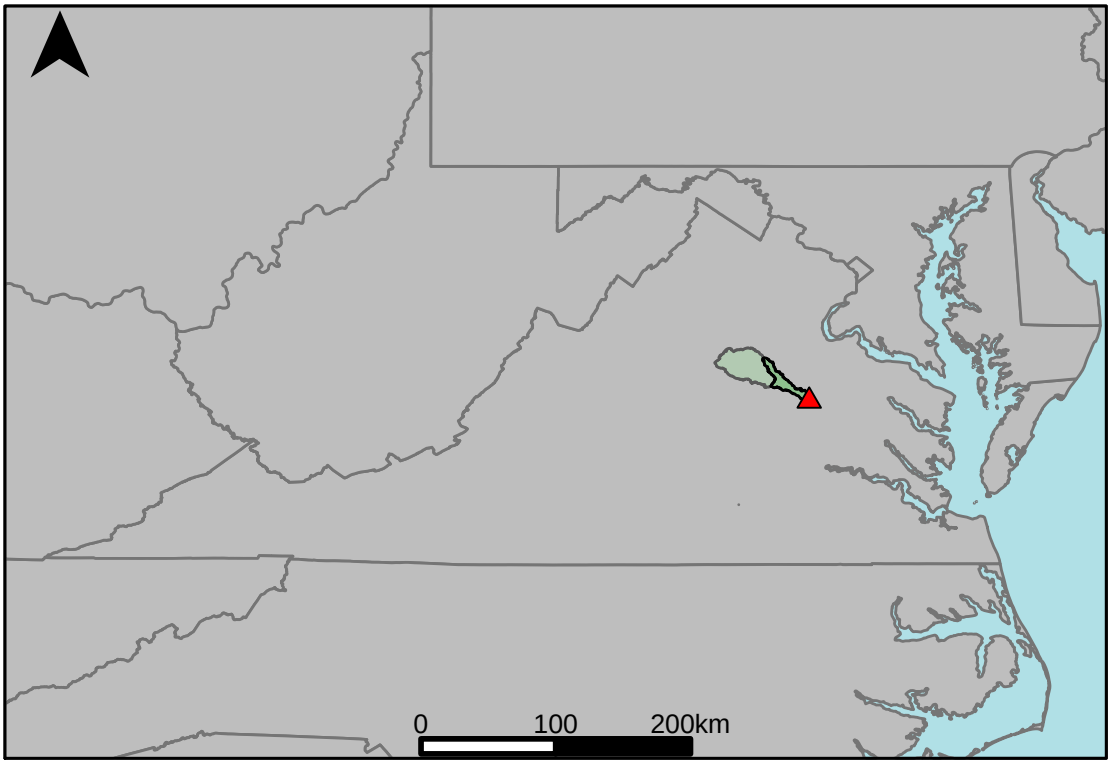
Appendix D.3: USGS Gage 01671020 vs. YP3_6330_6700 Pamunkey River



This river segment follows part of the flow of the North Anna River, a tributary of the York. The gage is located in Caroline County (Lat. 37°51'00.5", Long. -77°25'39.9"), approximately 7 miles northeast of Ashland, VA. Drainage area is 462 sq. miles. This gage started taking data in 1979 and is still taking data. Since 1973 there has been a diversion at a point 0.8 mi upstream. The average daily discharge error between the model and gage data for the 20 year timespan was -2.58%, with 31.7% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	54	56.8	5.19
Feb. Low Flow	68	76	11.8
Mar. Low Flow	79	137	73.4
Apr. Low Flow	144	272	88.9
May Low Flow	181	307	69.6
Jun. Low Flow	220	264	20
Jul. Low Flow	163	254	55.8
Aug. Low Flow	99	124	25.3
Sep. Low Flow	69	83.1	20.4
Oct. Low Flow	58	58.8	1.38
Nov. Low Flow	50	56.8	13.6
Dec. Low Flow	47	54.2	15.3

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	387	397	2.58
Jan. Mean Flow	527	586	11.2
Feb. Mean Flow	659	700	6.22
Mar. Mean Flow	767	808	5.35
Apr. Mean Flow	554	563	1.62
May Mean Flow	430	392	-8.84
Jun. Mean Flow	277	263	-5.05
Jul. Mean Flow	161	190	18
Aug. Mean Flow	141	154	9.22
Sep. Mean Flow	214	253	18.2
Oct. Mean Flow	160	161	0.62
Nov. Mean Flow	357	315	-11.8
Dec. Mean Flow	422	402	-4.74

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	214	162	-24.3
Feb. High Flow	1430	404	-71.7
Mar. High Flow	915	559	-38.9
Apr. High Flow	1620	1310	-19.1
May High Flow	1740	1050	-39.7
Jun. High Flow	2730	2070	-24.2
Jul. High Flow	1930	1650	-14.5
Aug. High Flow	976	590	-39.5
Sep. High Flow	723	294	-59.3
Oct. High Flow	243	130	-46.5
Nov. High Flow	224	168	-25
Dec. High Flow	120	83.5	-30.4

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	27	38.6	43
Med. 1 Day Min	43	49.4	14.9
Min. 3 Day Min	30.2	38.6	27.8
Med. 3 Day Min	45	50	11.1
Min. 7 Day Min	32.6	38.8	19
Med. 7 Day Min	47.3	50.9	7.61
Min. 30 Day Min	34.5	40.4	17.1
Med. 30 Day Min	58.2	57.5	-1.2
Min. 90 Day Min	36.4	45.7	25.5
Med. 90 Day Min	80.7	77	-4.58
7Q10	37	41.8	13
Year of 90-Day Min. Flow	2002	2002	0
Drought Year Mean	51.4	59	14.8
Mean Baseflow	158	204	29.1

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	10900	15700	44
Med. 1 Day Max	5620	4810	-14.4
Max. 3 Day Max	9350	10100	8.02
Med. 3 Day Max	4070	4370	7.37
Max. 7 Day Max	5690	7230	27.1
Med. 7 Day Max	2990	2620	-12.4
Max. 30 Day Max	3130	3040	-2.88
Med. 30 Day Max	1240	1110	-10.5
Max. 90 Day Max	2060	2050	-0.48
Med. 90 Day Max	824	780	-5.34

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	36.4	44.5	22.3
5% Non-Exceedance	44	50.8	15.5
50% Non-Exceedance	171	217	26.9
95% Non-Exceedance	1510	1420	-5.96
99% Non-Exceedance	3500	3650	4.29
Sept. 10% Non-Exceedance	41	48	17.1

Fig. 1: Hydrograph

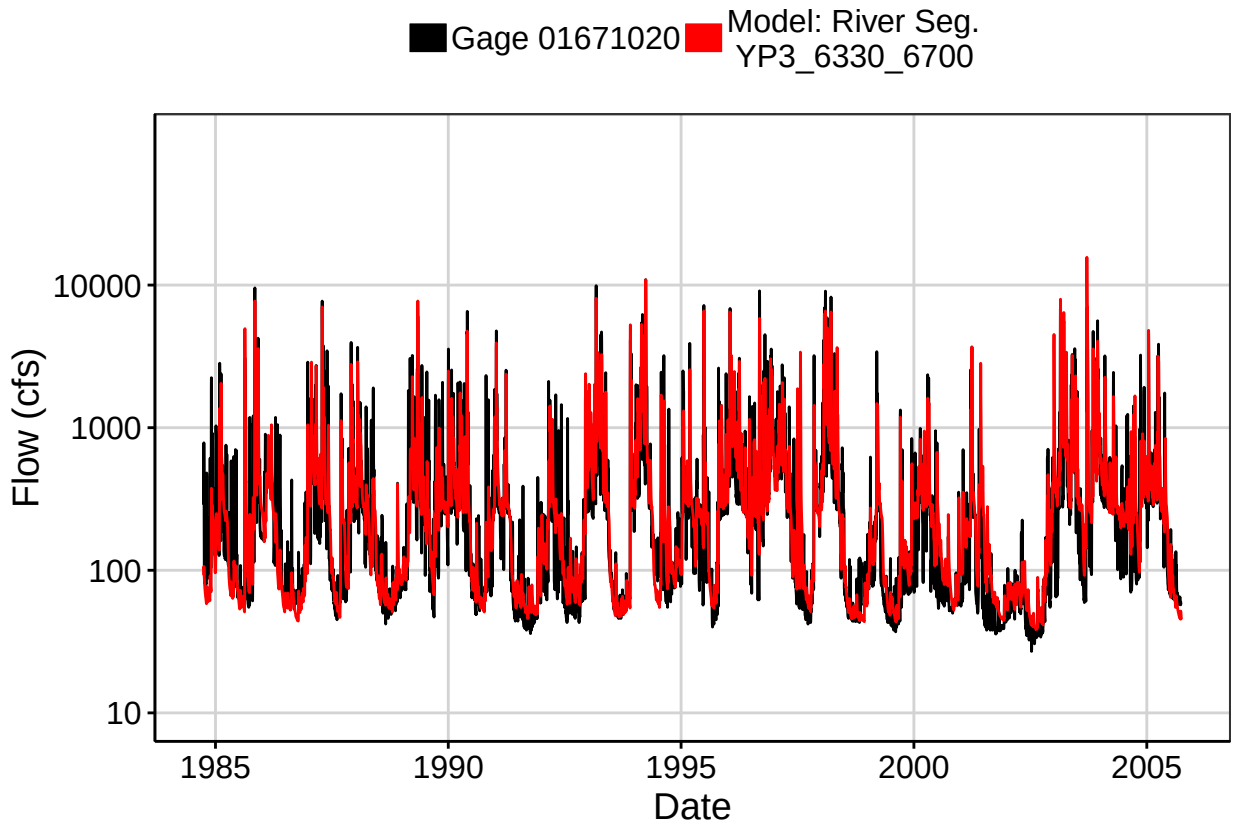


Fig. 2: Zoomed Hydrograph

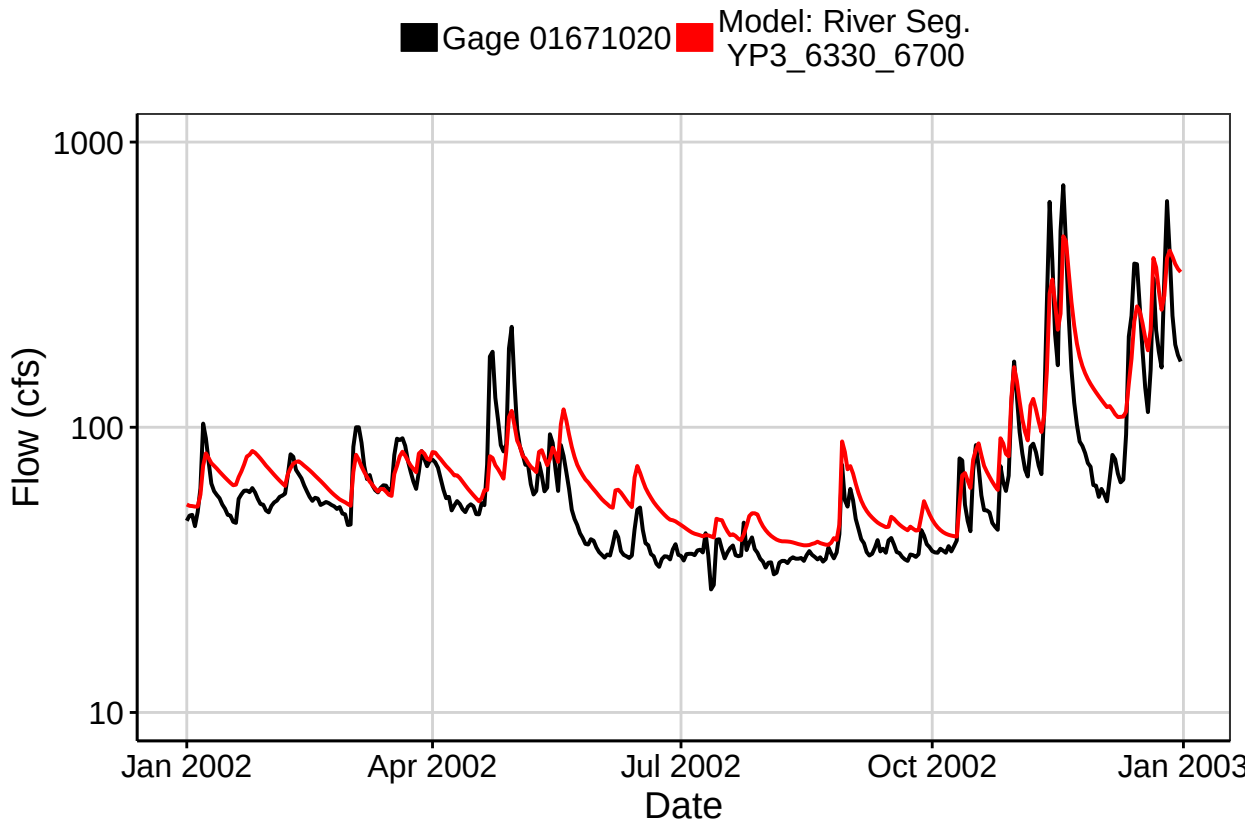


Fig. 3: Flow Exceedance

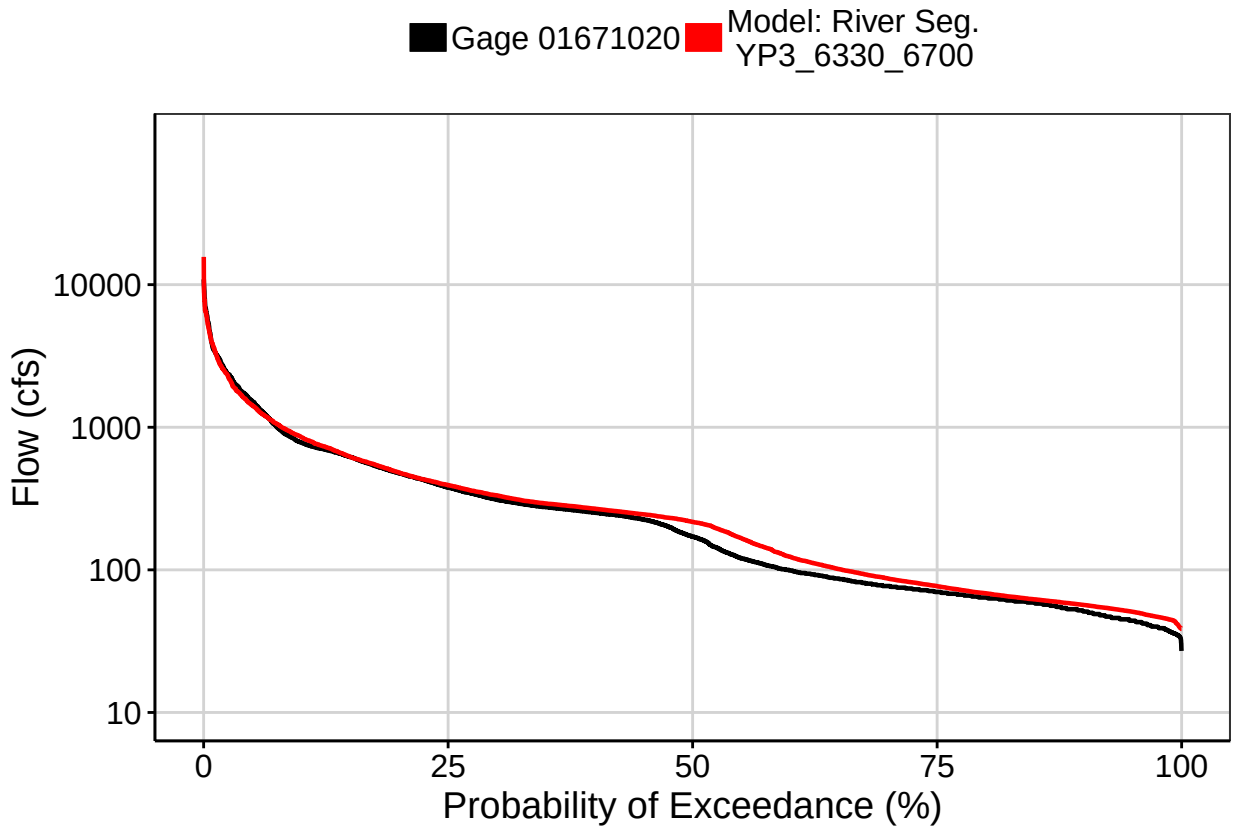


Fig. 4: Baseflow

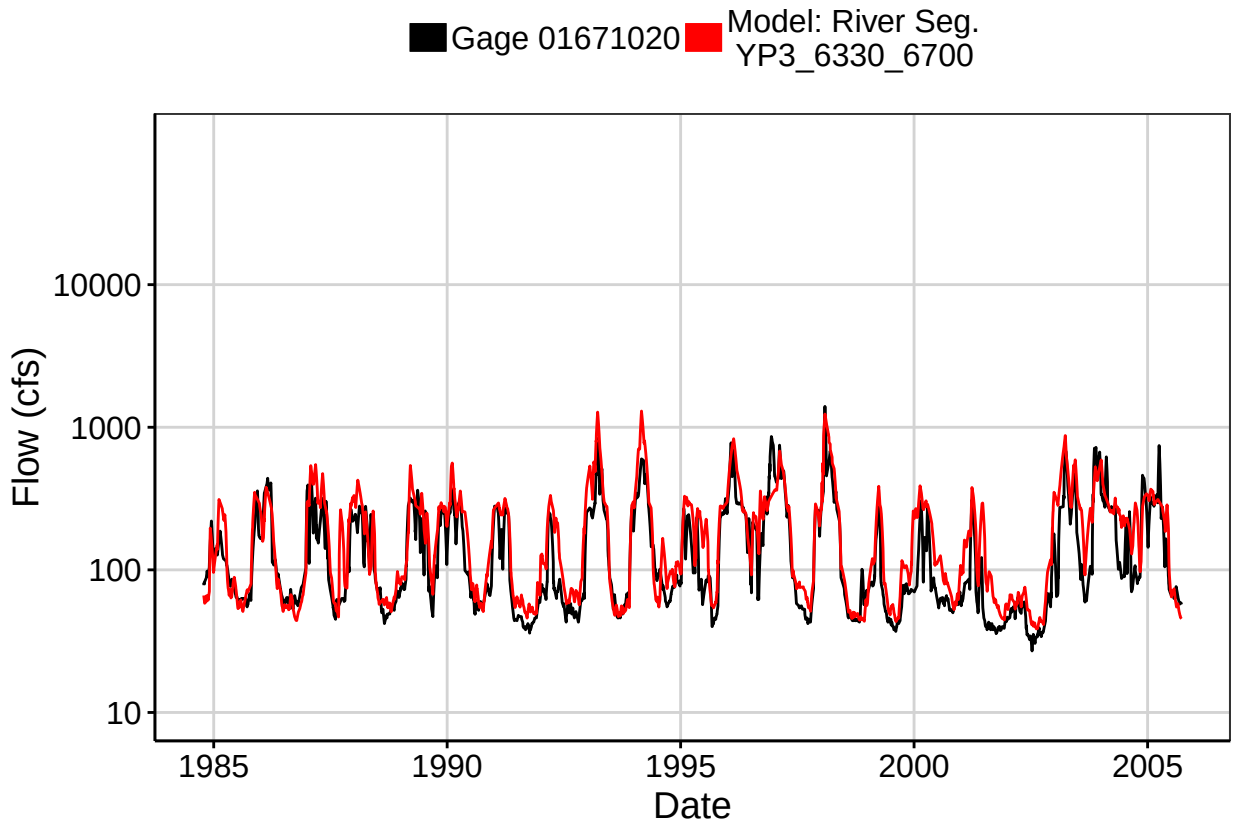


Fig. 5: Combined Baseflow

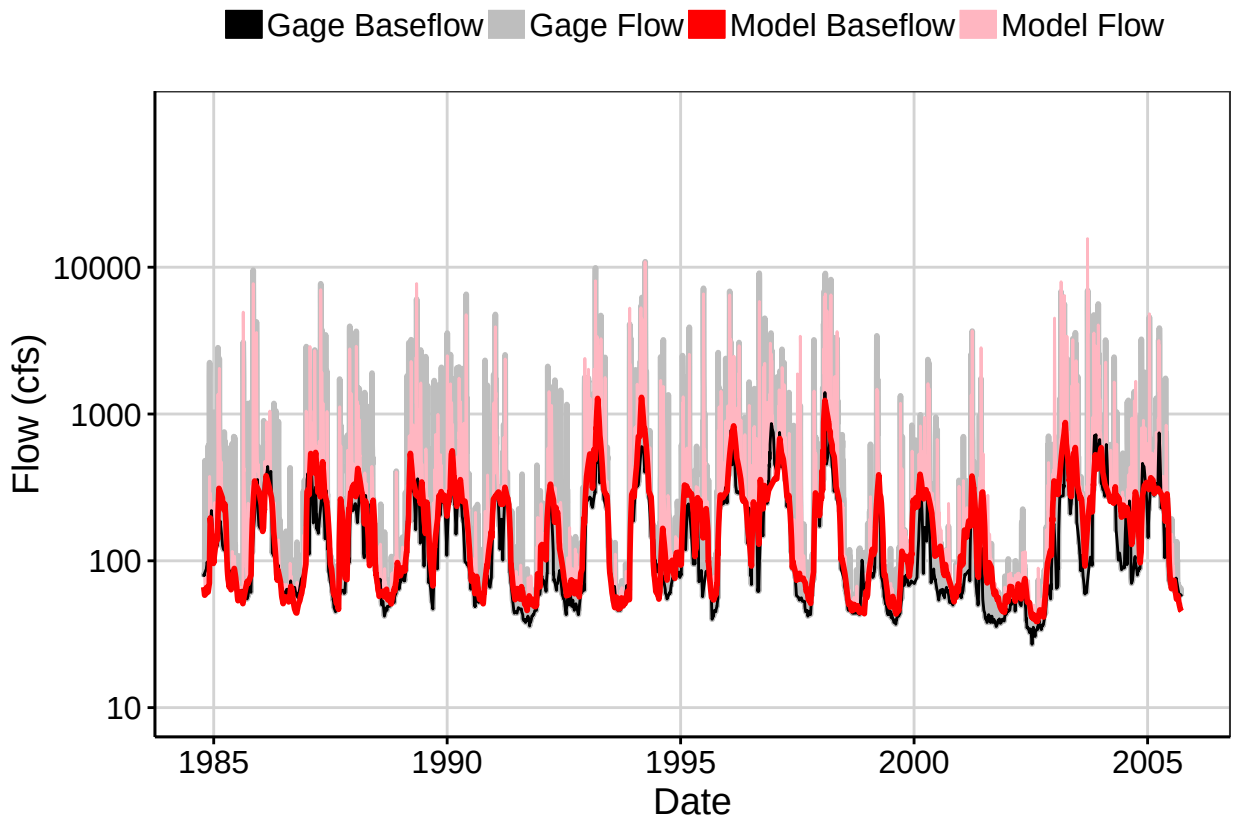


Fig. 6: Largest Error Segment

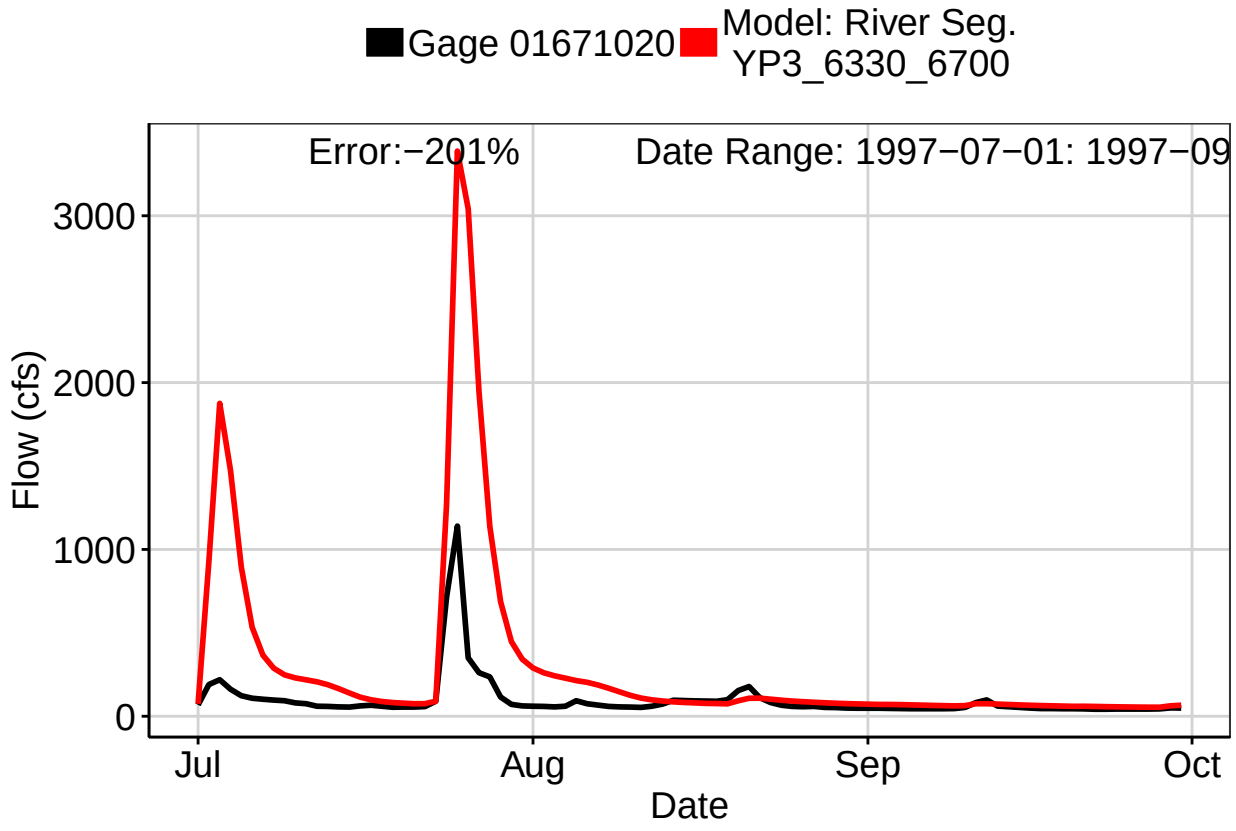


Fig. 7: Second Largest Error Segment

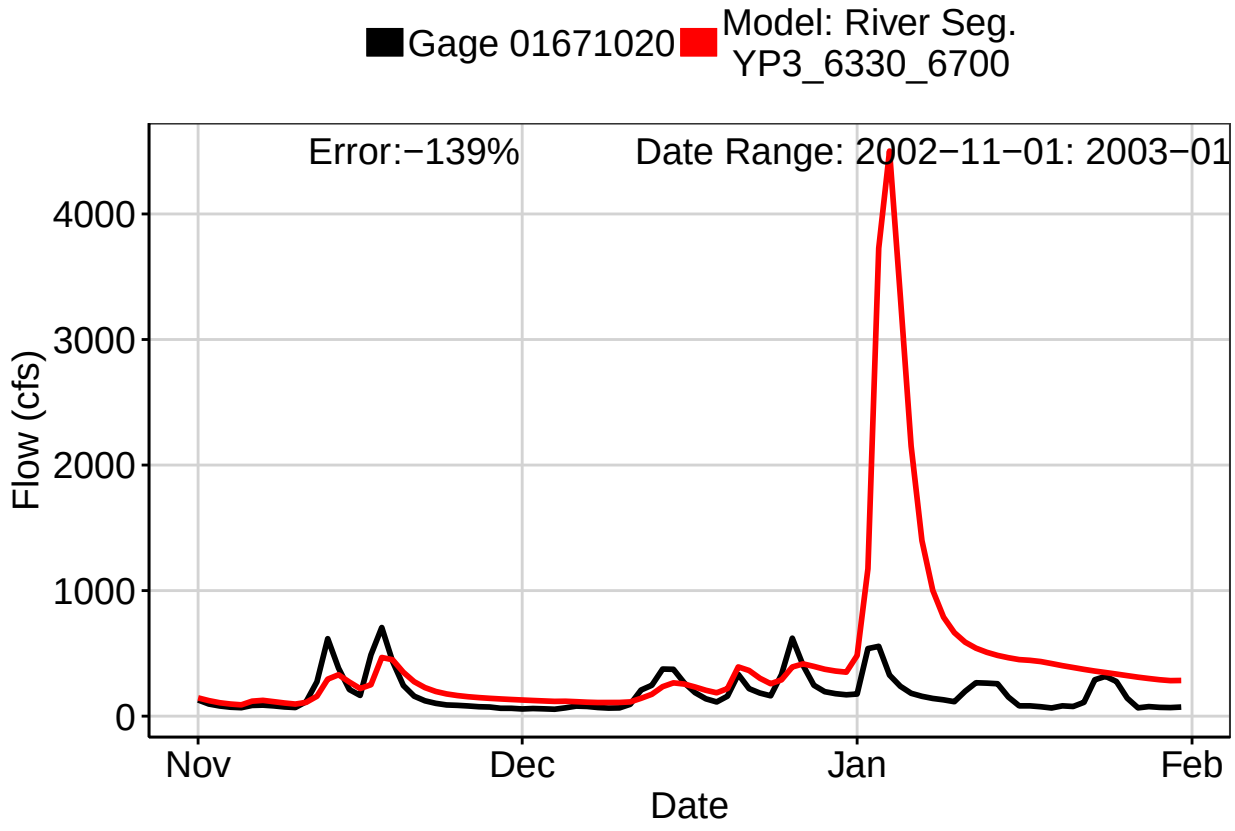


Fig. 8: Third Largest Error Segment

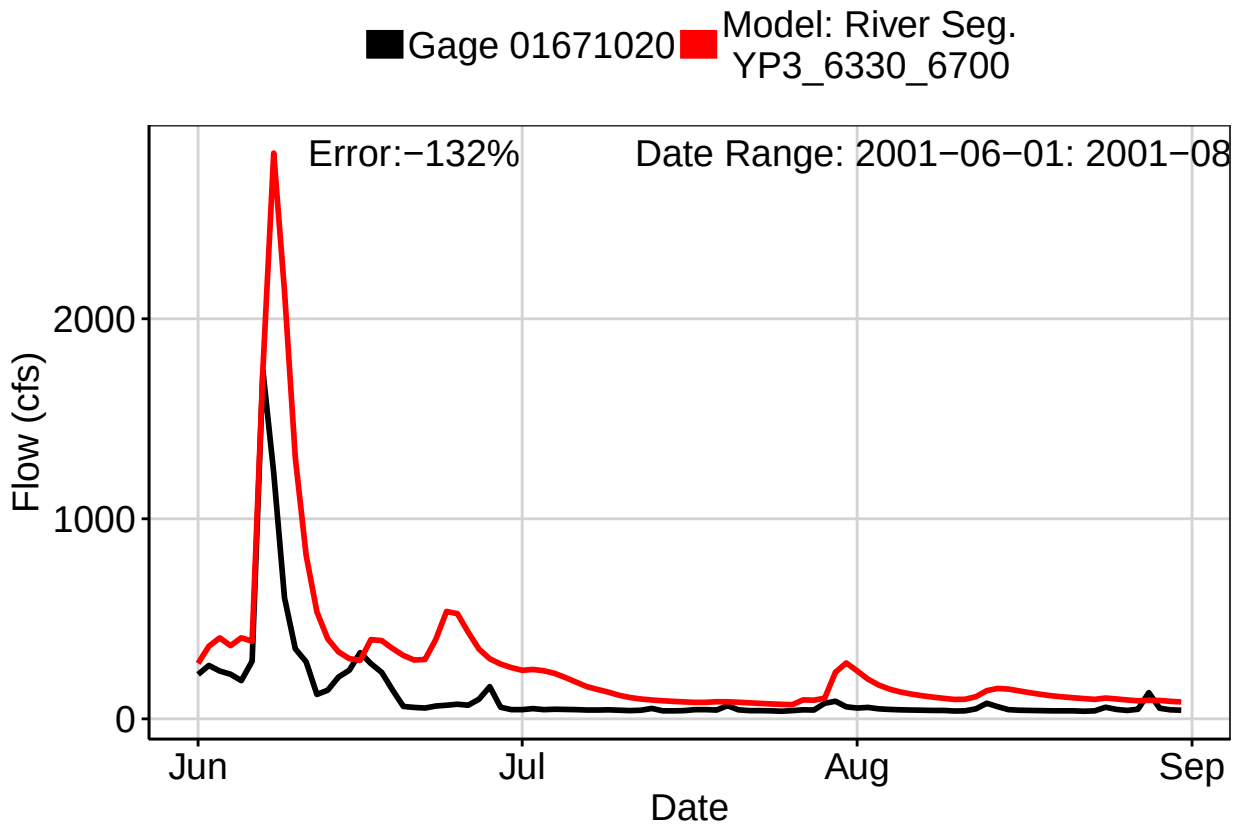


Fig. 9: Residuals Plot