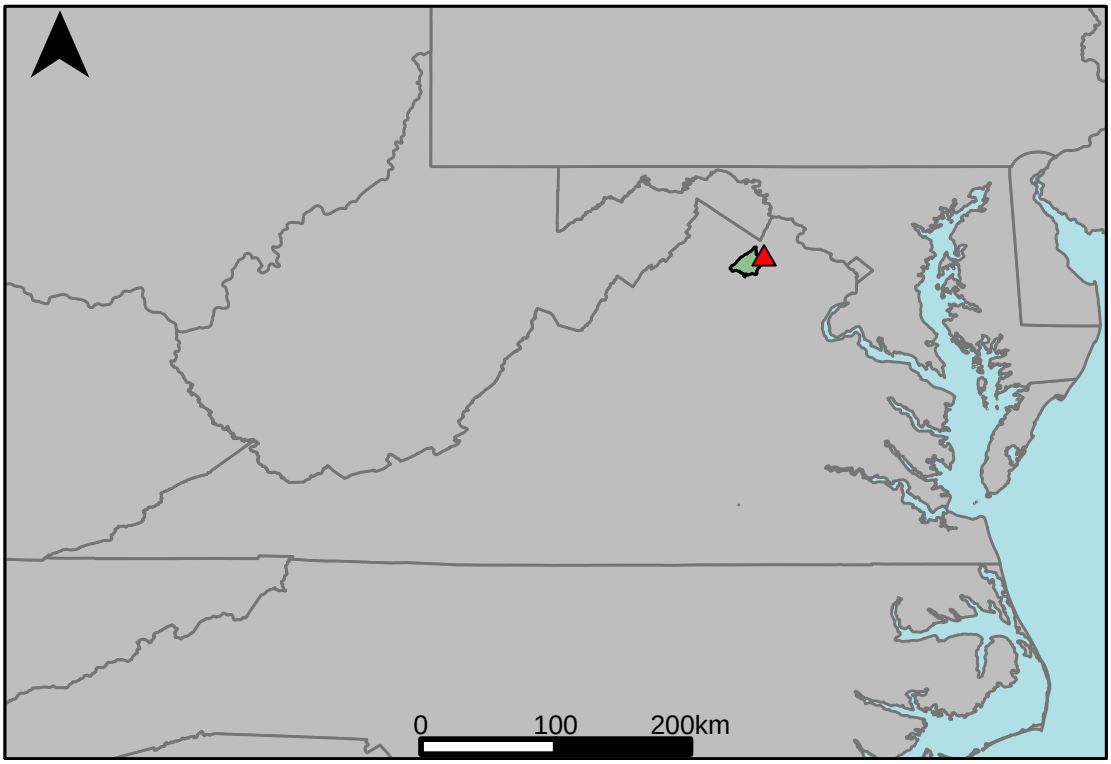
Appendix B.17: USGS Gage 01643700 vs. PM2_4860_4670 Middle Potomac River



This river segment follows part of the flow of the Goose Creek, a tributary of the Potomac. The gage is located in Loudoun County (Lat. 38°59'11.4", Long. -77°47'49.0"), approximately 3 miles west of Middleburg, VA. Drainage area is 122 sq. miles. This gage started taking data in 1965 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 0.76%, with 70.4% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	9.1	15.3	68.1
Feb. Low Flow	23	36	56.5
Mar. Low Flow	43	56.8	32.1
Apr. Low Flow	47	63.4	34.9
May Low Flow	72.5	81.6	12.6
Jun. Low Flow	77.5	65.1	-16
Jul. Low Flow	77.5	56.9	-26.6
Aug. Low Flow	53.5	32.8	-38.7
Sep. Low Flow	26.1	22.2	-14.9
Oct. Low Flow	13	11.8	-9.23
Nov. Low Flow	8.08	11.1	37.4
Dec. Low Flow	1.2	4.75	296

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	132	131	-0.76
Jan. Mean Flow	164	169	3.05
Feb. Mean Flow	159	184	15.7
Mar. Mean Flow	242	221	-8.68
Apr. Mean Flow	221	177	-19.9
May Mean Flow	180	156	-13.3
Jun. Mean Flow	114	81.5	-28.5
Jul. Mean Flow	59.6	62.8	5.37
Aug. Mean Flow	43	58.1	35.1
Sep. Mean Flow	104	105	0.96
Oct. Mean Flow	61.1	80	30.9
Nov. Mean Flow	98.5	126	27.9
Dec. Mean Flow	158	168	6.33

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	185	154	-16.8
Feb. High Flow	453	542	19.6
Mar. High Flow	370	533	44.1
Apr. High Flow	434	419	-3.46
May High Flow	270	414	53.3
Jun. High Flow	636	612	-3.77
Jul. High Flow	582	540	-7.22
Aug. High Flow	414	382	-7.73
Sep. High Flow	174	157	-9.77
Oct. High Flow	130	119	-8.46
Nov. High Flow	92.4	84.1	-8.98
Dec. High Flow	53	82.8	56.2

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	0.00	1.00	Inf
Med. 1 Day Min	5.50e-01	4.29	6.87e+02
Min. 3 Day Min	0.00	1.05	-2.76e+17
Med. 3 Day Min	6.50e-01	4.63	6.09e+02
Min. 7 Day Min	0.00	1.25	-1.17e+17
Med. 7 Day Min	8.50e-01	5.30	5.25e+02
Min. 30 Day Min	0.00	3.04	9.13e+05
Med. 30 Day Min	3.33	1.17e+01	2.51e+02
Min. 90 Day Min	1.64	8.06	3.91e+02
Med. 90 Day Min	1.54e+01	3.67e+01	1.38e+02
7Q10	0.00	1.88	4.88e+06
Year of 90-Day Min. Flow	1.98e+03	1.99e+03	1.00e+02
Drought Year Mean	5.20e+01	6.79e+01	3.06e+01
Mean Baseflow	6.01e+01	6.03e+01	3.30e-01

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	14000	7750	-44.6
Med. 1 Day Max	1780	1900	6.74
Max. 3 Day Max	5400	2920	-45.9
Med. 3 Day Max	1180	1130	-4.24
Max. 7 Day Max	2860	1850	-35.3
Med. 7 Day Max	730	606	-17
Max. 30 Day Max	890	685	-23
Med. 30 Day Max	469	331	-29.4
Max. 90 Day Max	475	458	-3.58
Med. 90 Day Max	274	217	-20.8

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	0	2.75	Inf
5% Non-Exceedance	0.58	6.88	1090
50% Non-Exceedance	67	72.5	8.21
95% Non-Exceedance	460	402	-12.6
99% Non-Exceedance	1050	1050	0
Sept. 10% Non-Exceedance	0.04	4.38	10800

Fig. 1: Hydrograph

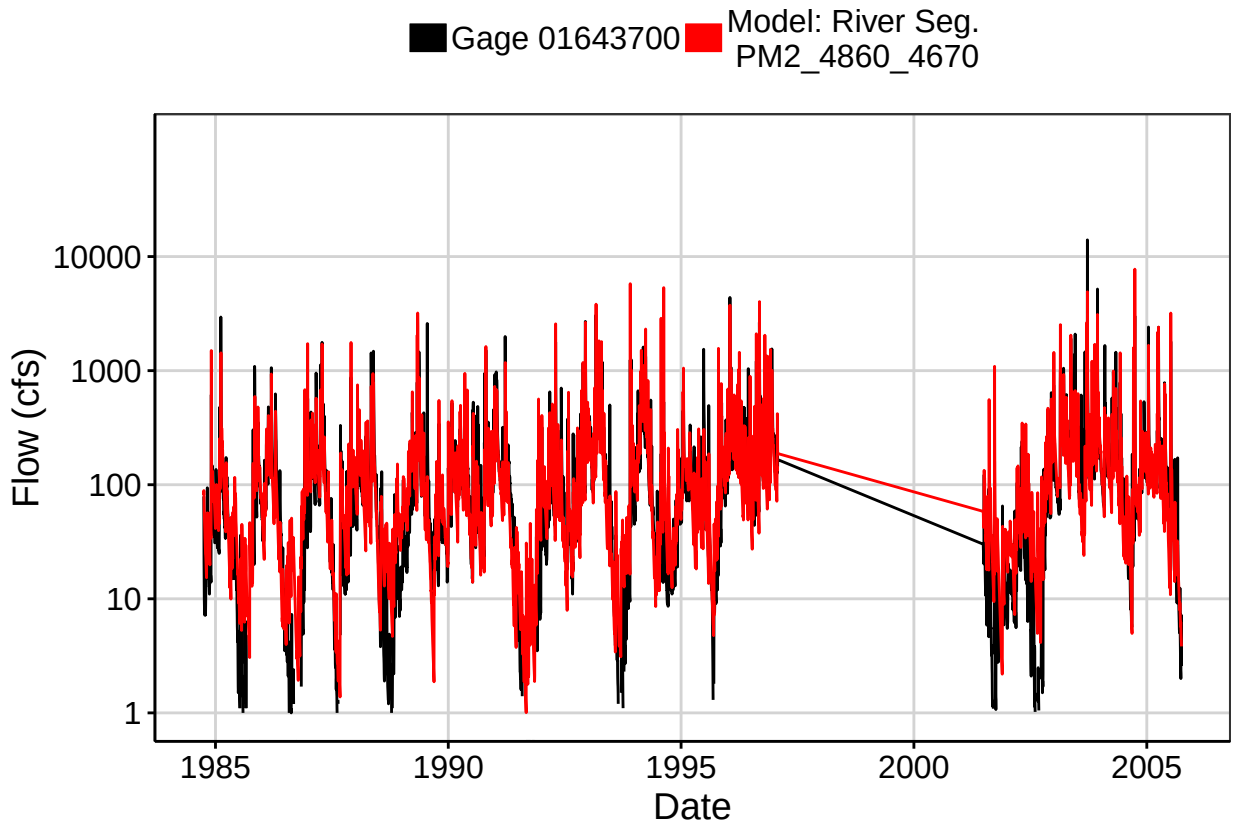


Fig. 2: Zoomed Hydrograph

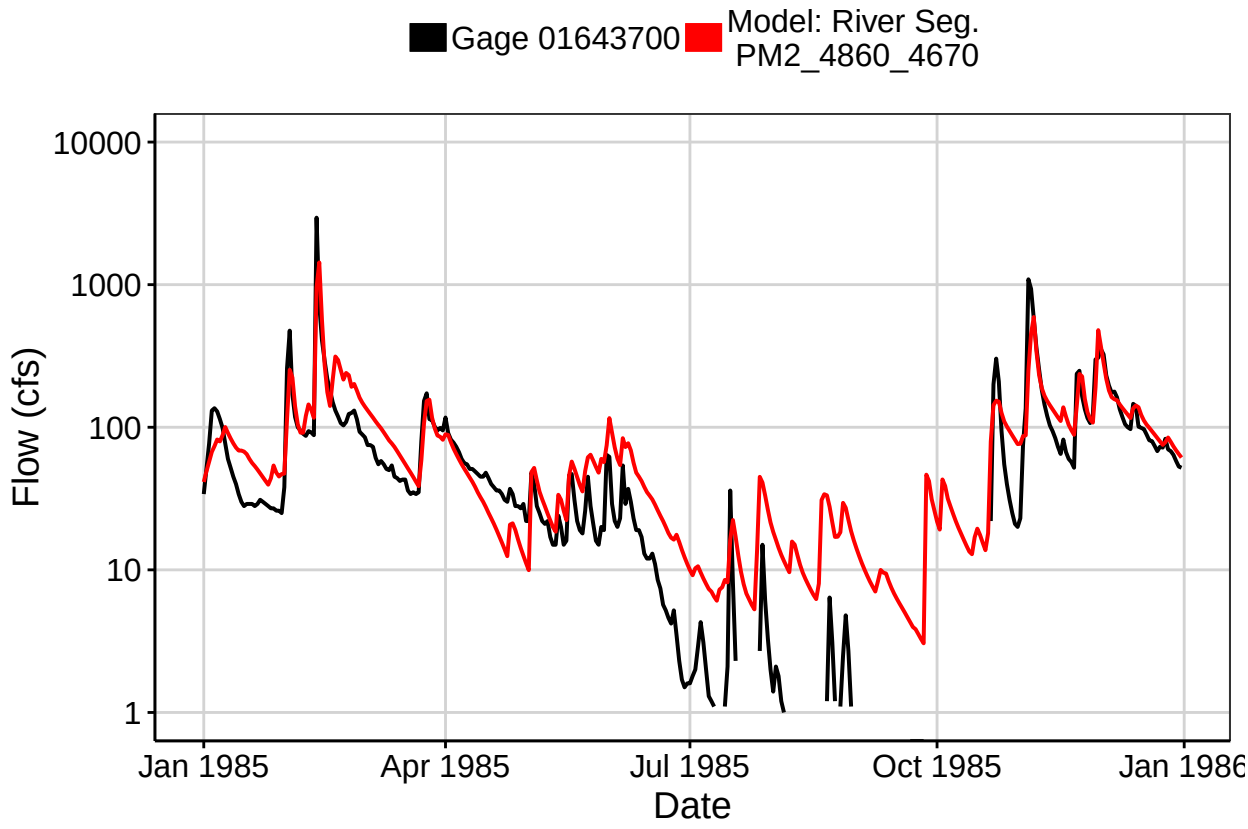


Fig. 3: Flow Exceedance

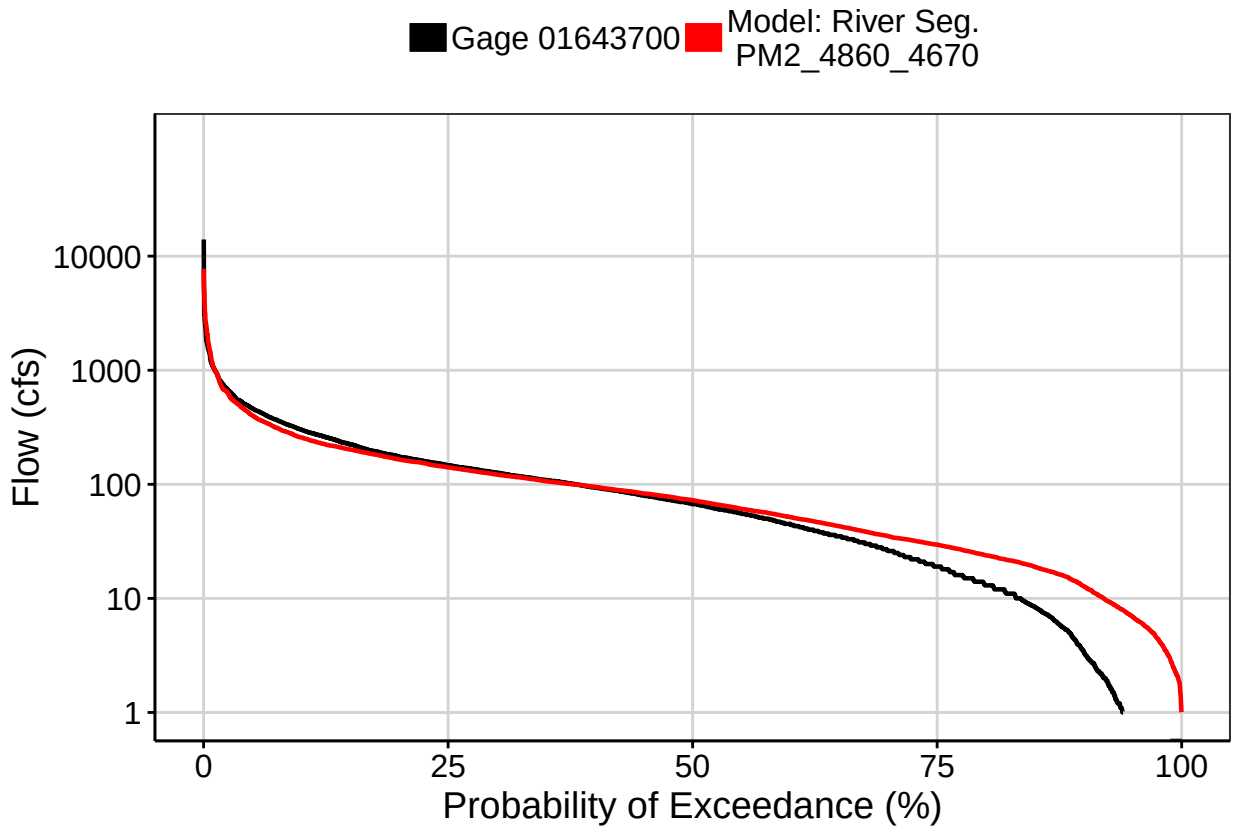


Fig. 4: Baseflow

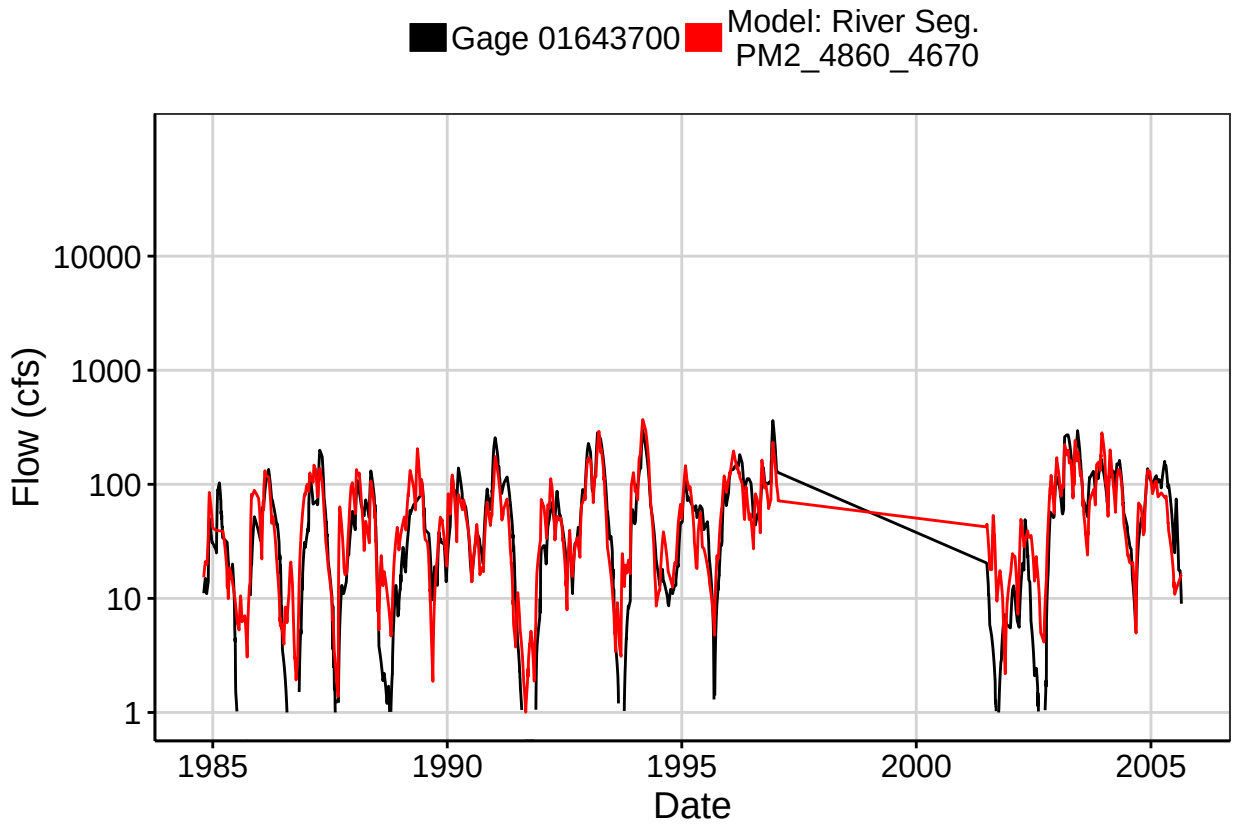


Fig. 5: Combined Baseflow

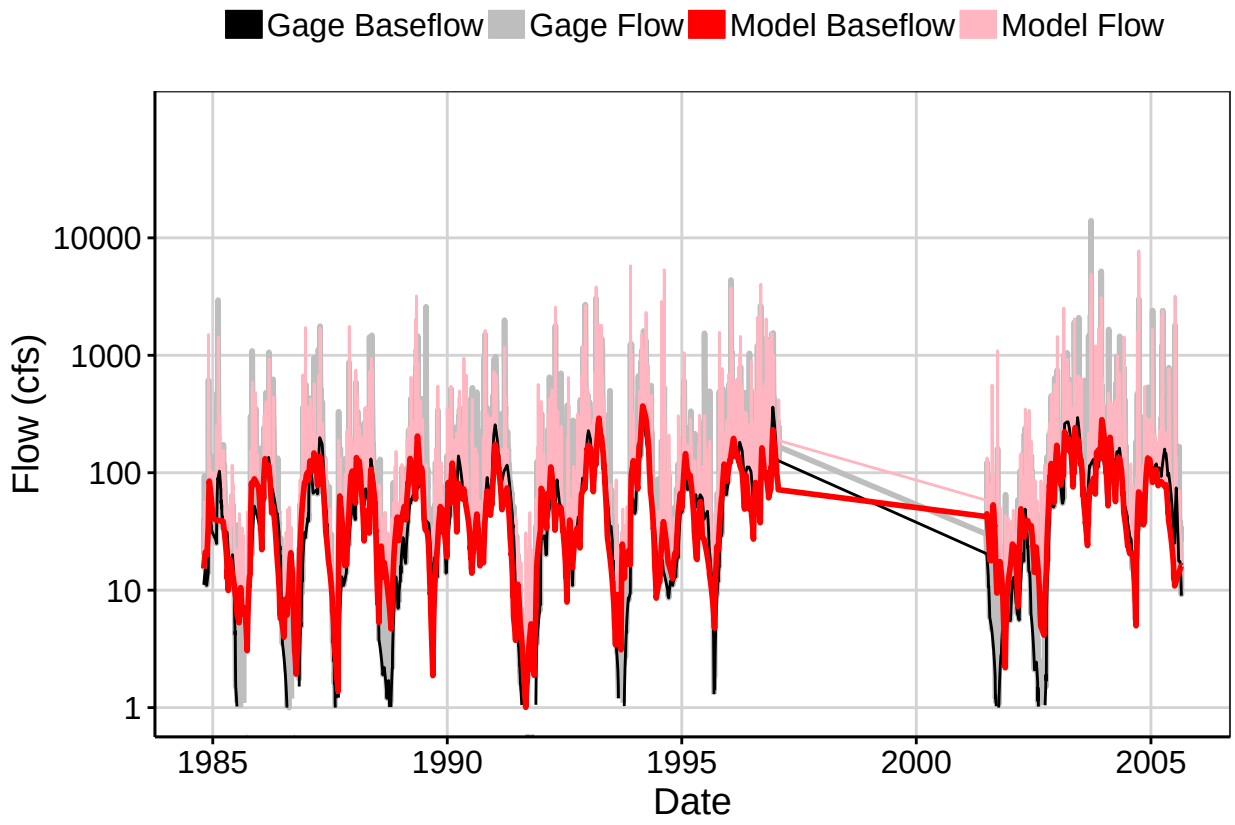


Fig. 6: Largest Error Segment

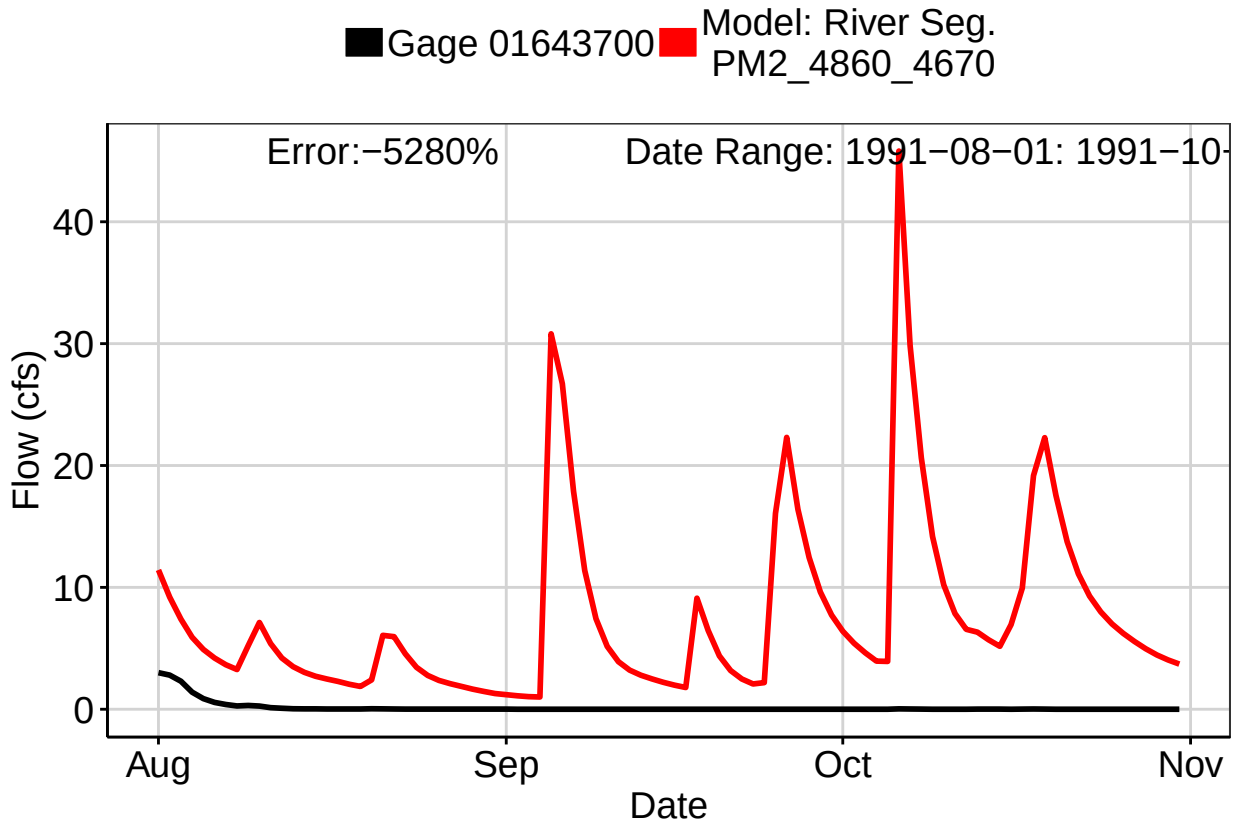


Fig. 7: Second Largest Error Segment

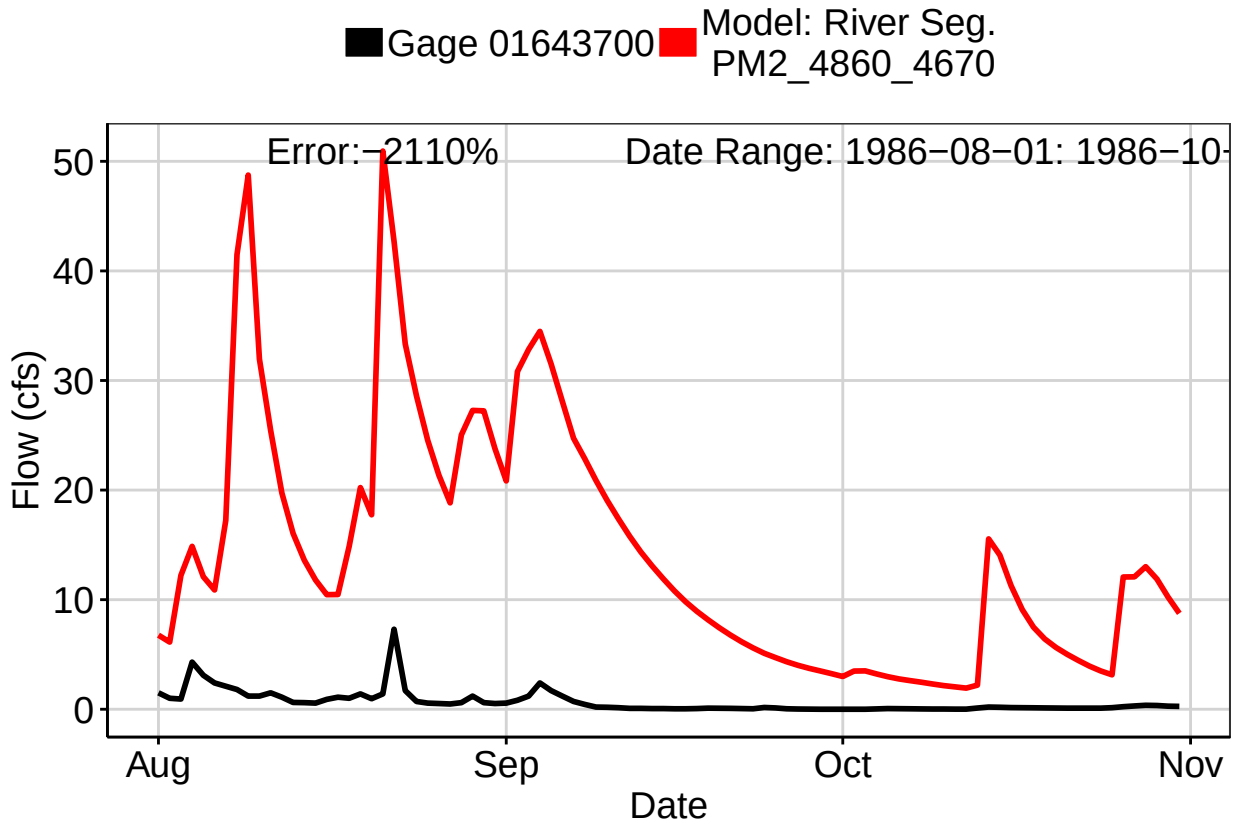


Fig. 8: Third Largest Error Segment

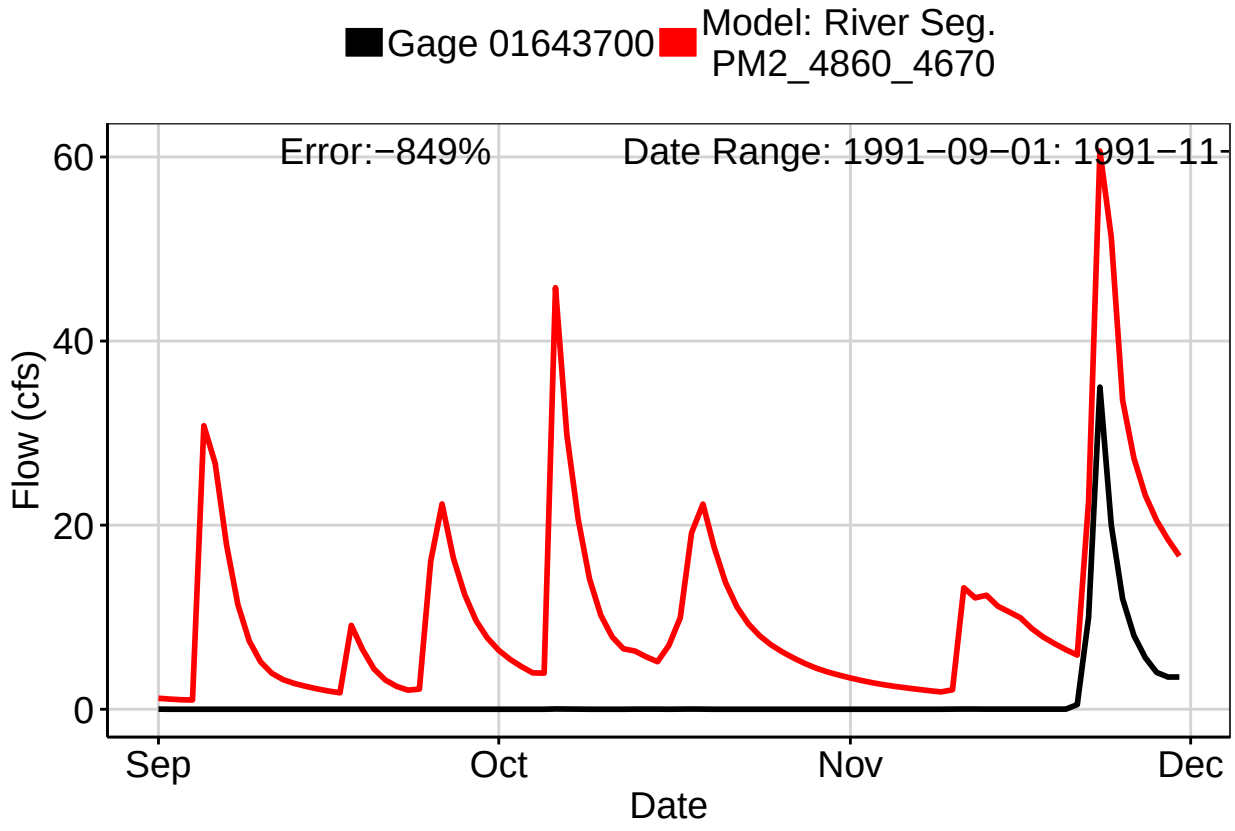


Fig. 9: Residuals Plot