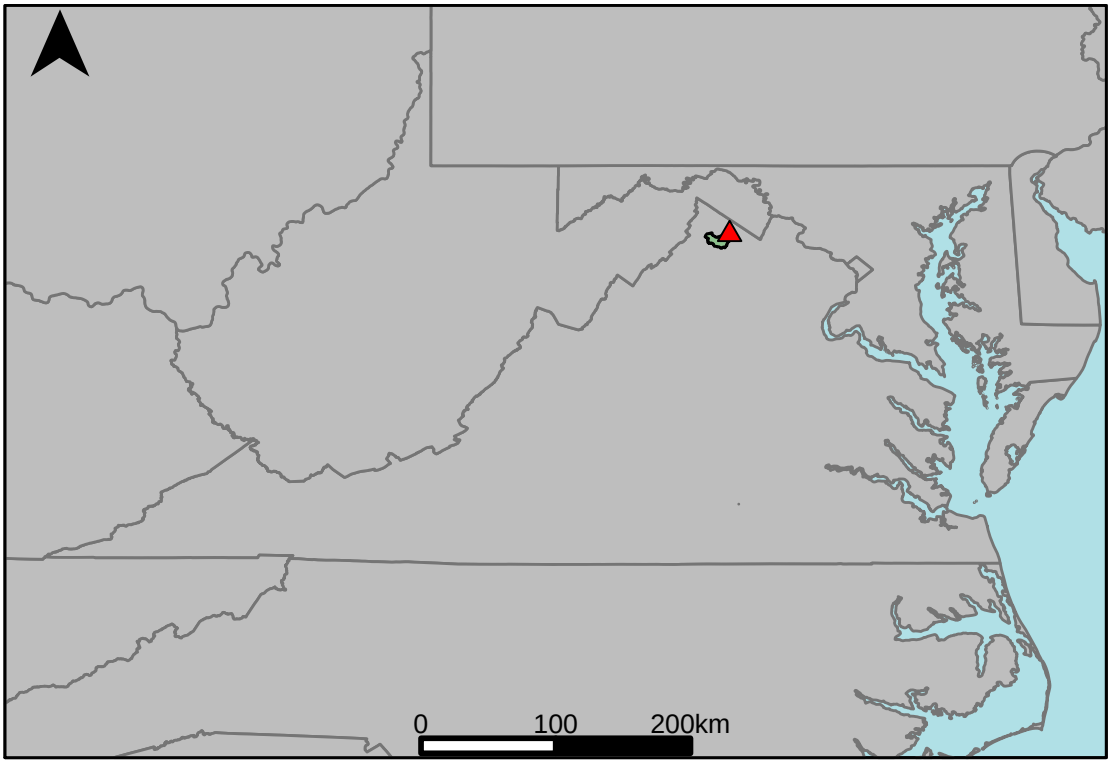
Appendix B: Potomac River Basin
Appendix B.1: USGS Gage 01615000 vs. PU2_4730_4220 Upper Potomac River



This river segment follows part of the flow of the Opequon Creek, a tributary of the Potomac. The gage is located in Clarke County (Lat. 39°10'29.0", Long. -78°04'42.0"), approximately 5.5 miles east of Winchester, VA. Drainage area is 58.2 sq. miles. This gage started taking data in 1943 and is still taking data. There are some diurnal fluctuations caused by mills upstream. Records from July 18, 1988 to Sept. 30, 1997 could be affected by water discharged from a treatment plant, which was diverted from another drainage basin. The average daily discharge error between the model and gage data for the 20 year timespan was -6.85%, with 46.7% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	12	9.54	-20.5
Feb. Low Flow	16.4	14.6	-11
Mar. Low Flow	18.5	23.2	25.4
Apr. Low Flow	23	31.3	36.1
May Low Flow	25.2	36.7	45.6
Jun. Low Flow	25.4	35	37.8
Jul. Low Flow	26.5	24.2	-8.68
Aug. Low Flow	20	18	-10
Sep. Low Flow	16.4	13.8	-15.9
Oct. Low Flow	13	10.3	-20.8
Nov. Low Flow	11.5	9.05	-21.3
Dec. Low Flow	11.5	9.22	-19.8

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	58.4	62.4	6.85
Jan. Mean Flow	73.2	75	2.46
Feb. Mean Flow	73.2	87.5	19.5
Mar. Mean Flow	114	129	13.2
Apr. Mean Flow	76.1	86.6	13.8
May Mean Flow	61.3	63.7	3.92
Jun. Mean Flow	38.6	38.1	-1.3
Jul. Mean Flow	27.8	27	-2.88
Aug. Mean Flow	23.9	27.3	14.2
Sep. Mean Flow	45.7	50.9	11.4
Oct. Mean Flow	38.5	37.2	-3.38
Nov. Mean Flow	56	59.4	6.07
Dec. Mean Flow	73.7	69.4	-5.83

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	37	57.4	55.1
Feb. High Flow	300	257	-14.3
Mar. High Flow	409	162	-60.4
Apr. High Flow	265	146	-44.9
May High Flow	192	129	-32.8
Jun. High Flow	729	673	-7.68
Jul. High Flow	174	212	21.8
Aug. High Flow	150	153	2
Sep. High Flow	69	72.3	4.78
Oct. High Flow	83	55	-33.7
Nov. High Flow	39.5	44.8	13.4
Dec. High Flow	44	67	52.3

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	1.7	0.08	-95.3
Med. 1 Day Min	8.2	8.62	5.12
Min. 3 Day Min	1.7	0.09	-94.9
Med. 3 Day Min	8.2	9.05	10.4
Min. 7 Day Min	1.8	0.13	-92.6
Med. 7 Day Min	8.2	9.23	12.6
Min. 30 Day Min	2.43	1.18	-51.4
Med. 30 Day Min	11.5	11.3	-1.74
Min. 90 Day Min	4.1	4.13	0.73
Med. 90 Day Min	16.5	14.9	-9.7
7Q10	3.15	1.58	-49.8
Year of 90-Day Min. Flow	1986	1985	100
Drought Year Mean	41.6	42	0.96
Mean Baseflow	23.3	29.2	25.3

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	3980	3420	-14.1
Med. 1 Day Max	1480	1310	-11.5
Max. 3 Day Max	1550	1950	25.8
Med. 3 Day Max	719	604	-16
Max. 7 Day Max	782	944	20.7
Med. 7 Day Max	350	327	-6.57
Max. 30 Day Max	340	386	13.5
Med. 30 Day Max	172	175	1.74
Max. 90 Day Max	186	226	21.5
Med. 90 Day Max	108	101	-6.48

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	3.3	0.65	-80.3
5% Non-Exceedance	7.01	5.9	-15.8
50% Non-Exceedance	26	33.2	27.7
95% Non-Exceedance	184	187	1.63
99% Non-Exceedance	611	598	-2.13
Sept. 10% Non-Exceedance	3.8	1.64	-56.8

Fig. 1: Hydrograph

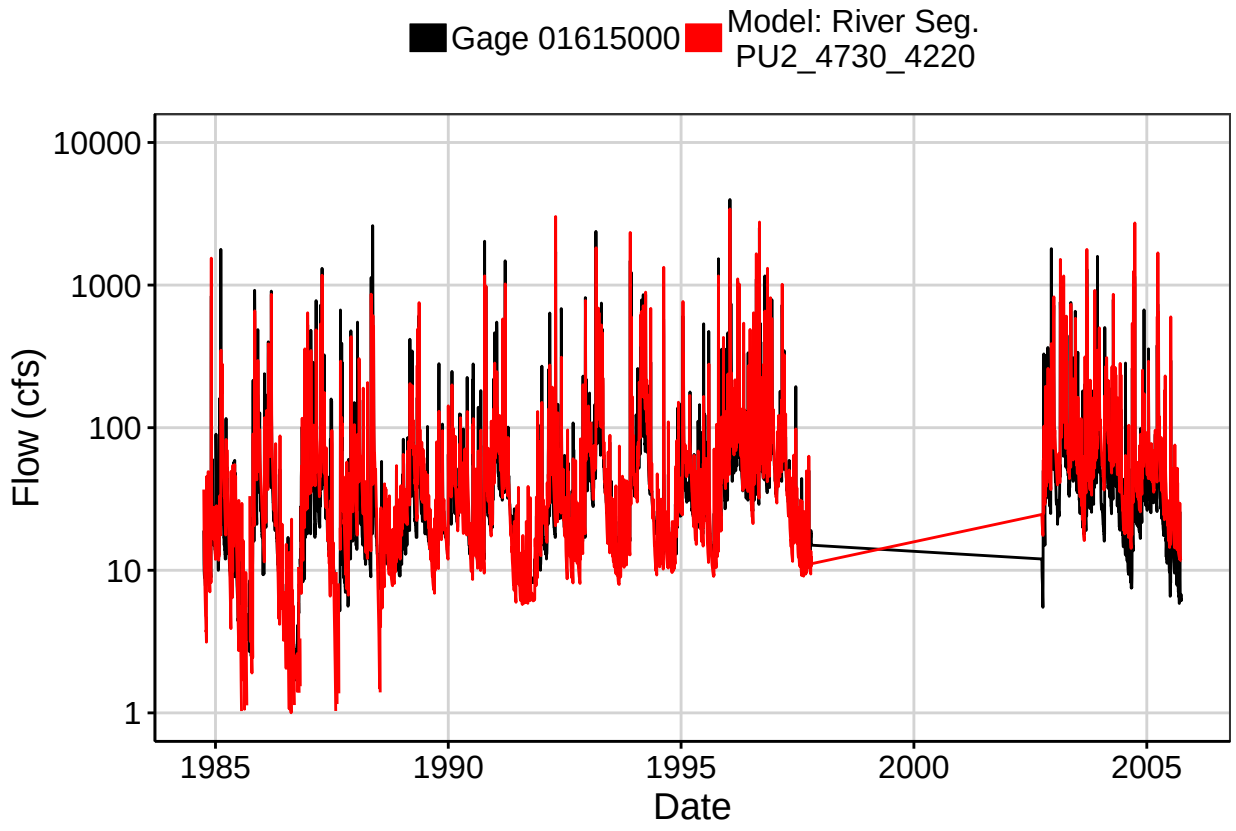


Fig. 2: Zoomed Hydrograph

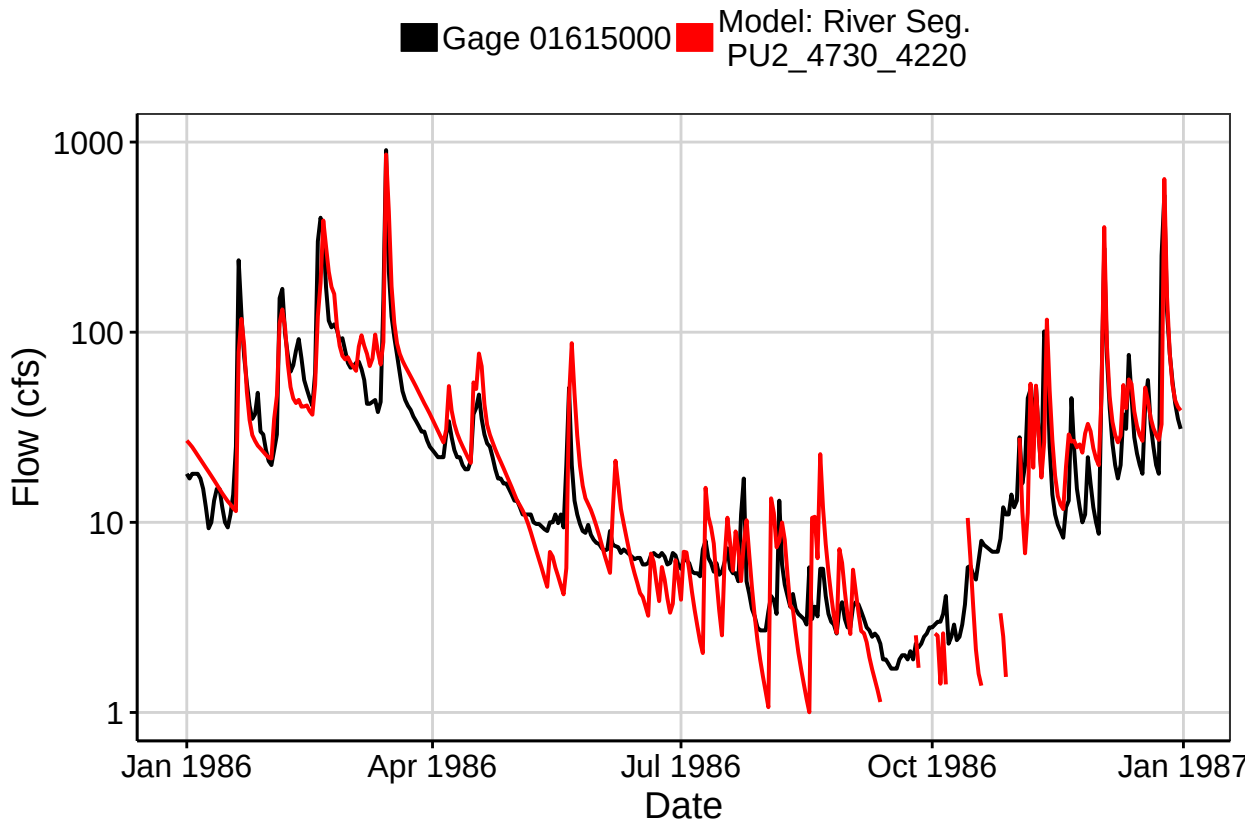


Fig. 3: Flow Exceedance

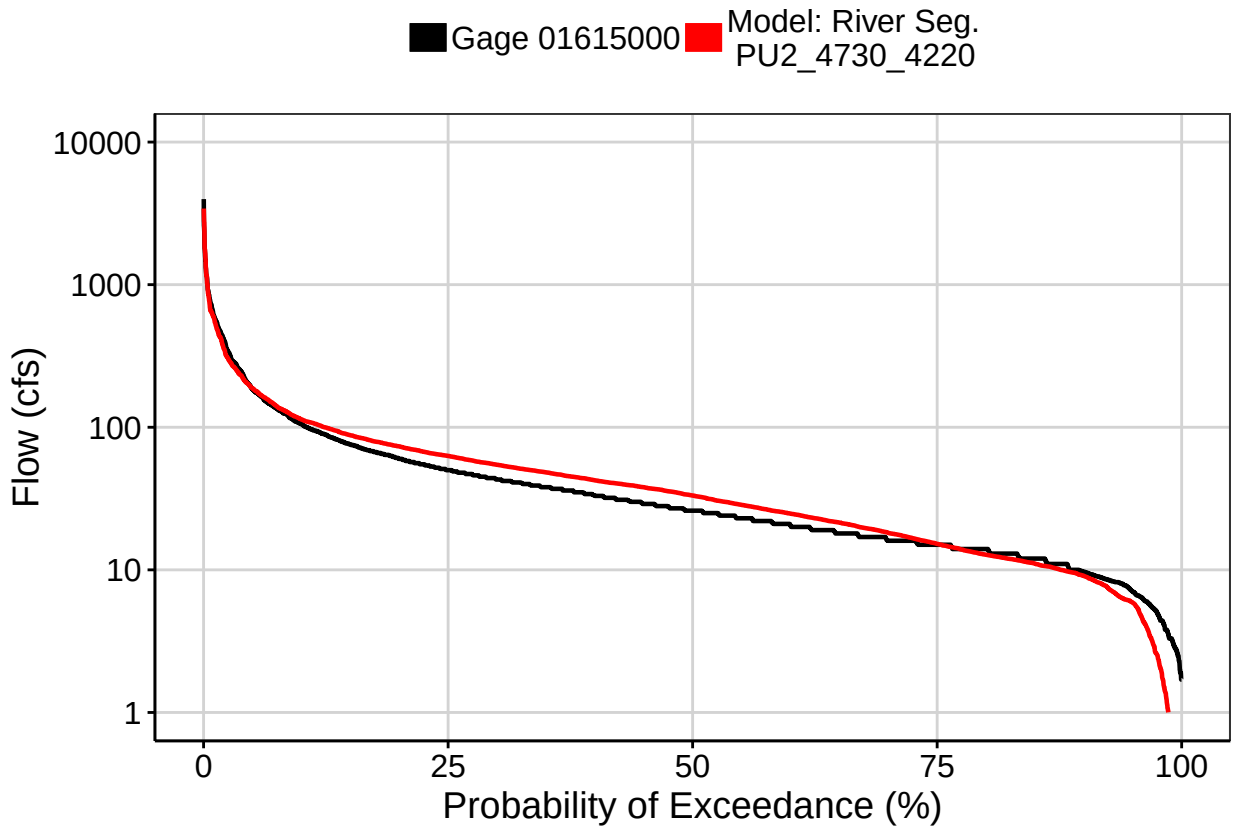


Fig. 4: Baseflow

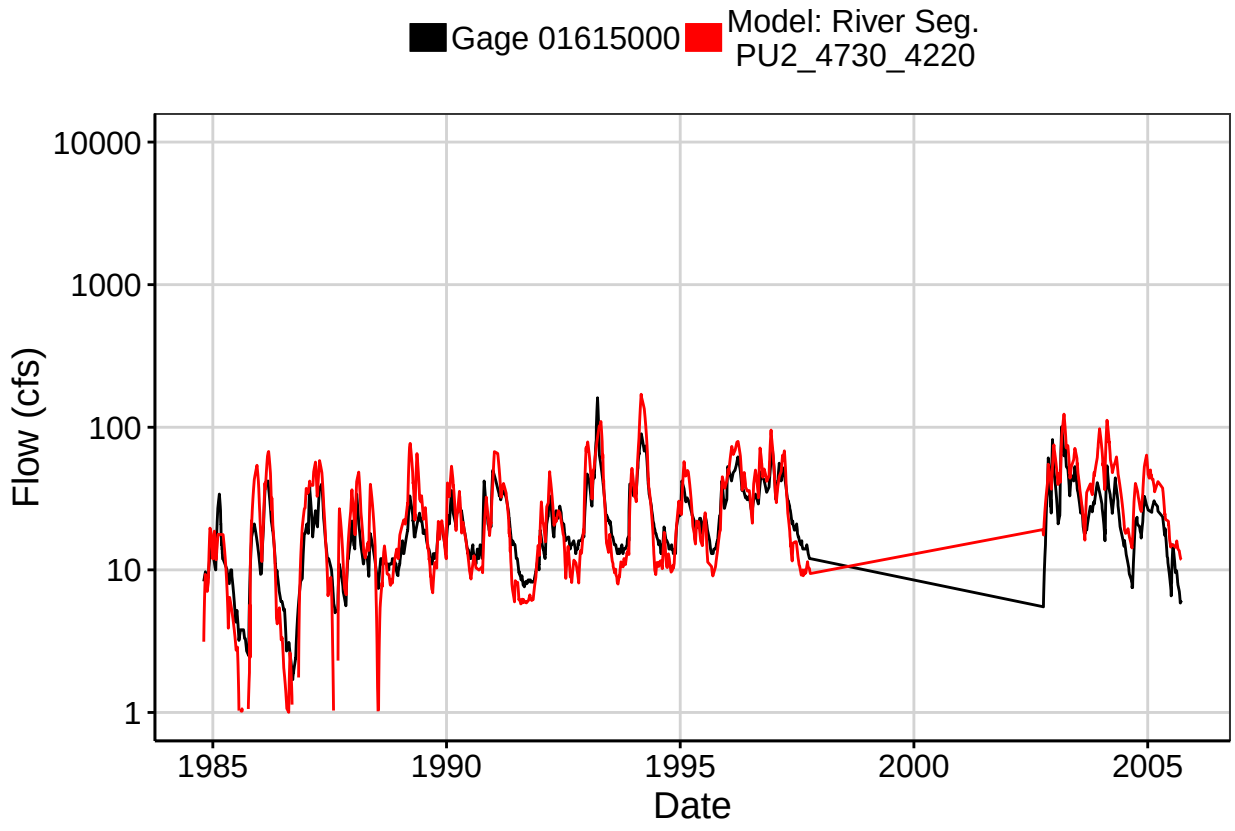


Fig. 5: Combined Baseflow

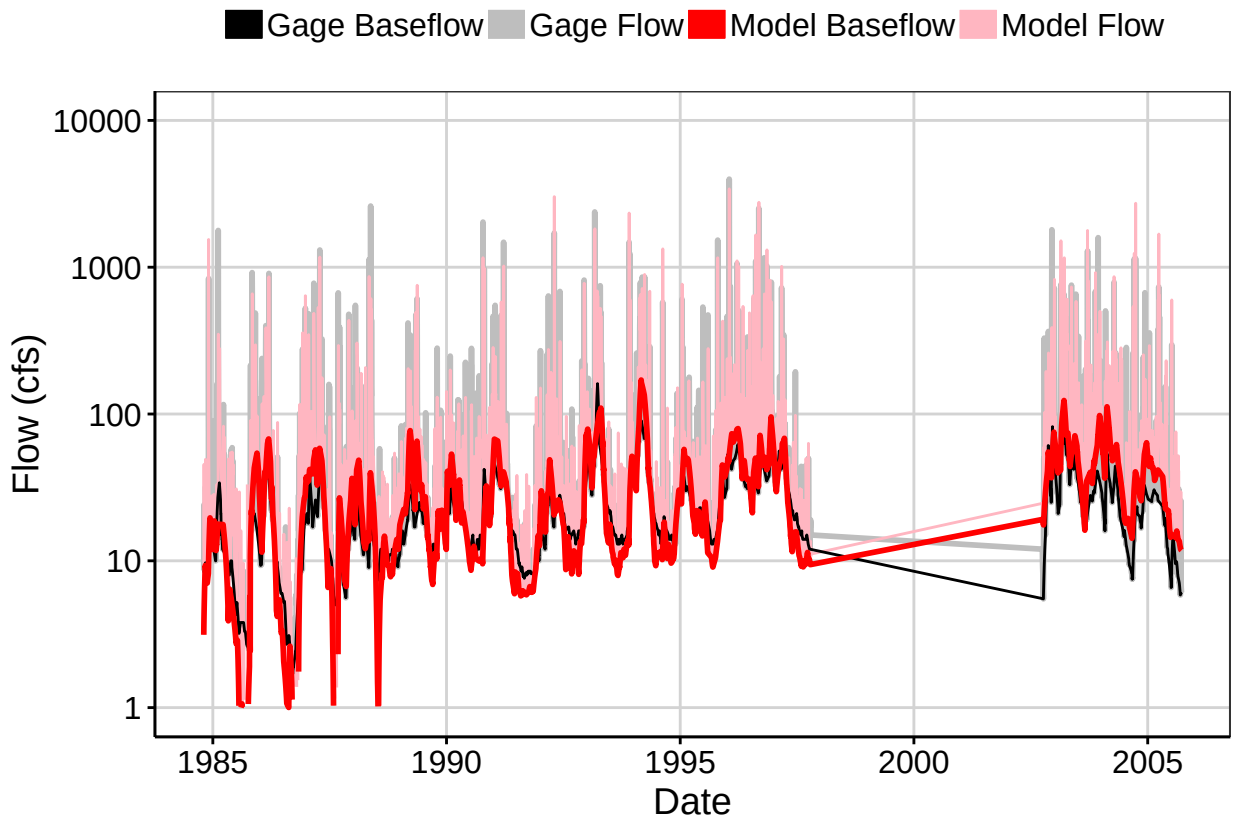


Fig. 6: Largest Error Segment

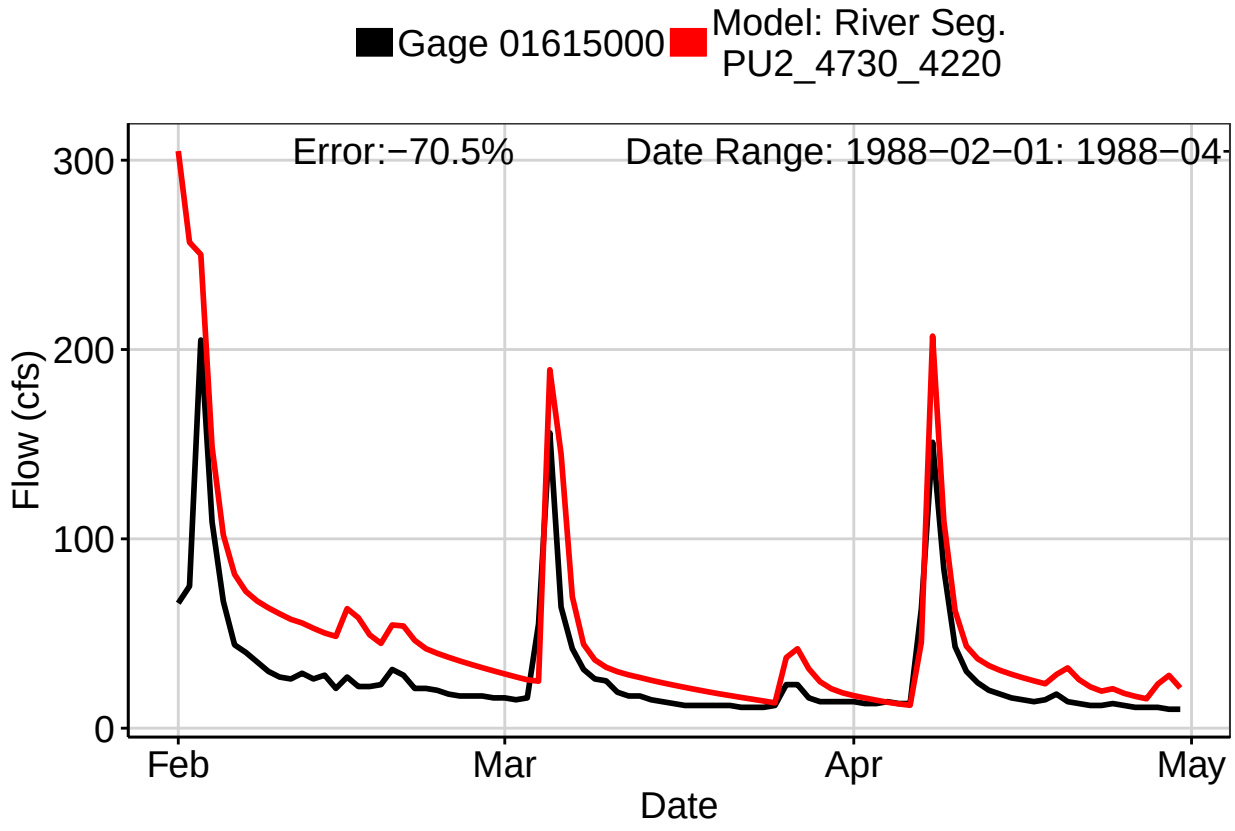


Fig. 7: Second Largest Error Segment

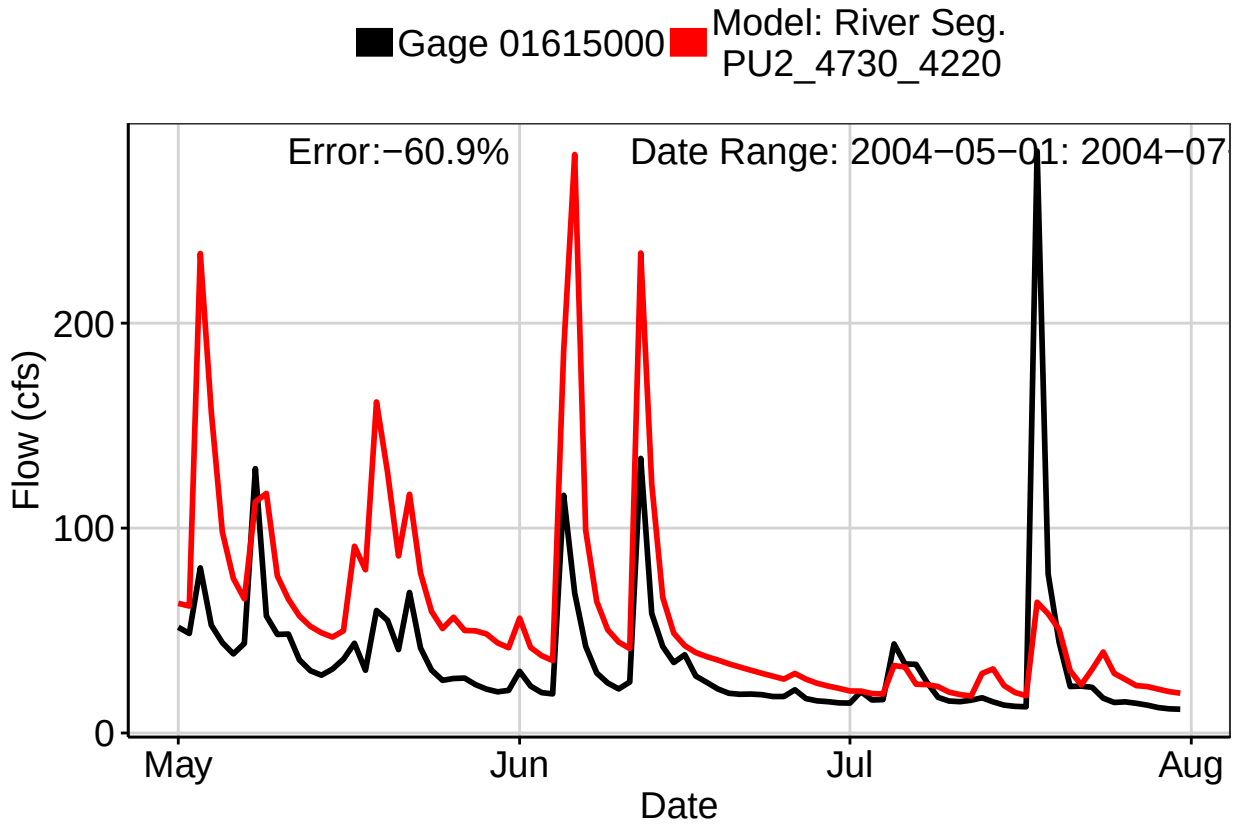


Fig. 8: Third Largest Error Segment

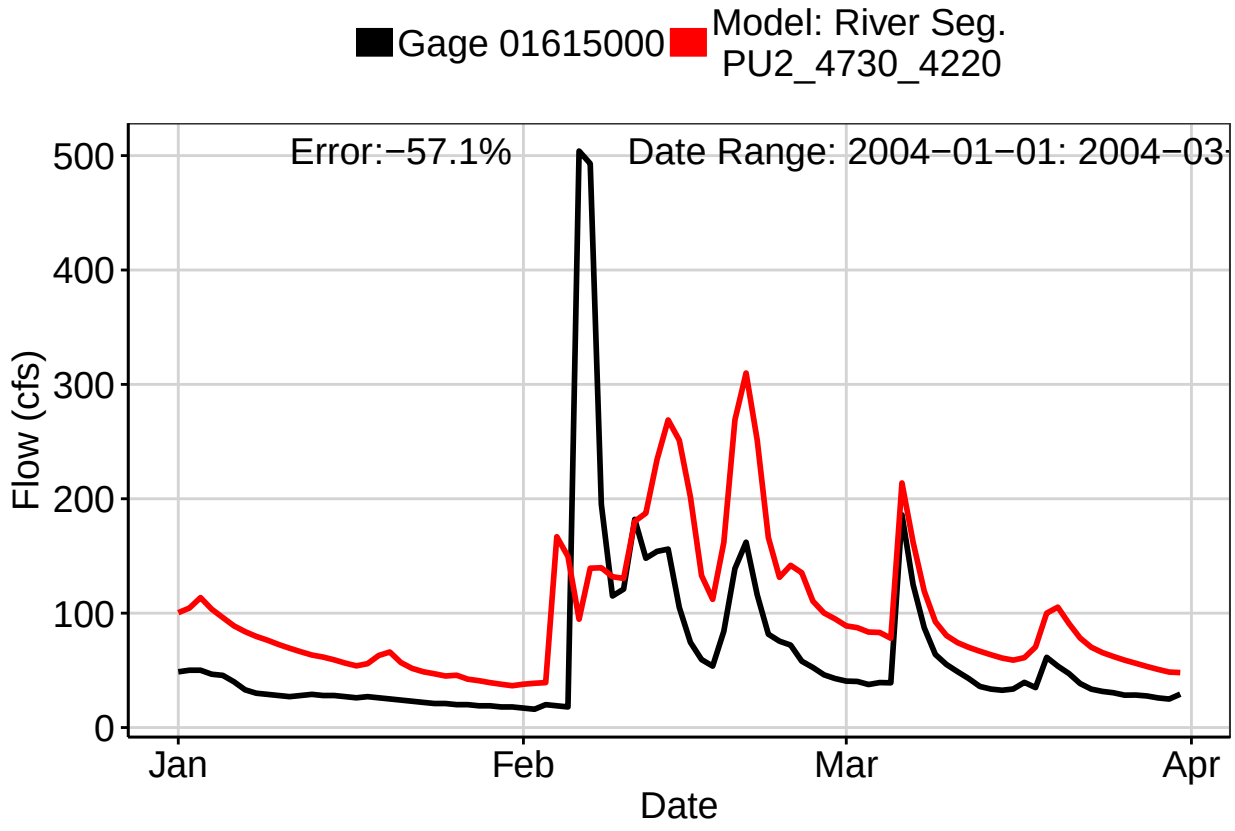


Fig. 9: Residuals Plot