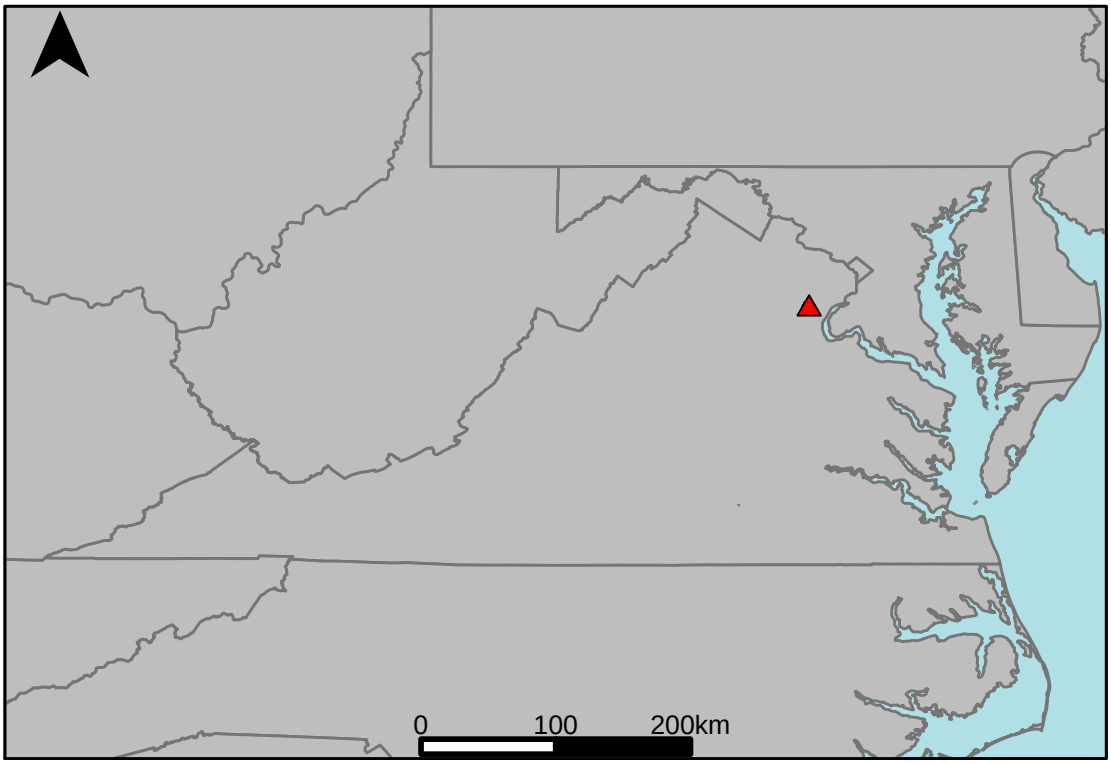
Appendix B.21: USGS Gage 01658500 vs. PL0_5540_5490 Lower Potomac River



This river segment follows part of the flow of the South Fork of Quantico Creek, a tributary of the Potomac. The gage is located in Prince William County (Lat. 38°35'14.4", Long. -77°25'42.9"), approximately 6 miles west of Dumfries, VA. Drainage area is 7.62 sq. miles. This gage started taking data in 1951 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 1.92%, with 56.7% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	0.5	0.03	-93.7
Feb. Low Flow	1.1	0.75	-32.2
Mar. Low Flow	2.2	2.13	-3.18
Apr. Low Flow	2.4	3.7	54.2
May Low Flow	3.5	4.55	30
Jun. Low Flow	3.3	3.28	-0.61
Jul. Low Flow	3.3	1.81	-45.2
Aug. Low Flow	1.7	0.34	-79.7
Sep. Low Flow	0.58	0.01	-99.1
Oct. Low Flow	0.31	0	-99.6
Nov. Low Flow	0.14	0	-100
Dec. Low Flow	0.1	0	-100

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	7.31	7.17	-1.92
Jan. Mean Flow	10.7	11.3	5.61
Feb. Mean Flow	12.1	12.8	5.79
Mar. Mean Flow	13.9	14.2	2.16
Apr. Mean Flow	10.7	8.62	-19.4
May Mean Flow	9.36	7.25	-22.5
Jun. Mean Flow	4.51	3.11	-31
Jul. Mean Flow	2.95	1.97	-33.2
Aug. Mean Flow	1.45	2.12	46.2
Sep. Mean Flow	3.73	4.42	18.5
Oct. Mean Flow	3.16	4.06	28.5
Nov. Mean Flow	7.45	7.24	-2.82
Dec. Mean Flow	8.15	9.28	13.9

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	7.2	6.67	-7.36
Feb. High Flow	65	39.3	-39.5
Mar. High Flow	41	25.4	-38
Apr. High Flow	74	51.4	-30.5
May High Flow	38	29.1	-23.4
Jun. High Flow	72	57.5	-20.1
Jul. High Flow	42.7	27.7	-35.1
Aug. High Flow	32	24.4	-23.8
Sep. High Flow	13	7.17	-44.8
Oct. High Flow	10	4.14	-58.6
Nov. High Flow	5.1	4.51	-11.6
Dec. High Flow	8.4	7.21	-14.2

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	0.00	0.00	Inf
Med. 1 Day Min	6.00e-02	0.00	-1.00e+02
Min. 3 Day Min	0.00	0.00	-4.10e+09
Med. 3 Day Min	7.00e-02	0.00	-1.00e+02
Min. 7 Day Min	0.00	0.00	-1.07e+10
Med. 7 Day Min	8.00e-02	0.00	-1.00e+02
Min. 30 Day Min	2.00e-02	0.00	-9.51e+01
Med. 30 Day Min	1.80e-01	7.00e-02	-6.17e+01
Min. 90 Day Min	1.00e-01	1.50e-01	5.09e+01
Med. 90 Day Min	1.07	8.20e-01	-2.36e+01
7Q10	0.00	0.00	1.55e+01
Year of 90-Day Min. Flow	2.00e+03	2.00e+03	1.00e+02
Drought Year Mean	1.29	1.81	4.03e+01
Mean Baseflow	2.35	2.43	3.40

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	549	462	-15.8
Med. 1 Day Max	193	129	-33.2
Max. 3 Day Max	215	173	-19.5
Med. 3 Day Max	92	69.8	-24.1
Max. 7 Day Max	107	91.1	-14.9
Med. 7 Day Max	45.8	43.5	-5.02
Max. 30 Day Max	64	46.8	-26.9
Med. 30 Day Max	20	18.7	-6.5
Max. 90 Day Max	38.9	31.5	-19
Med. 90 Day Max	12.7	13.3	4.72

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	0	0	Inf
5% Non-Exceedance	0.09	0	-99.4
50% Non-Exceedance	2.9	3.17	9.31
95% Non-Exceedance	25	24.5	-2
99% Non-Exceedance	89	75.2	-15.5
Sept. 10% Non-Exceedance	0.04	0	-100

Fig. 1: Hydrograph

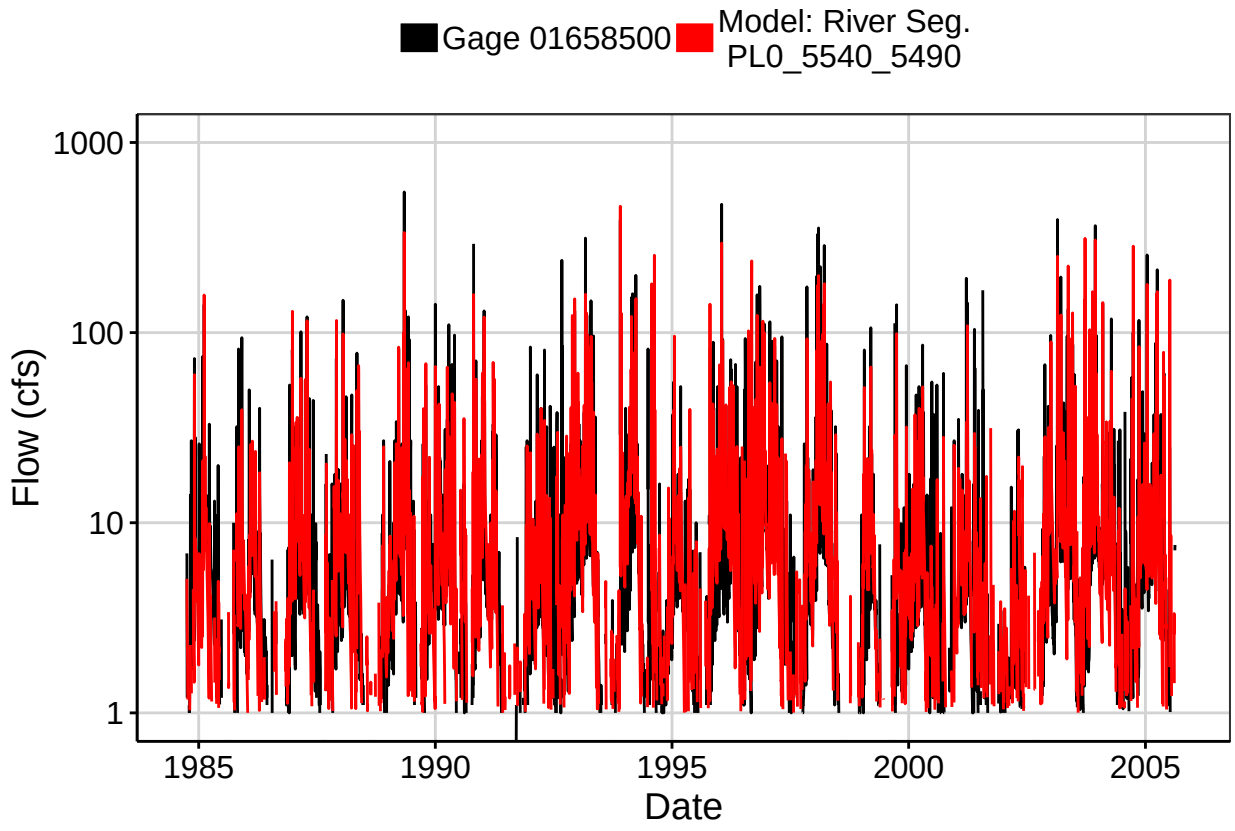


Fig. 2: Zoomed Hydrograph

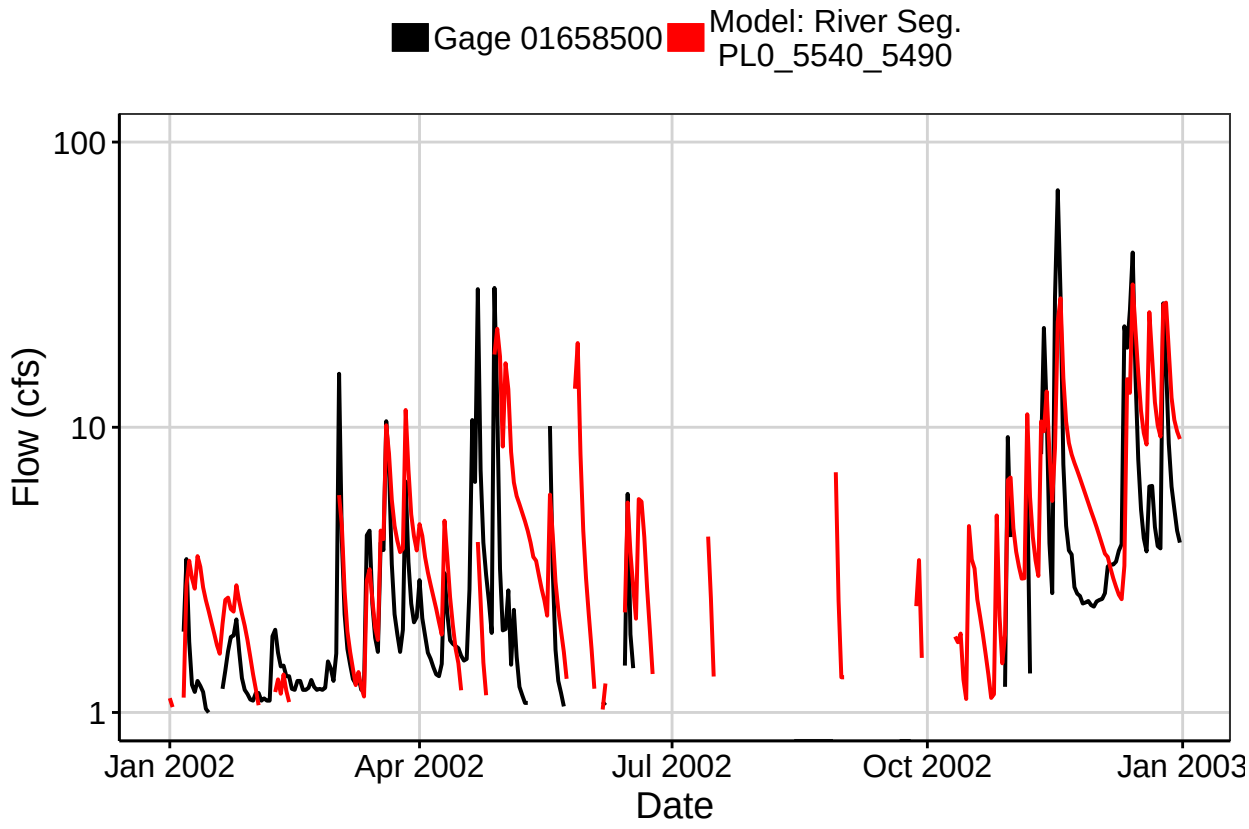


Fig. 3: Flow Exceedance

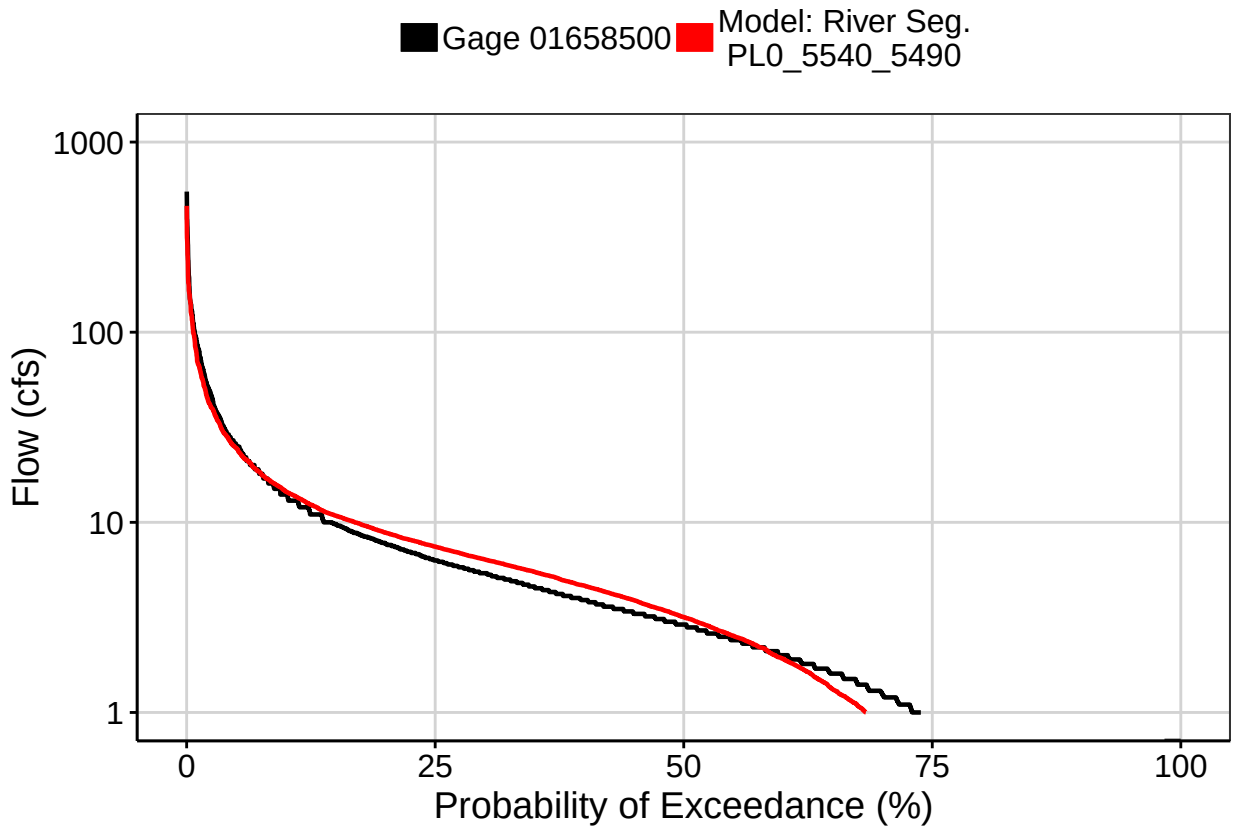


Fig. 4: Baseflow

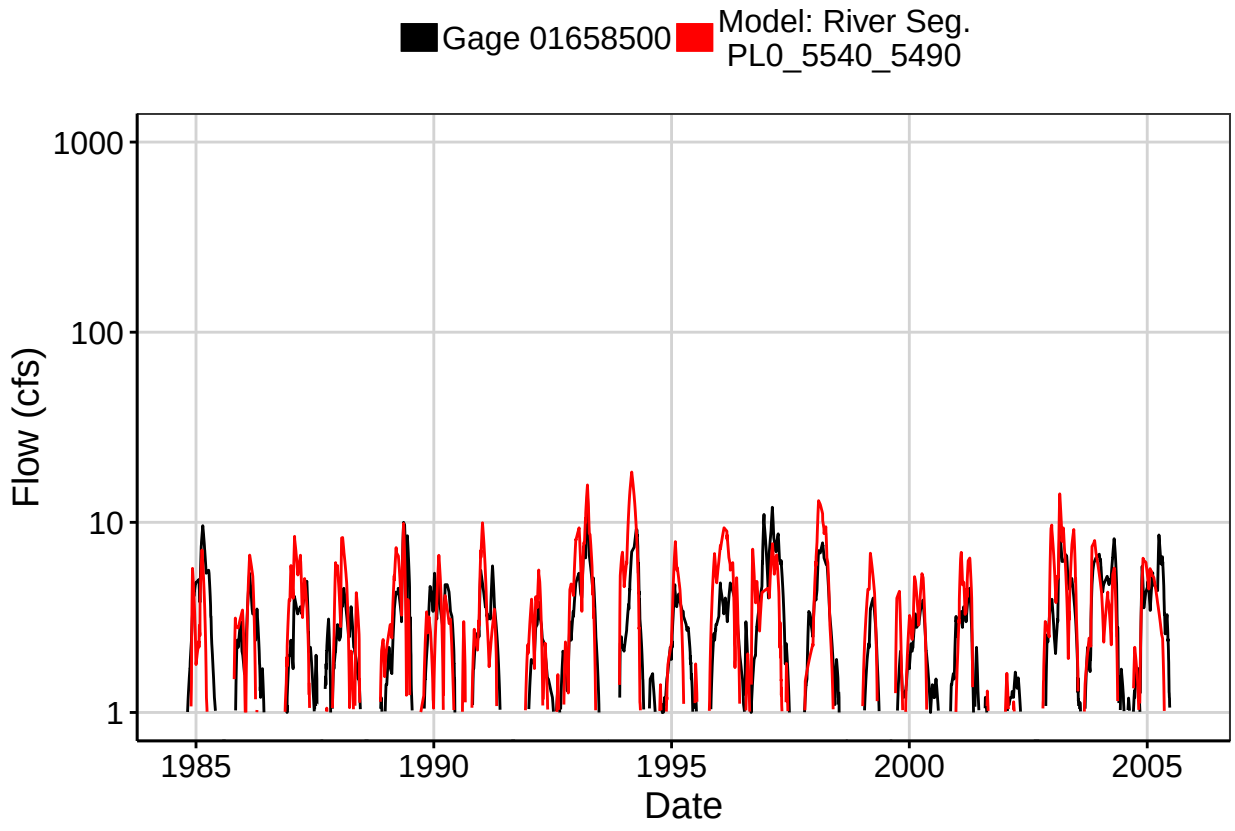


Fig. 5: Combined Baseflow

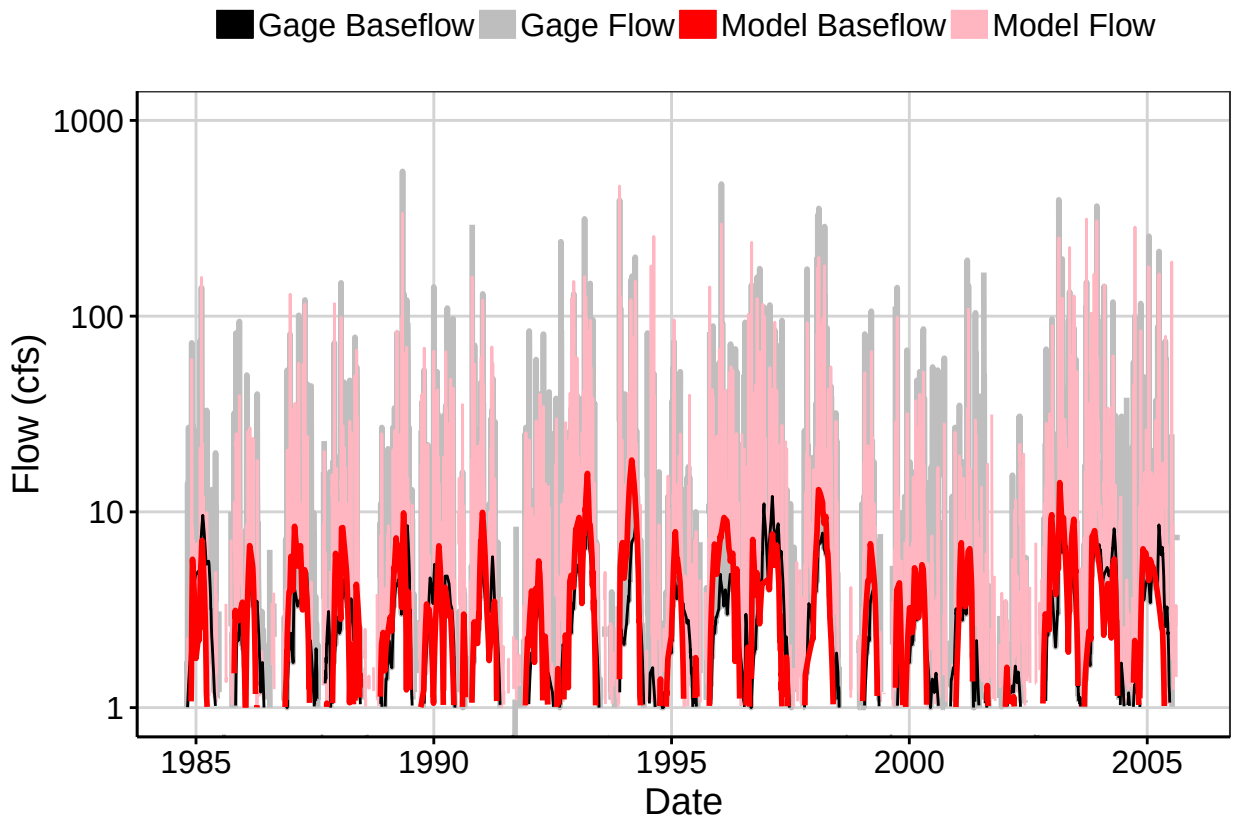


Fig. 6: Largest Error Segment

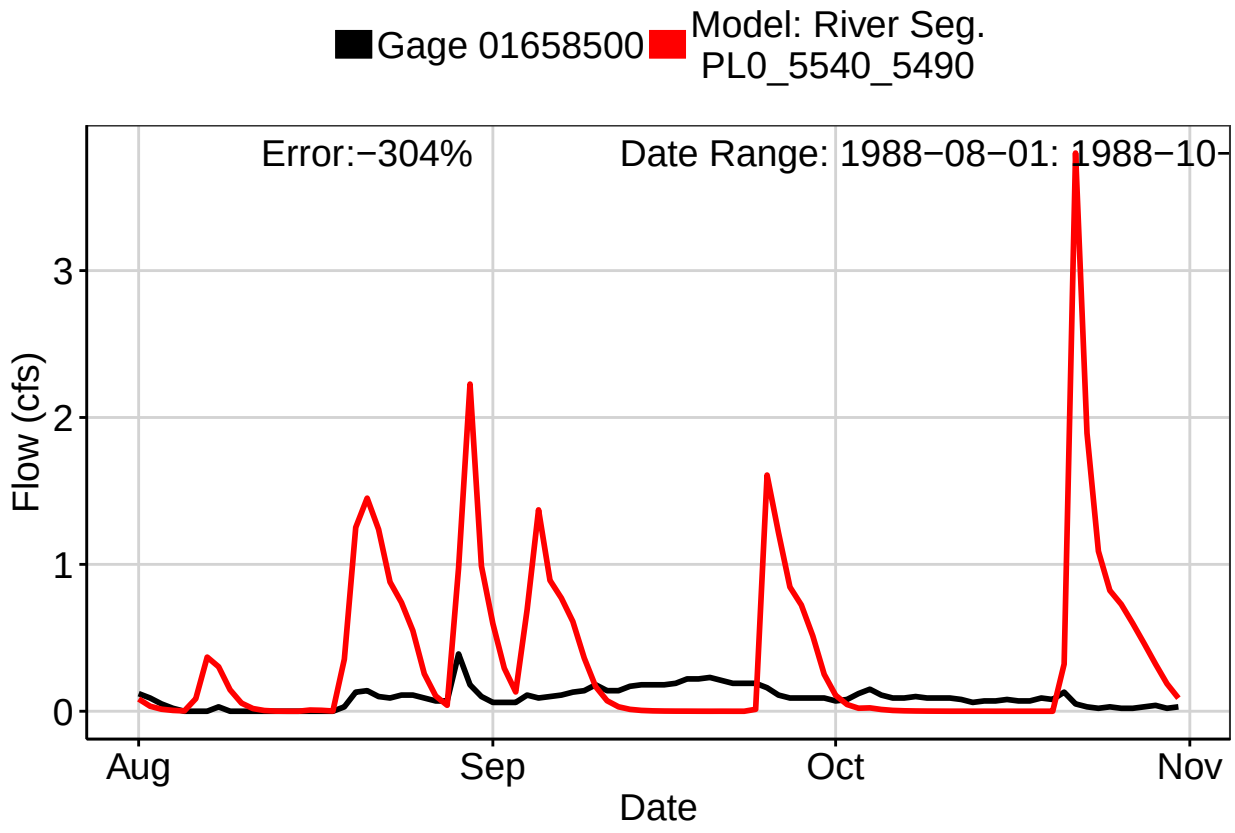


Fig. 7: Second Largest Error Segment

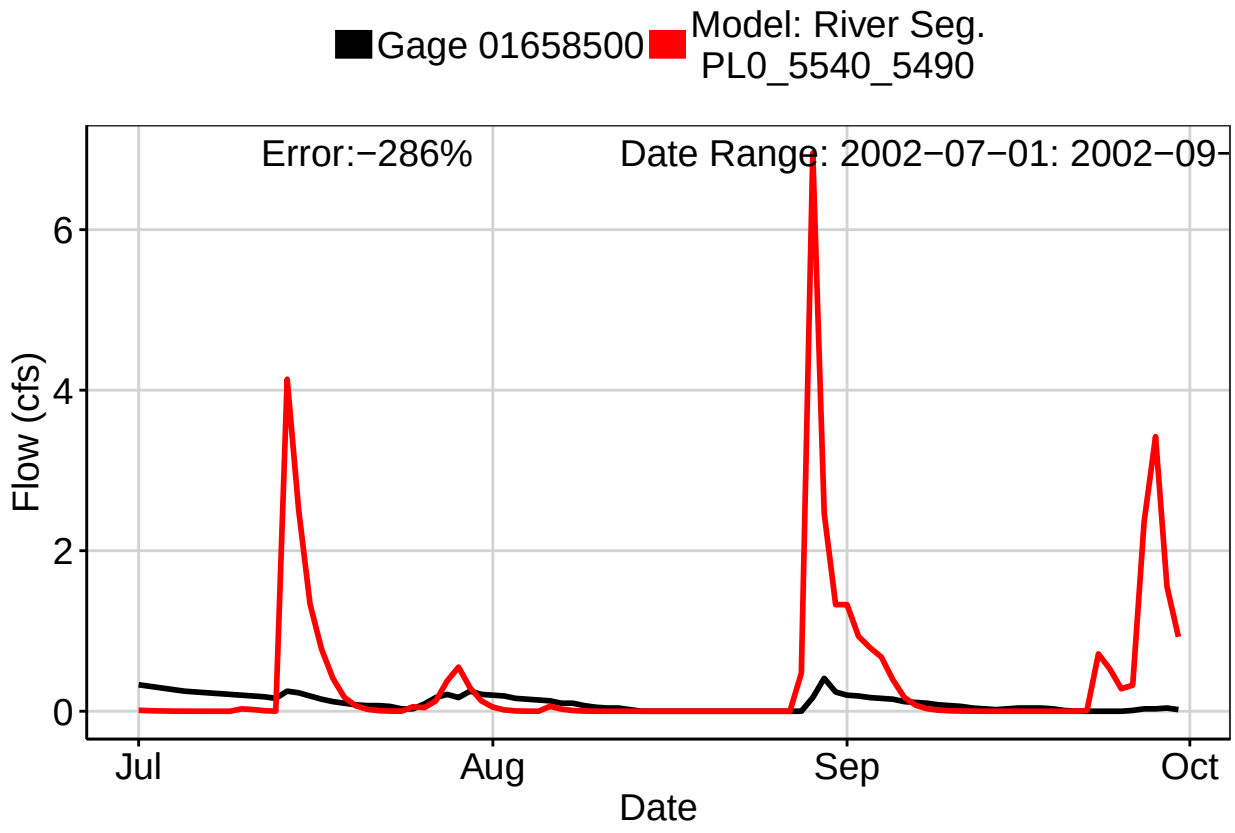


Fig. 8: Third Largest Error Segment

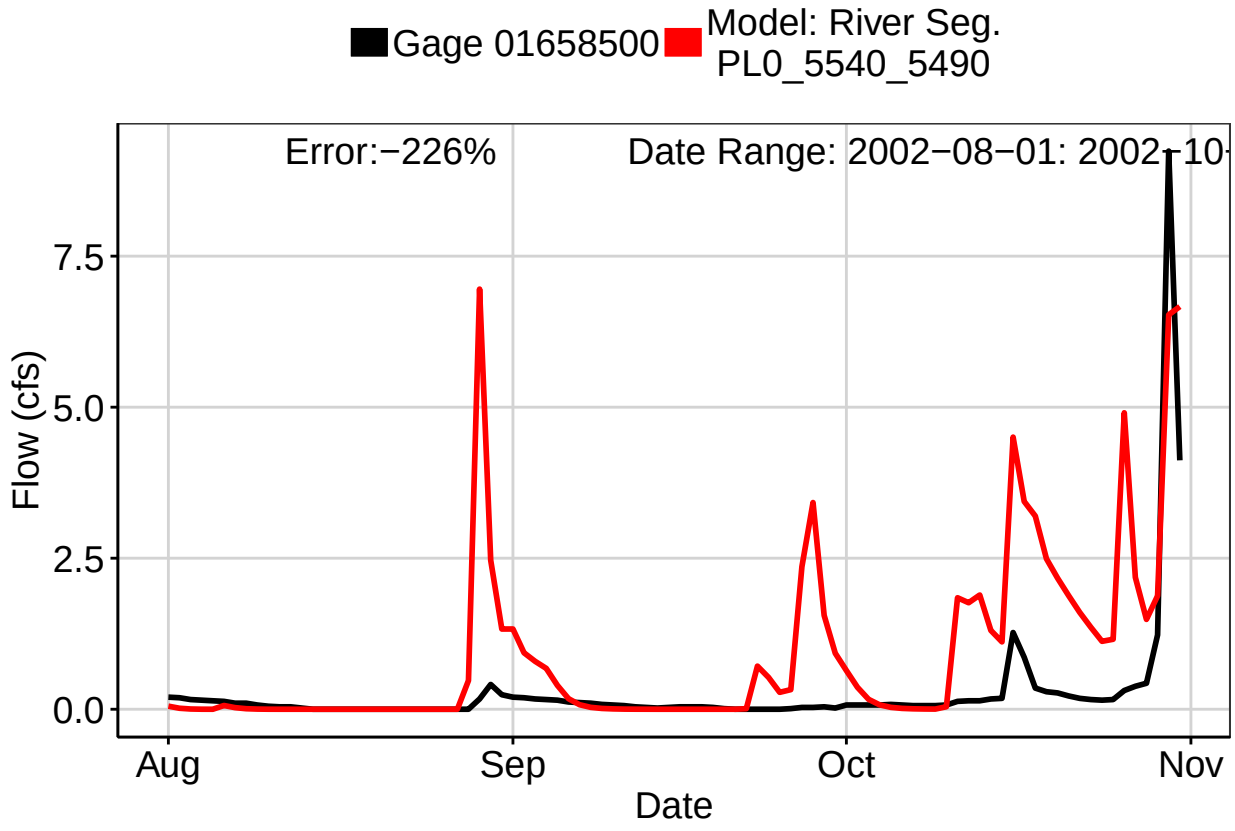


Fig. 9: Residuals Plot