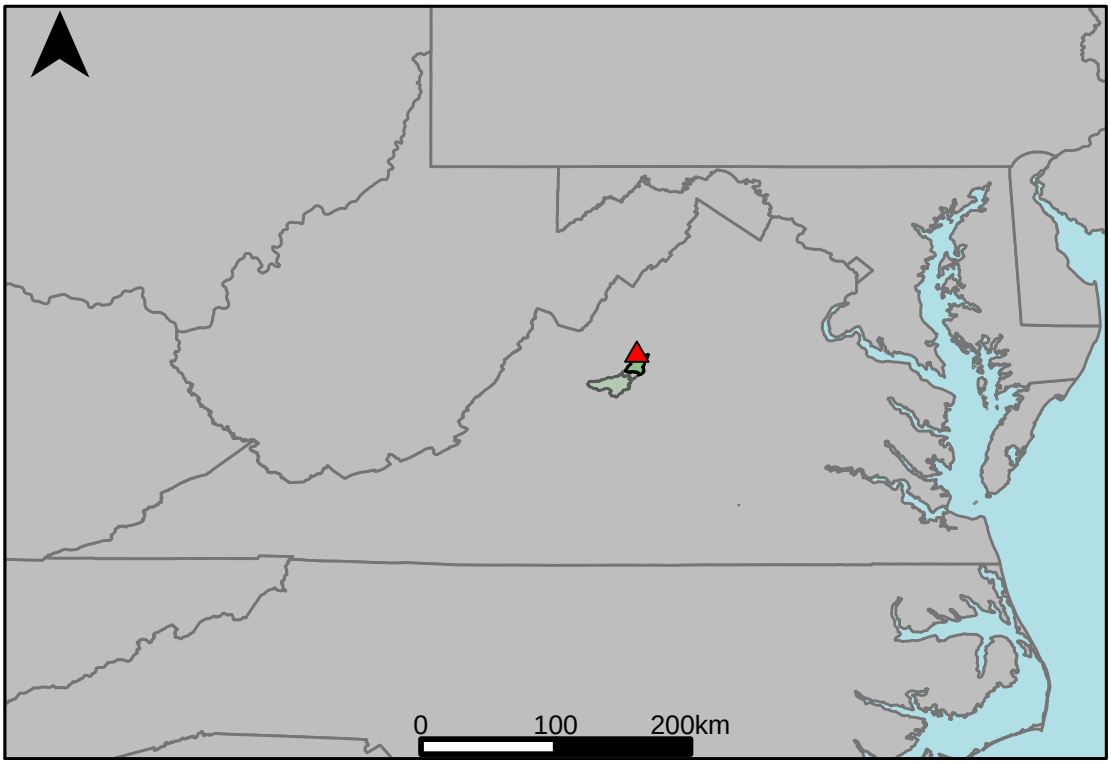
Appendix B.8: USGS Gage 01627500 vs. PS2_6490_6420 Shenandoah River



This river segment follows part of the flow of the South River, a tributary of the Potomac. The gage is located in Augusta County (Lat. 38°13'07.5", Long. -78°50'12.1"), approximately 3.5 miles south of Grottoes, VA. Drainage area is 212 sq. miles. This gage started taking data in 1925 and is still taking data. There are discharges of about 6.0 cfs from wastewater treatment plants upstream. Most of the water discharged from the treatment plants was diverted from another drainage basin for industrial and municipal supply. Small diurnal fluctuation at low flow is caused by upstream mills and irrigation. The average daily discharge error between the model and gage data for the 20 year timespan was -5.19%, with 47.9% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	72	55.3	-23.2
Feb. Low Flow	90	92.1	2.33
Mar. Low Flow	113	140	23.9
Apr. Low Flow	135	173	28.1
May Low Flow	168	189	12.5
Jun. Low Flow	182	208	14.3
Jul. Low Flow	183	166	-9.29
Aug. Low Flow	131	151	15.3
Sep. Low Flow	99	111	12.1
Oct. Low Flow	83	72.8	-12.3
Nov. Low Flow	73	62.1	-14.9
Dec. Low Flow	68	55.1	-19

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	270	284	5.19
Jan. Mean Flow	347	328	-5.48
Feb. Mean Flow	361	396	9.7
Mar. Mean Flow	418	447	6.94
Apr. Mean Flow	397	365	-8.06
May Mean Flow	285	300	5.26
Jun. Mean Flow	204	244	19.6
Jul. Mean Flow	148	190	28.4
Aug. Mean Flow	122	149	22.1
Sep. Mean Flow	255	275	7.84
Oct. Mean Flow	170	190	11.8
Nov. Mean Flow	303	279	-7.92
Dec. Mean Flow	242	257	6.2

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	156	375	140
Feb. High Flow	631	649	2.85
Mar. High Flow	505	429	-15
Apr. High Flow	535	937	75.1
May High Flow	388	415	6.96
Jun. High Flow	934	1040	11.3
Jul. High Flow	860	890	3.49
Aug. High Flow	448	515	15
Sep. High Flow	273	575	111
Oct. High Flow	214	562	163
Nov. High Flow	132	279	111
Dec. High Flow	122	259	112

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	35.1	17.3	-50.7
Med. 1 Day Min	62	40.8	-34.2
Min. 3 Day Min	35.3	18.2	-48.4
Med. 3 Day Min	63.3	42.7	-32.5
Min. 7 Day Min	36.1	19.5	-46
Med. 7 Day Min	64.7	46.2	-28.6
Min. 30 Day Min	37.8	25.9	-31.5
Med. 30 Day Min	69.9	65.7	-6.01
Min. 90 Day Min	41.5	43.7	5.3
Med. 90 Day Min	94.8	118	24.5
7Q10	46.6	26	-44.2
Year of 90-Day Min. Flow	2002	1999	100
Drought Year Mean	69.8	95.9	37.4
Mean Baseflow	153	164	7.19

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	16400	13800	-15.9
Med. 1 Day Max	2410	3490	44.8
Max. 3 Day Max	12100	7340	-39.3
Med. 3 Day Max	2280	2060	-9.65
Max. 7 Day Max	6460	3970	-38.5
Med. 7 Day Max	1400	1560	11.4
Max. 30 Day Max	2150	1350	-37.2
Med. 30 Day Max	758	788	3.96
Max. 90 Day Max	1330	989	-25.6
Med. 90 Day Max	443	458	3.39

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	41.2	27.5	-33.3
5% Non-Exceedance	60	43.8	-27
50% Non-Exceedance	157	191	21.7
95% Non-Exceedance	790	784	-0.76
99% Non-Exceedance	1980	1920	-3.03
Sept. 10% Non-Exceedance	60.9	43.1	-29.2

Fig. 1: Hydrograph

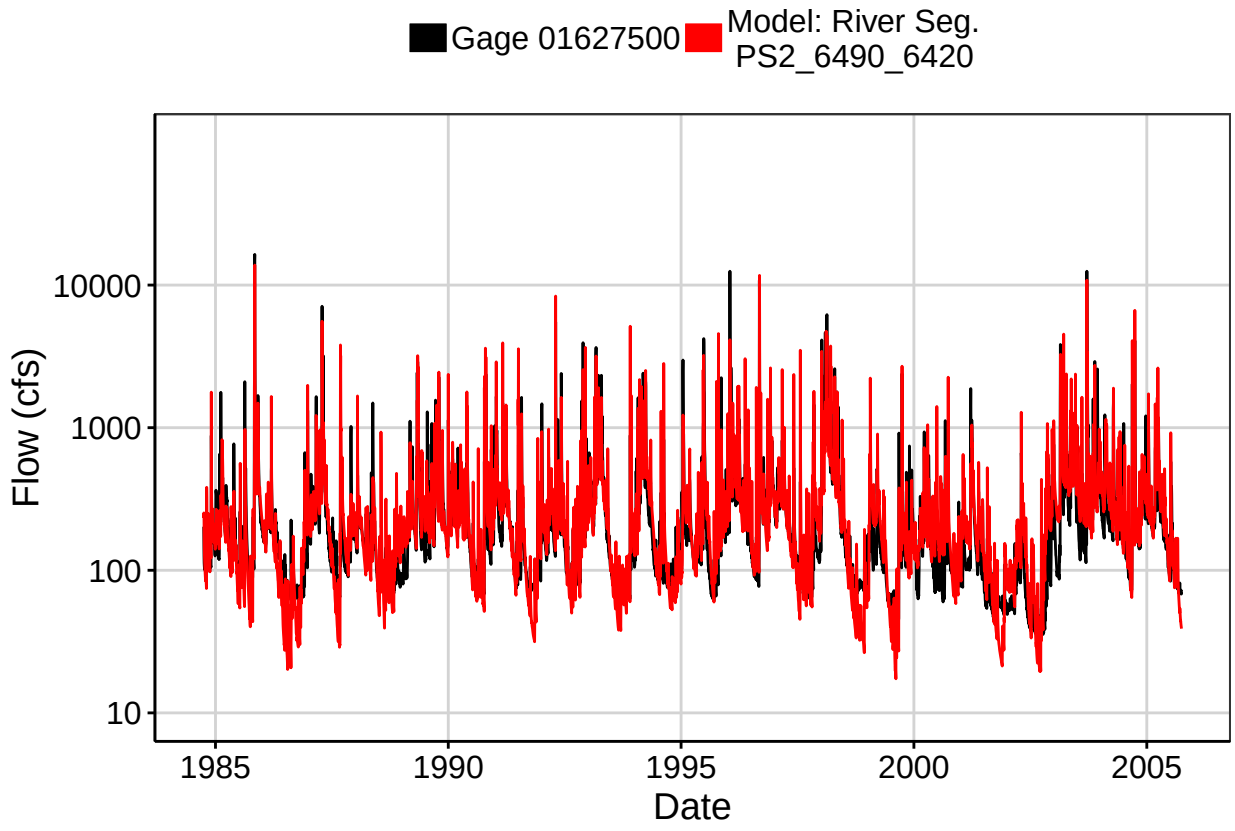


Fig. 2: Zoomed Hydrograph

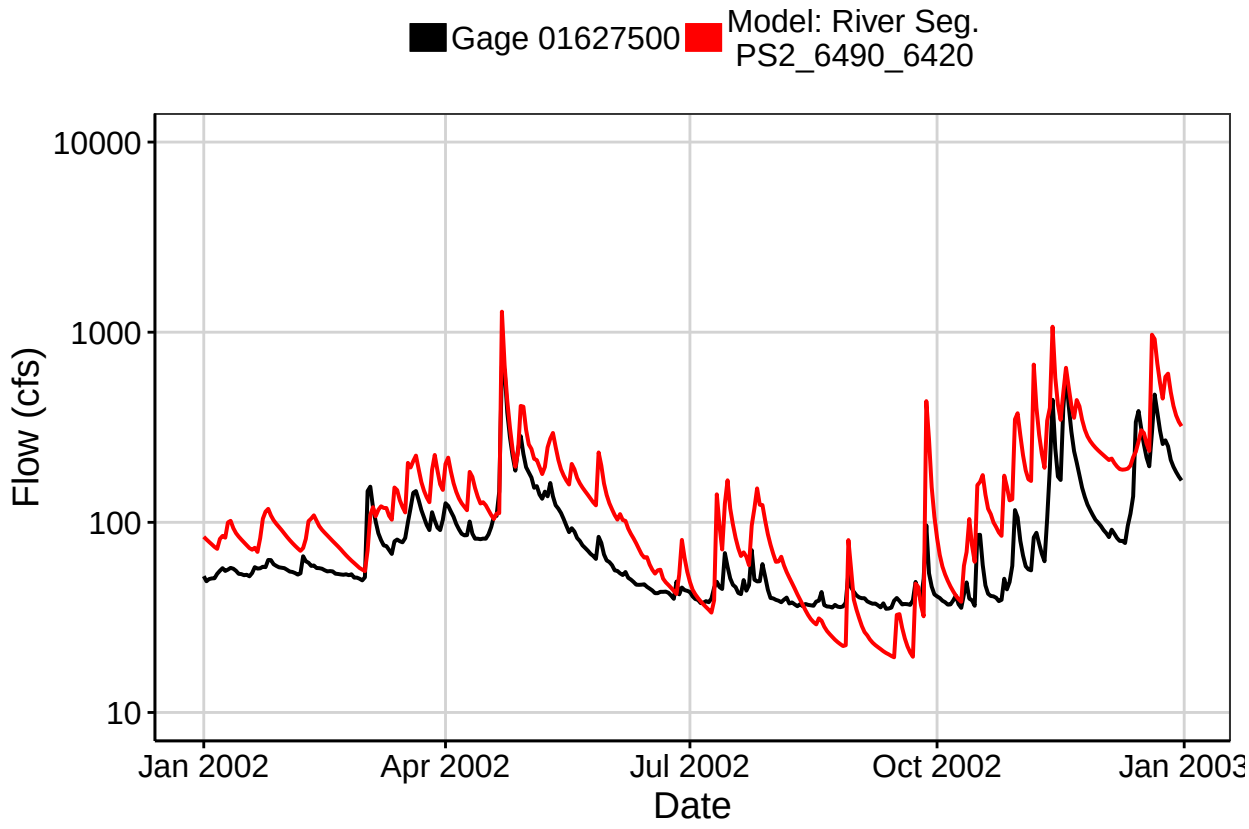


Fig. 3: Flow Exceedance

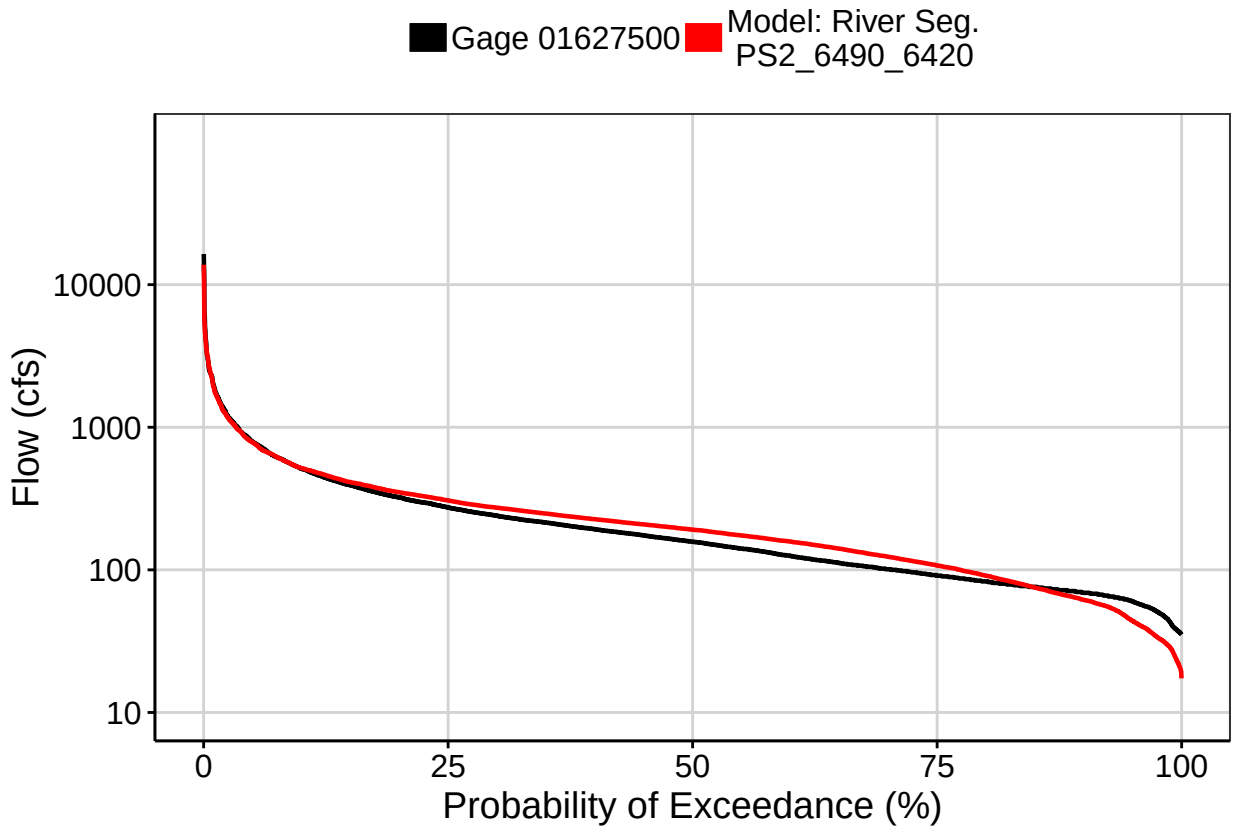


Fig. 4: Baseflow

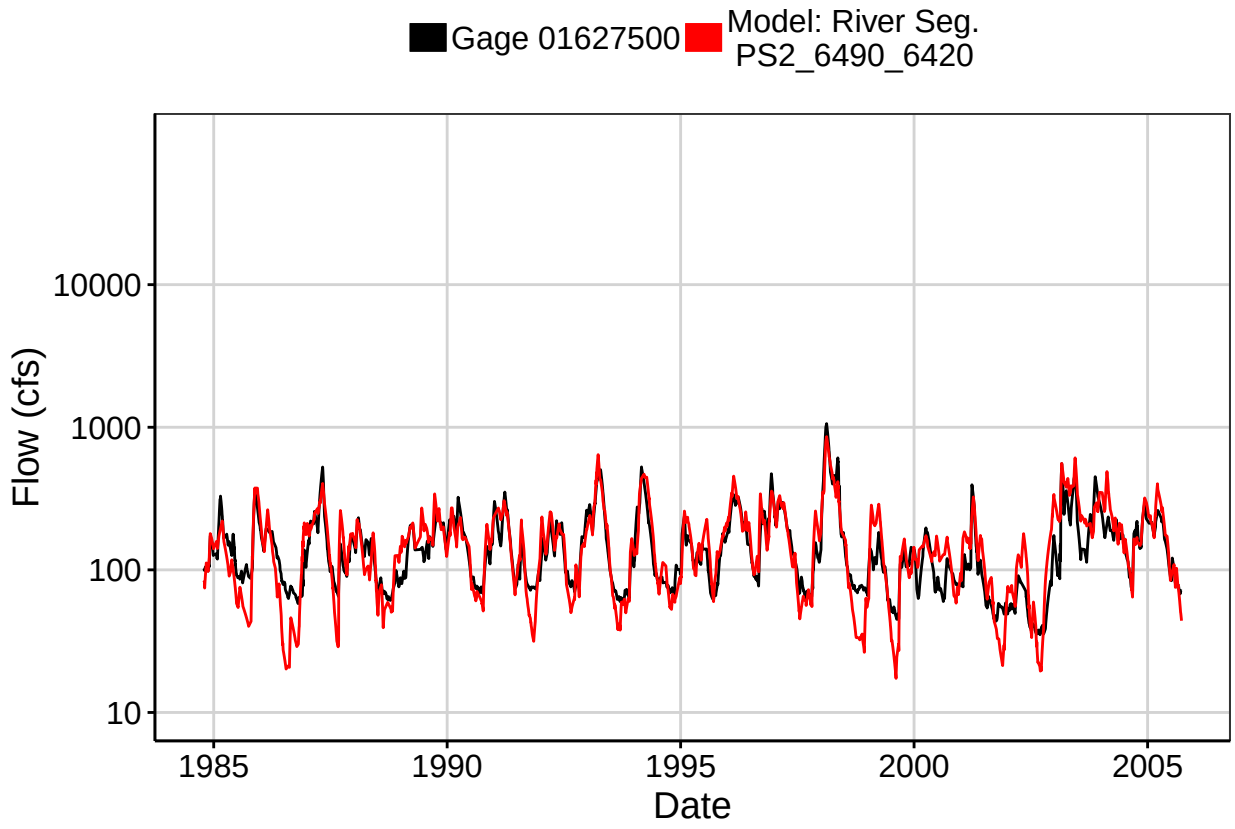


Fig. 5: Combined Baseflow

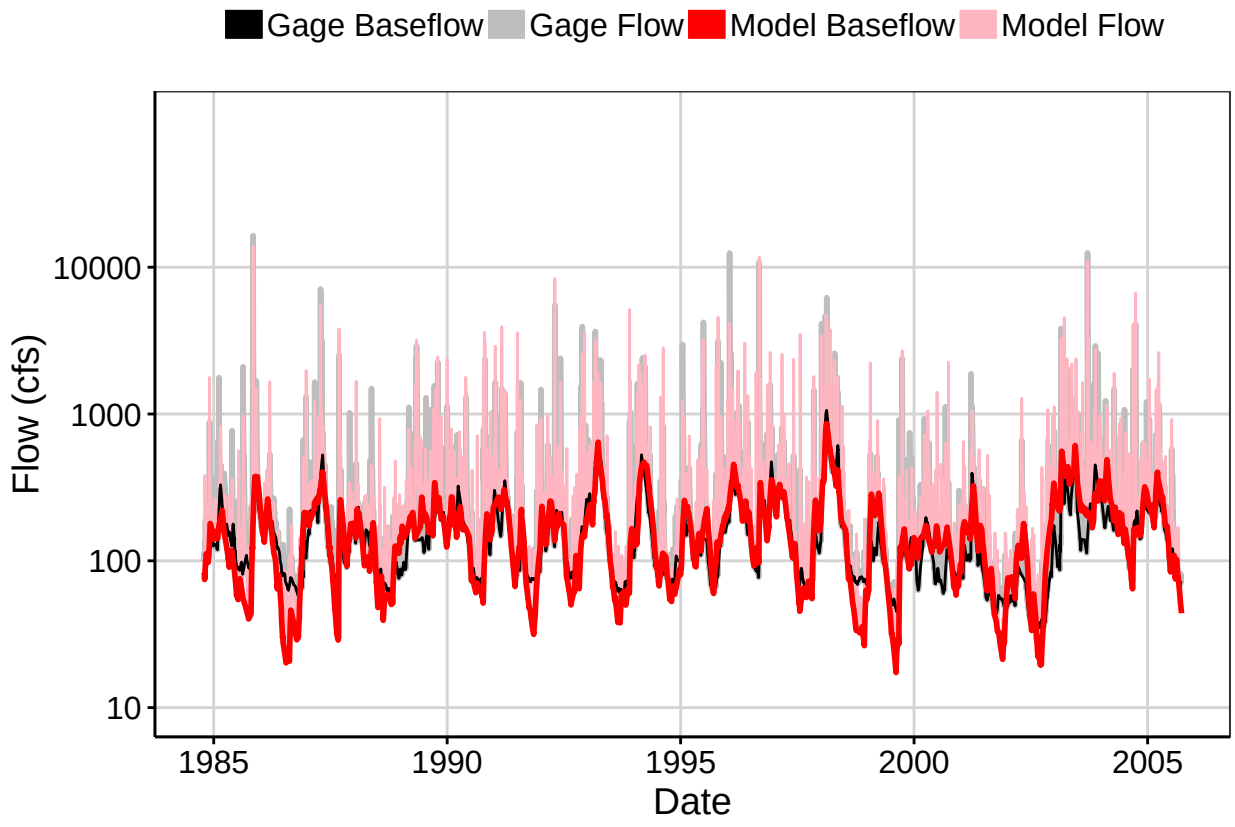


Fig. 6: Largest Error Segment

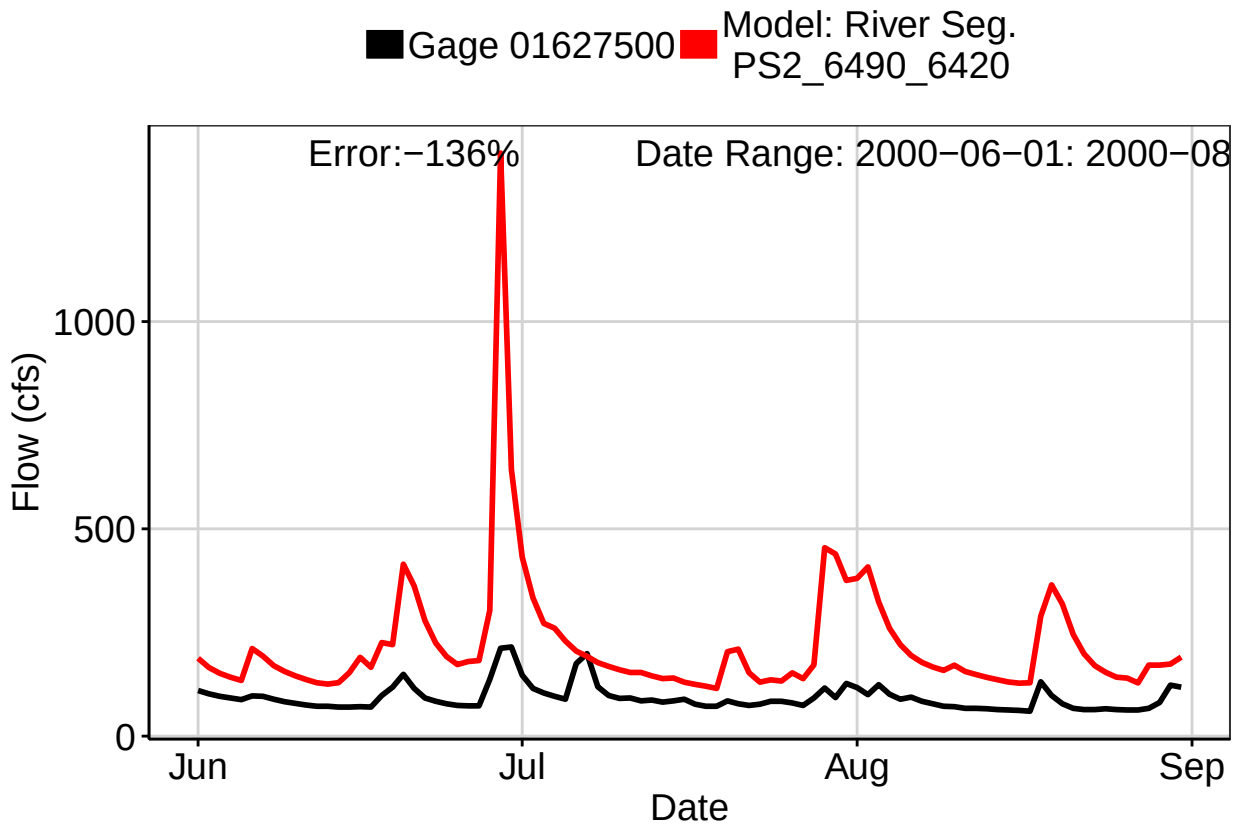


Fig. 7: Second Largest Error Segment

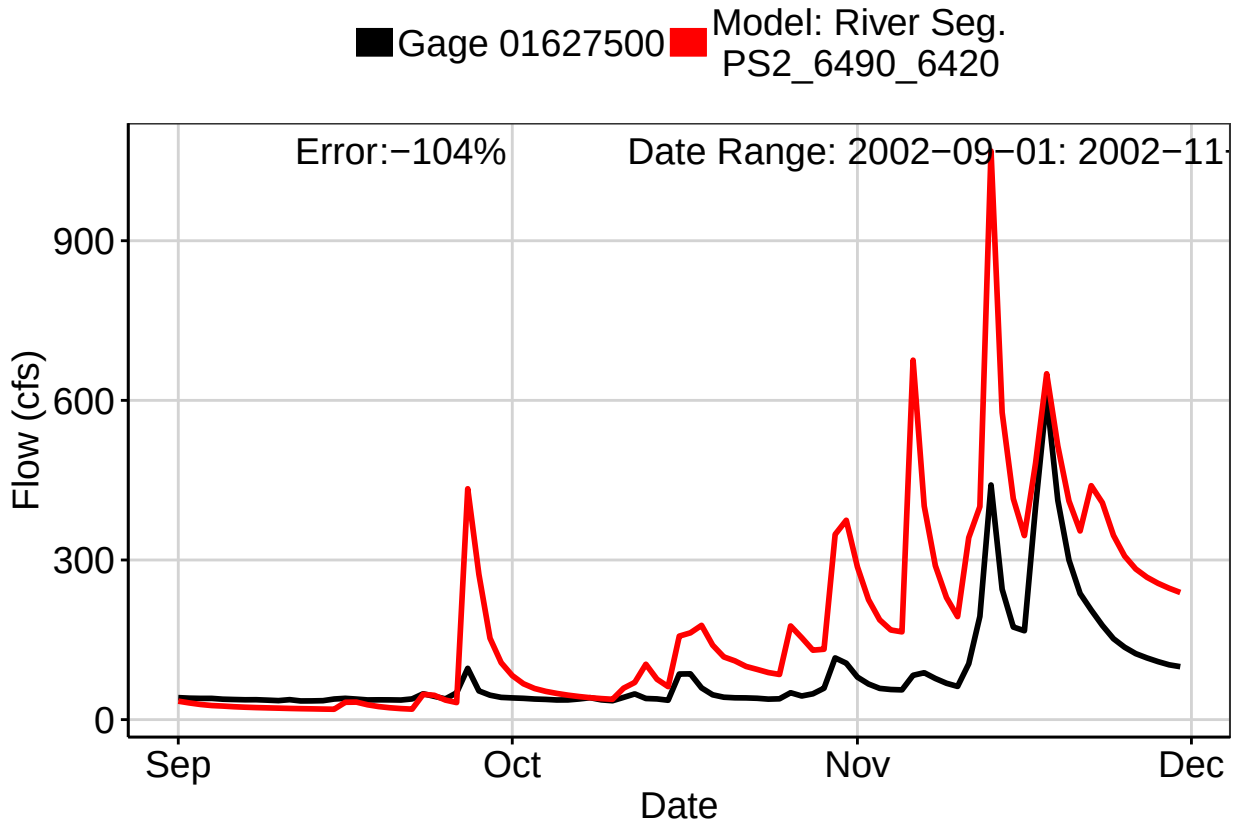


Fig. 8: Third Largest Error Segment

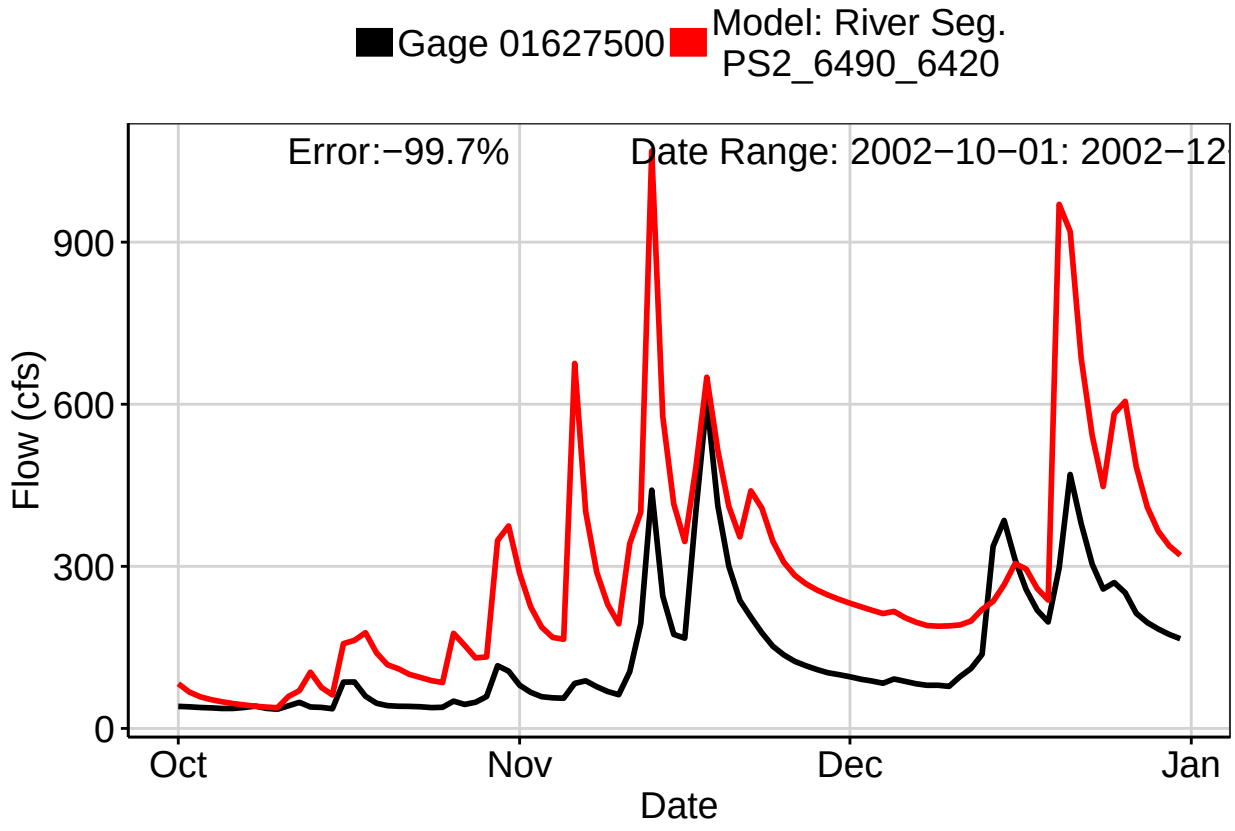


Fig. 9: Residuals Plot