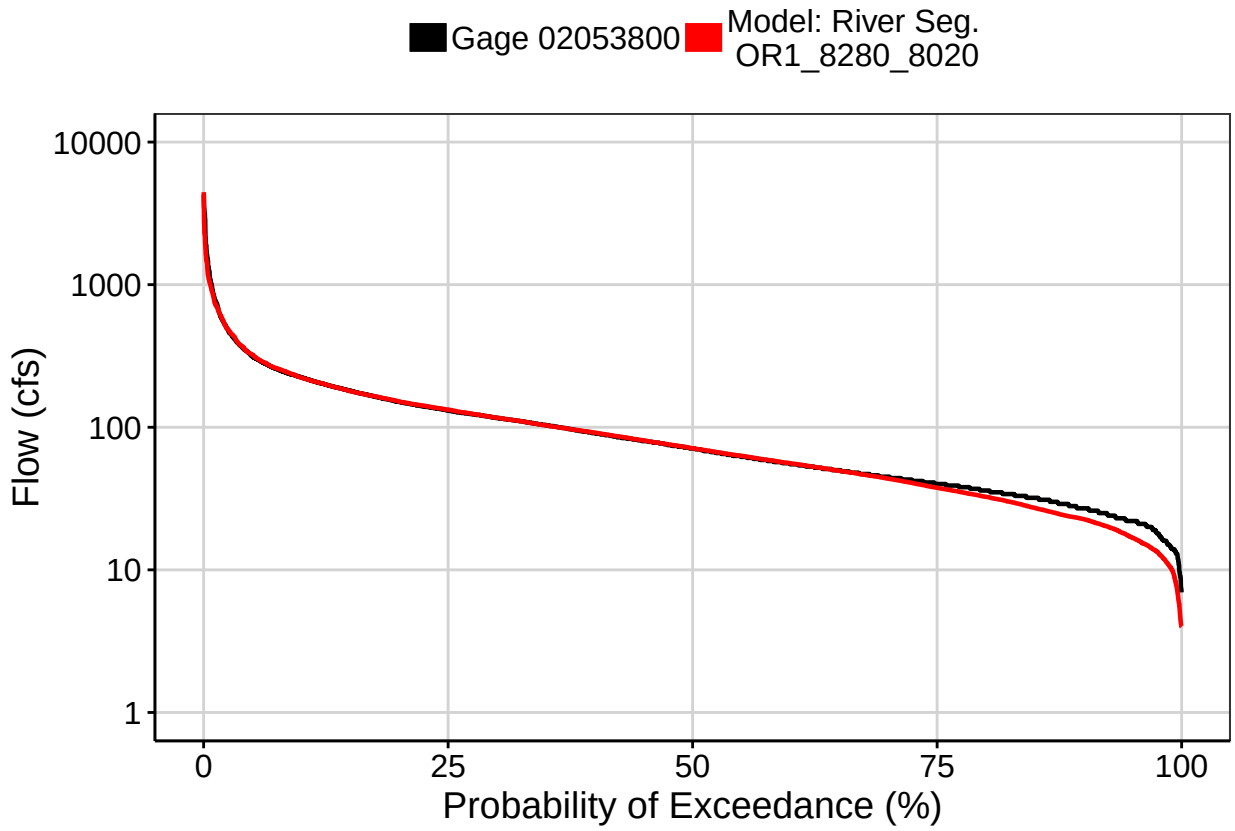


Fig. 4: Baseflow

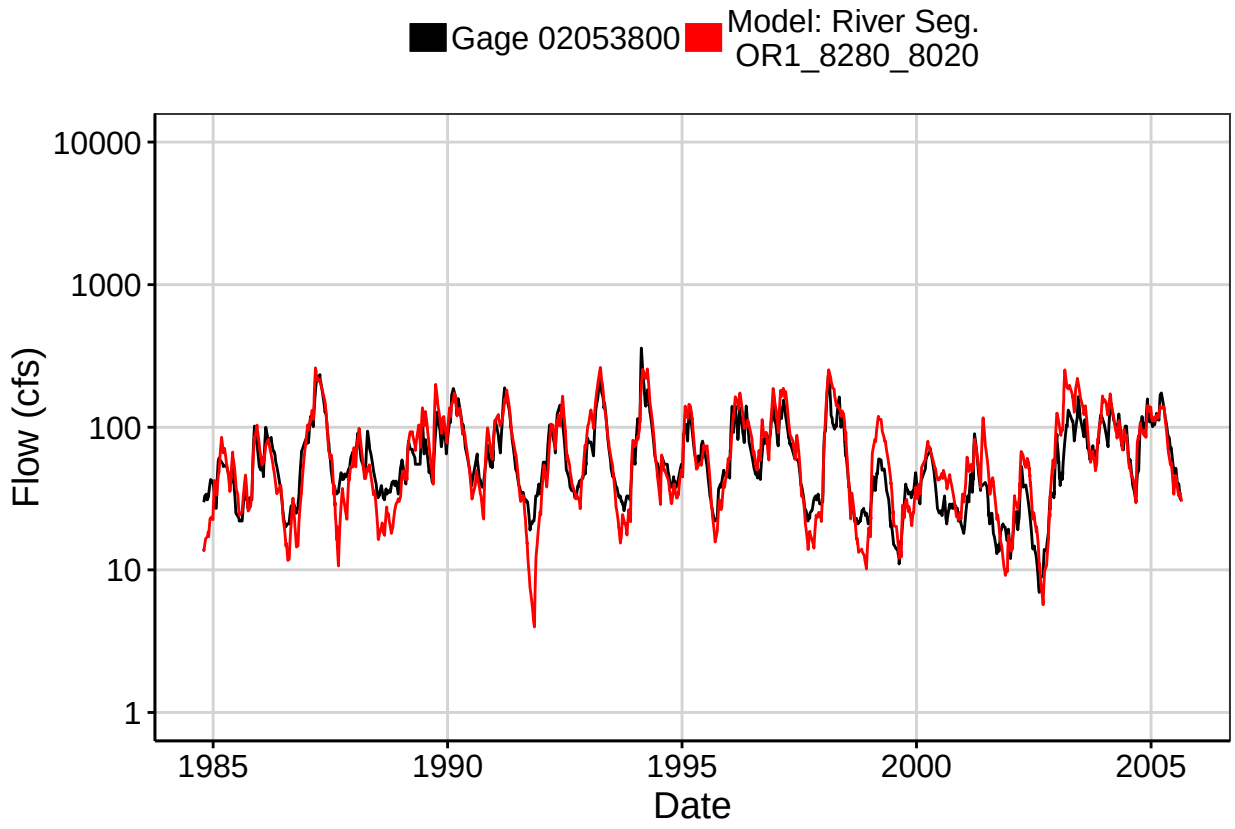


Fig. 5: Combined Baseflow

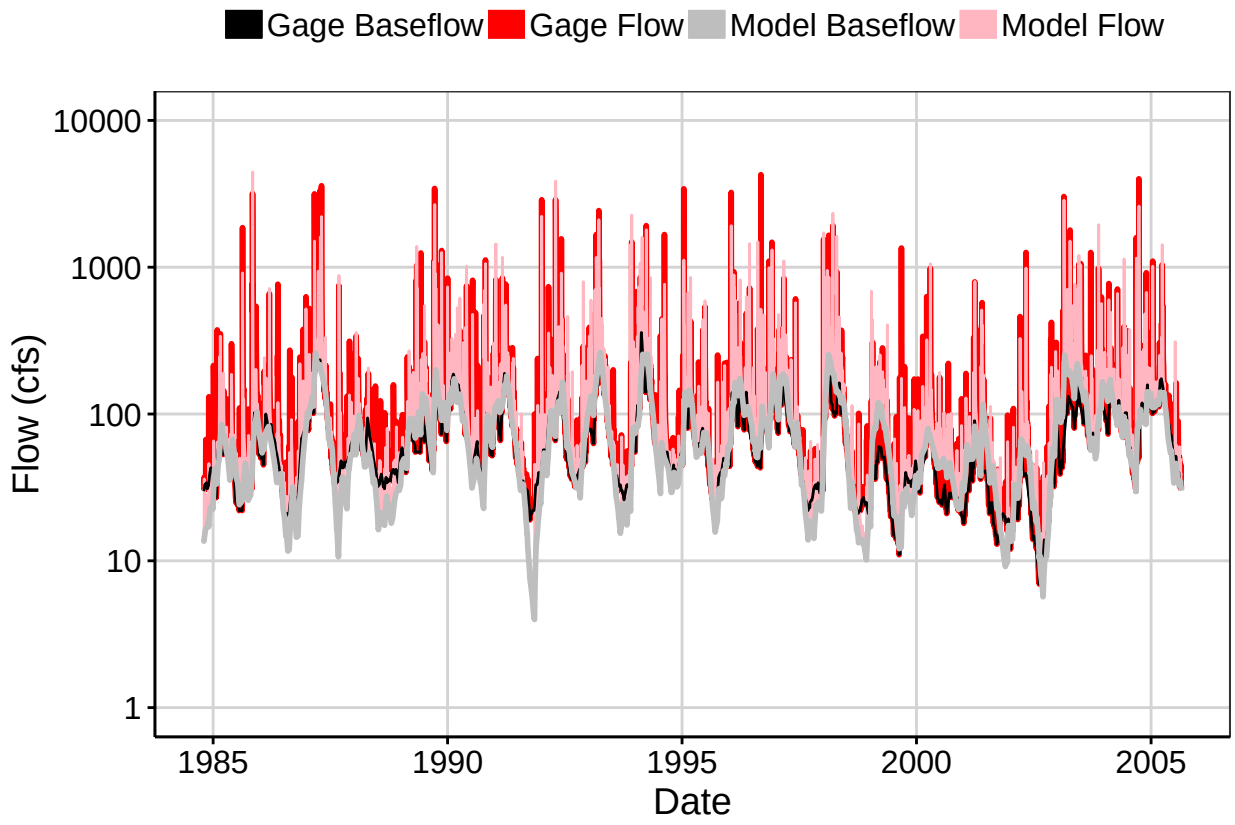


Fig. 6: Largest Error Segment

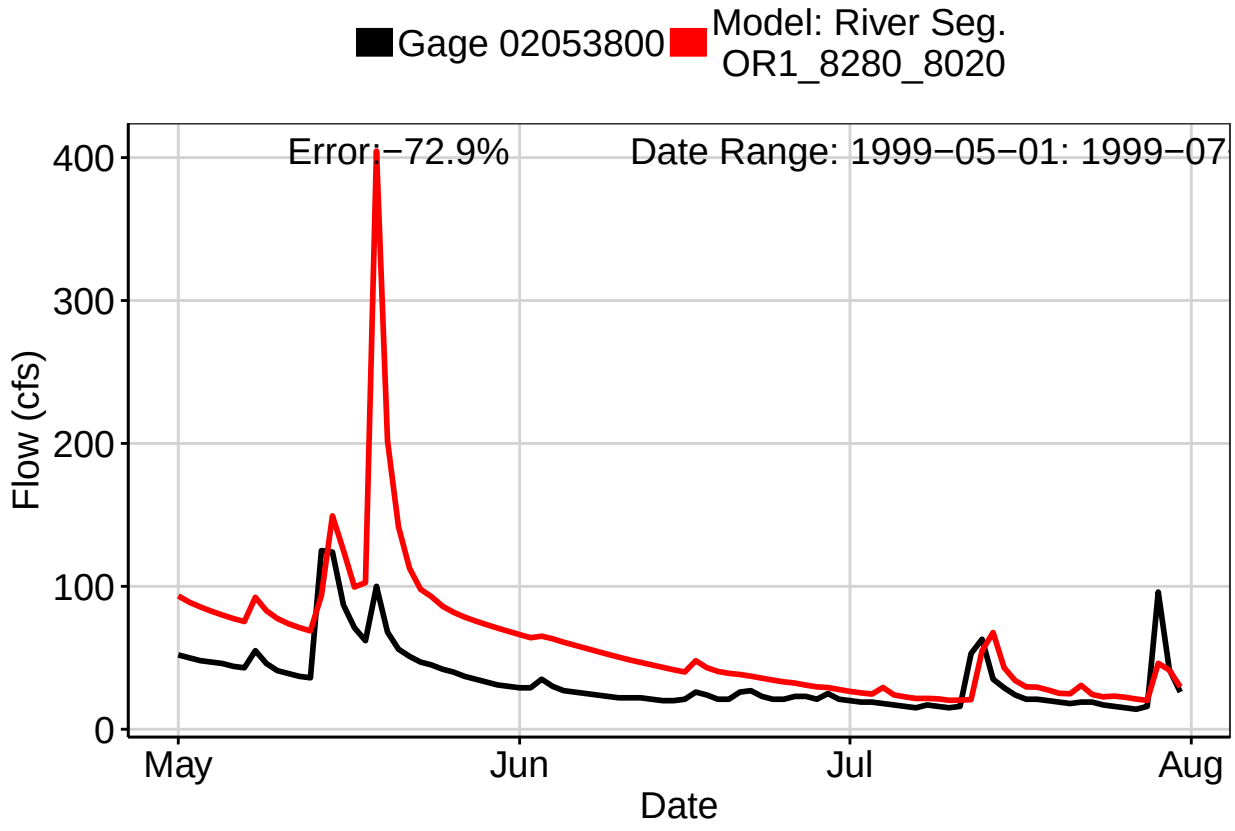


Fig. 7: Second Largest Error Segment

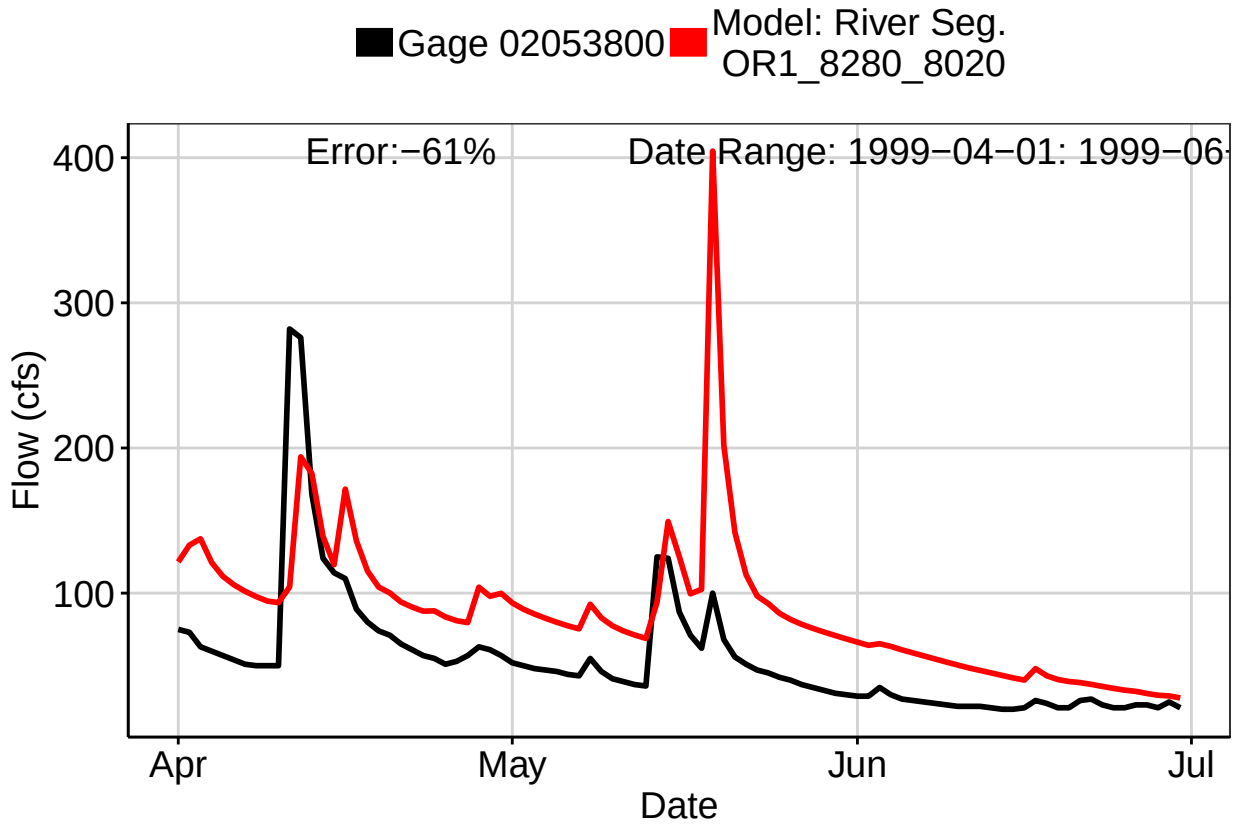


Fig. 8: Third Largest Error Segment

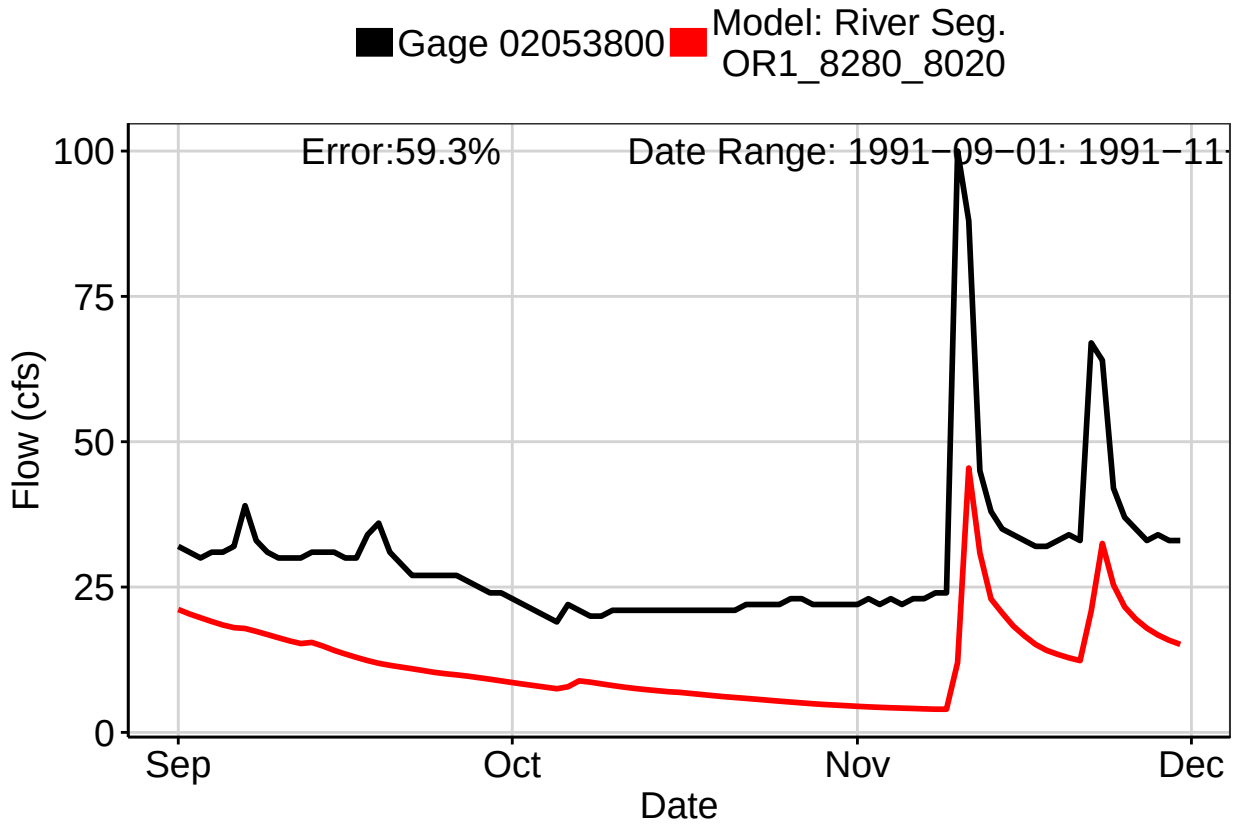


Fig. 9: Residuals Plot