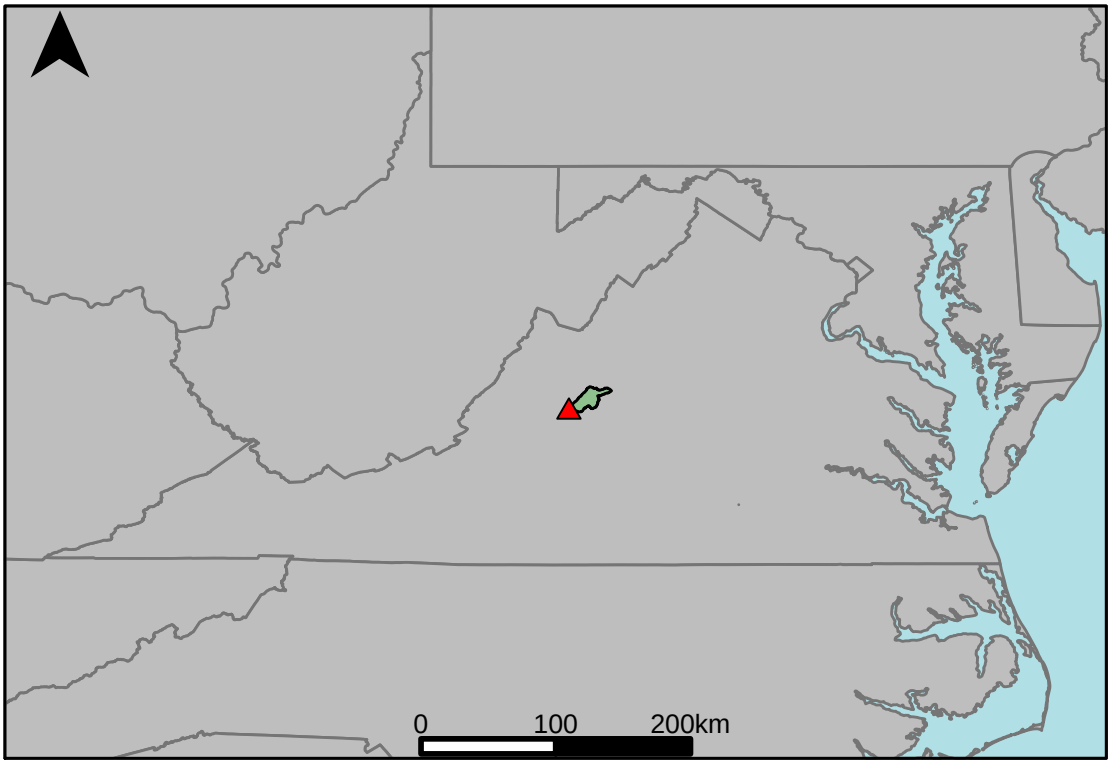
Appendix A.18: USGS Gage 02024000 vs. JU1_6880_7260 Upper James River



This river segment follows part of the flow of the Maury River, a tributary of the James. The gage is located in Rockbridge County (Lat. 37°45'45.5", Long. -79°23'29.1"), approximately 2.8 miles northwest of Buena Vista, VA. Drainage area is 647 sq. miles. This gage started taking data in 1938 and is still taking data. Since 1966, there has been some regulation at times by Lake Merriweather on Little Calfpasture River. The average daily discharge error between the model and gage data for the 20 year timespan was 0.98%, with 30.4% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	116	84	-27.6
Feb. Low Flow	142	156	9.86
Mar. Low Flow	235	283	20.4
Apr. Low Flow	273	354	29.7
May Low Flow	329	502	52.6
Jun. Low Flow	453	513	13.2
Jul. Low Flow	395	432	9.37
Aug. Low Flow	281	357	27
Sep. Low Flow	168	247	47
Oct. Low Flow	136	152	11.8
Nov. Low Flow	110	103	-6.36
Dec. Low Flow	98	82.9	-15.4

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	718	711	-0.98
Jan. Mean Flow	1010	876	-13.3
Feb. Mean Flow	1010	1100	8.91
Mar. Mean Flow	1310	1230	-6.11
Apr. Mean Flow	1120	1070	-4.46
May Mean Flow	837	777	-7.17
Jun. Mean Flow	594	707	19
Jul. Mean Flow	297	351	18.2
Aug. Mean Flow	249	275	10.4
Sep. Mean Flow	460	575	25
Oct. Mean Flow	333	364	9.31
Nov. Mean Flow	670	630	-5.97
Dec. Mean Flow	746	619	-17

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	350	427	22
Feb. High Flow	1500	1690	12.7
Mar. High Flow	2680	1310	-51.1
Apr. High Flow	3080	2100	-31.8
May High Flow	1760	1160	-34.1
Jun. High Flow	4000	6450	61.3
Jul. High Flow	2690	2660	-1.12
Aug. High Flow	2200	1840	-16.4
Sep. High Flow	947	1190	25.7
Oct. High Flow	633	784	23.9
Nov. High Flow	300	414	38
Dec. High Flow	312	331	6.09

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	37.9	18	-52.5
Med. 1 Day Min	82	59.3	-27.7
Min. 3 Day Min	38.4	18.9	-50.8
Med. 3 Day Min	88.3	64	-27.5
Min. 7 Day Min	39.6	20.9	-47.2
Med. 7 Day Min	91.7	70.4	-23.2
Min. 30 Day Min	43.1	27.6	-36
Med. 30 Day Min	118	96.3	-18.4
Min. 90 Day Min	72.6	65.2	-10.2
Med. 90 Day Min	175	197	12.6
7Q10	61.3	30.3	-50.6
Year of 90-Day Min. Flow	2002	2002	0
Drought Year Mean	210	154	-26.7
Mean Baseflow	349	379	8.6

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	41200	36900	-10.4
Med. 1 Day Max	9830	13600	38.4
Max. 3 Day Max	21900	17900	-18.3
Med. 3 Day Max	6610	7770	17.5
Max. 7 Day Max	10800	10800	0
Med. 7 Day Max	4180	4420	5.74
Max. 30 Day Max	3720	3610	-2.96
Med. 30 Day Max	2560	2210	-13.7
Max. 90 Day Max	2820	2690	-4.61
Med. 90 Day Max	1470	1370	-6.8

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	60.9	31	-49.1
5% Non-Exceedance	91	65.2	-28.4
50% Non-Exceedance	360	414	15
95% Non-Exceedance	2420	2130	-12
99% Non-Exceedance	5340	6800	27.3
Sept. 10% Non-Exceedance	84	60.3	-28.2

Fig. 1: Hydrograph

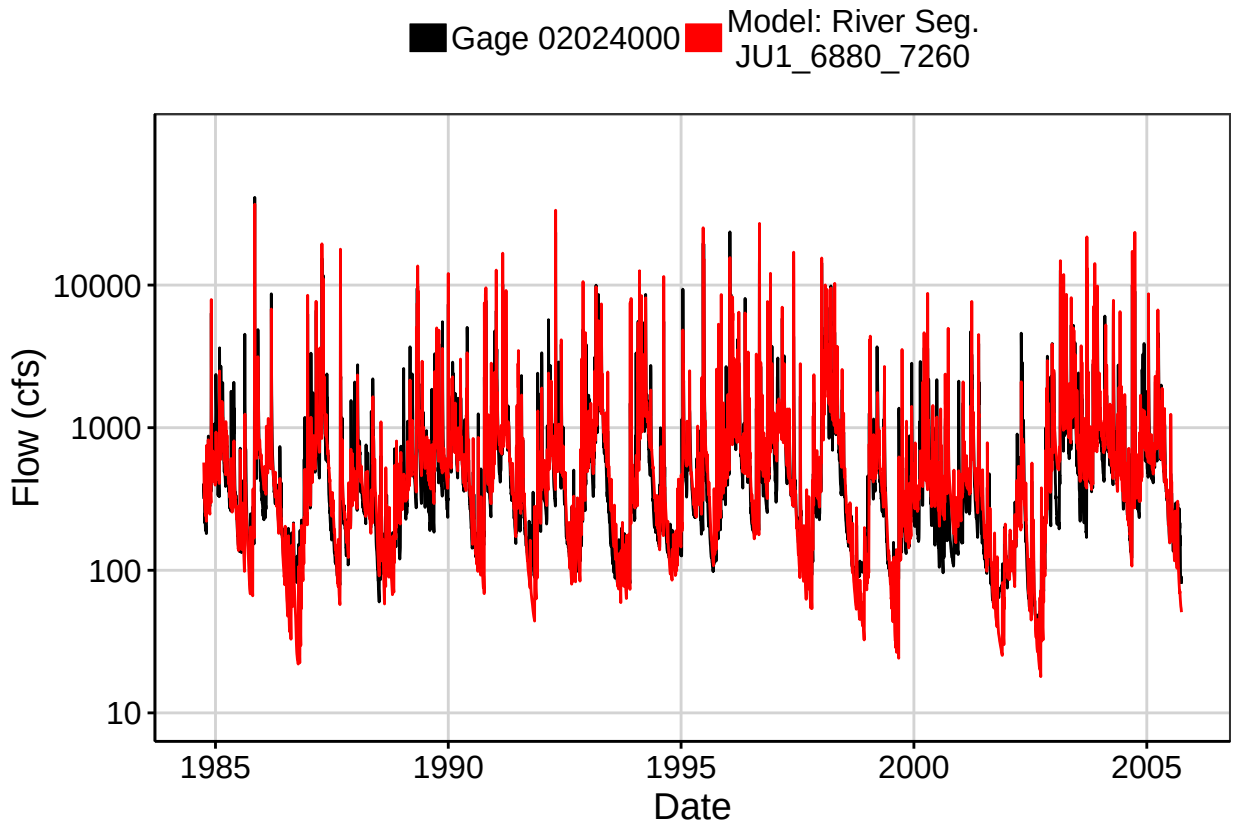


Fig. 2: Zoomed Hydrograph

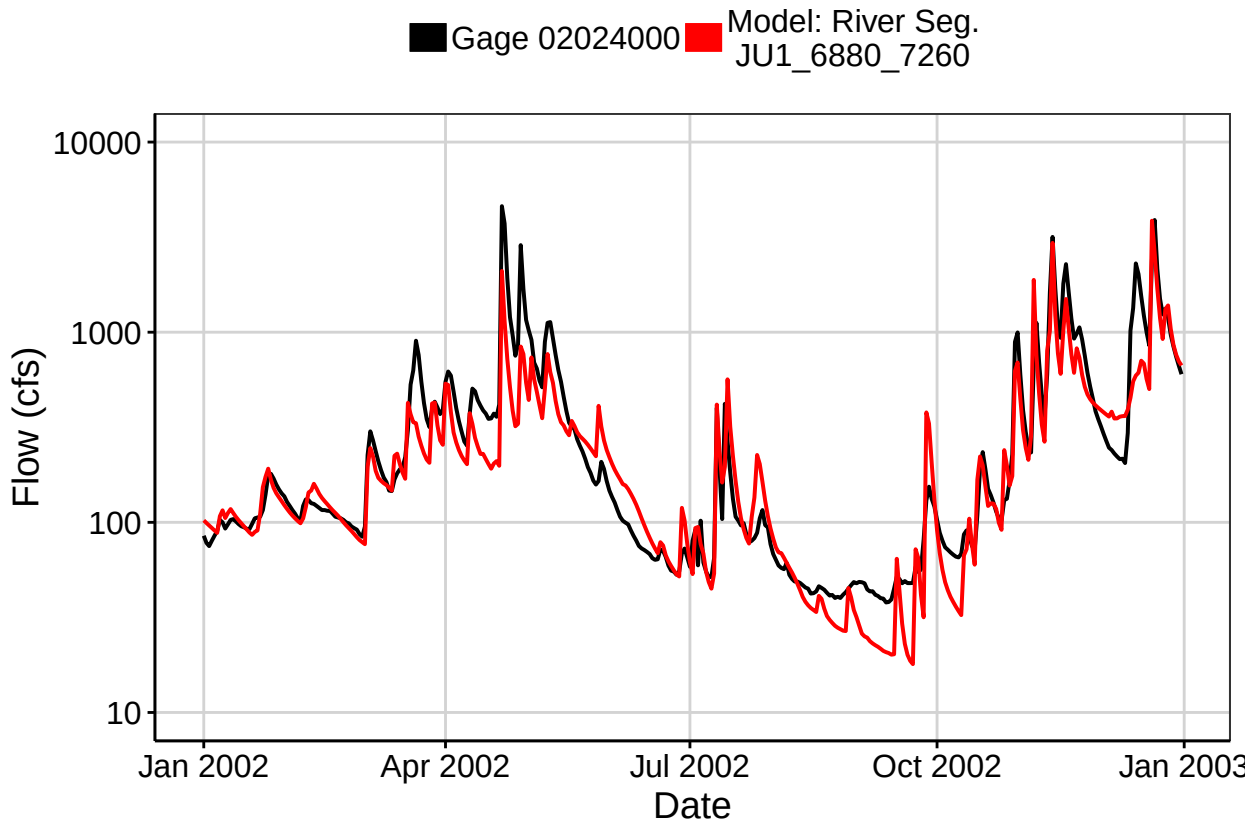


Fig. 3: Flow Exceedance

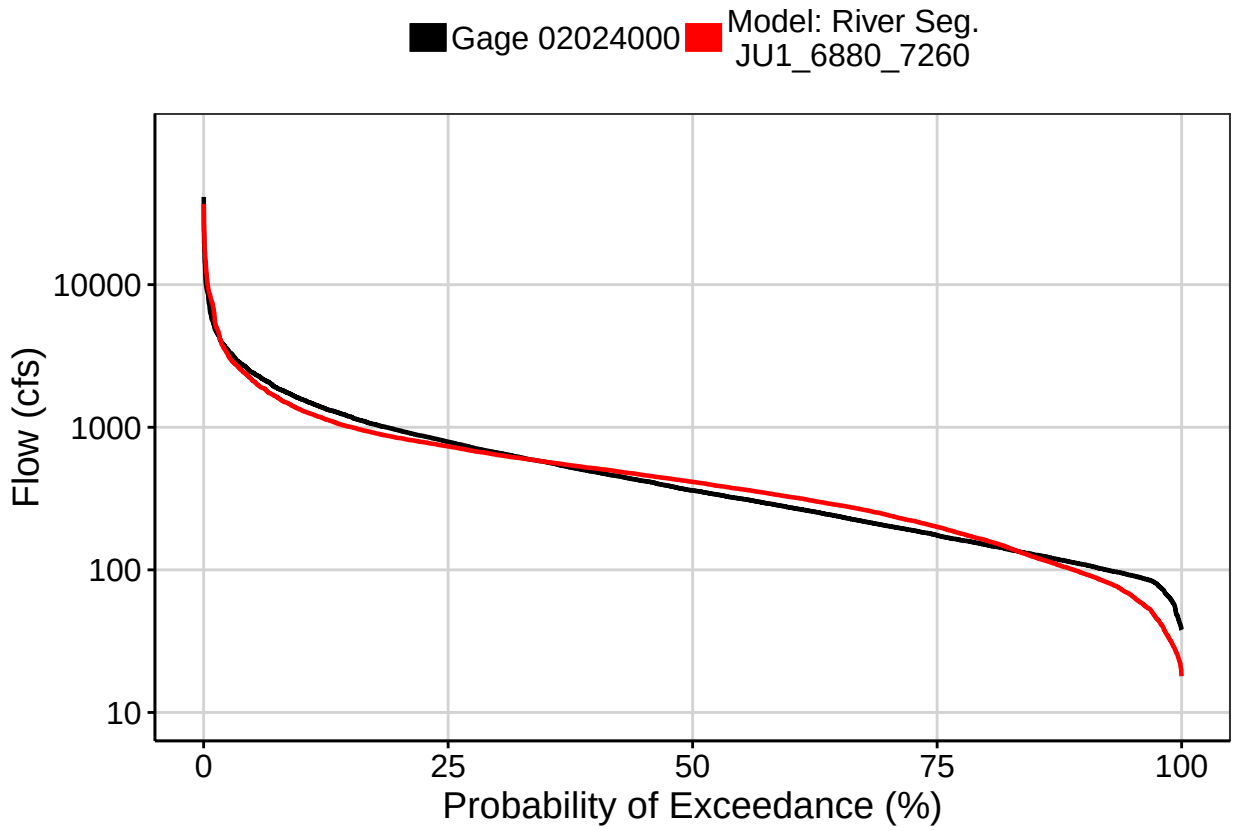


Fig. 4: Baseflow

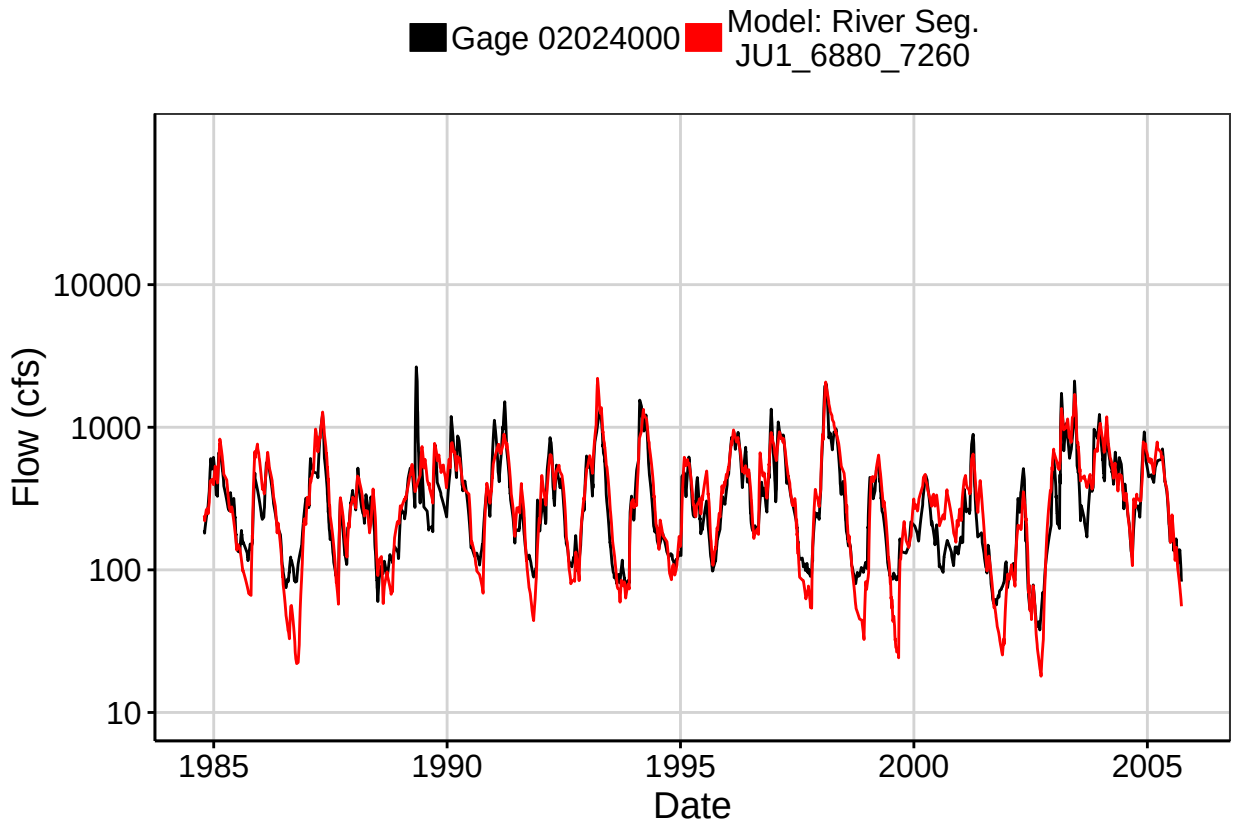


Fig. 5: Combined Baseflow

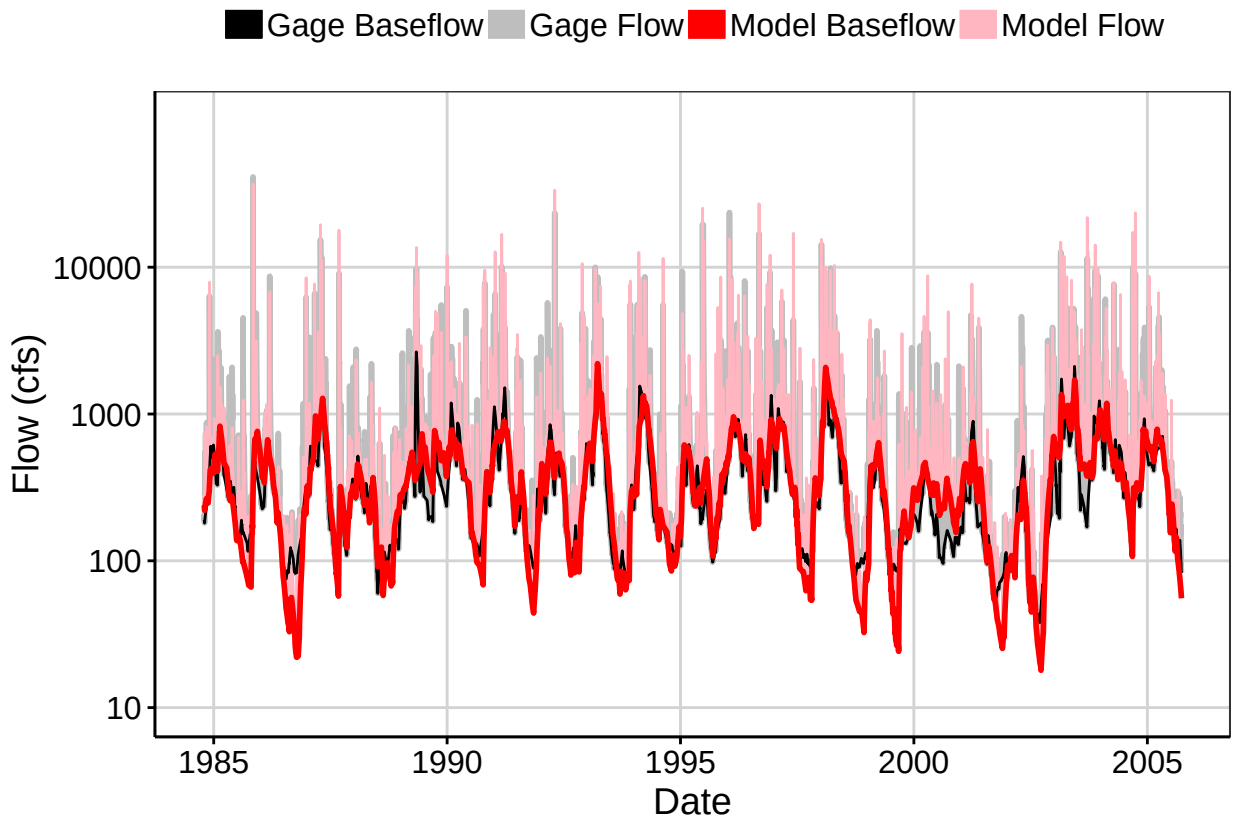


Fig. 6: Largest Error Segment

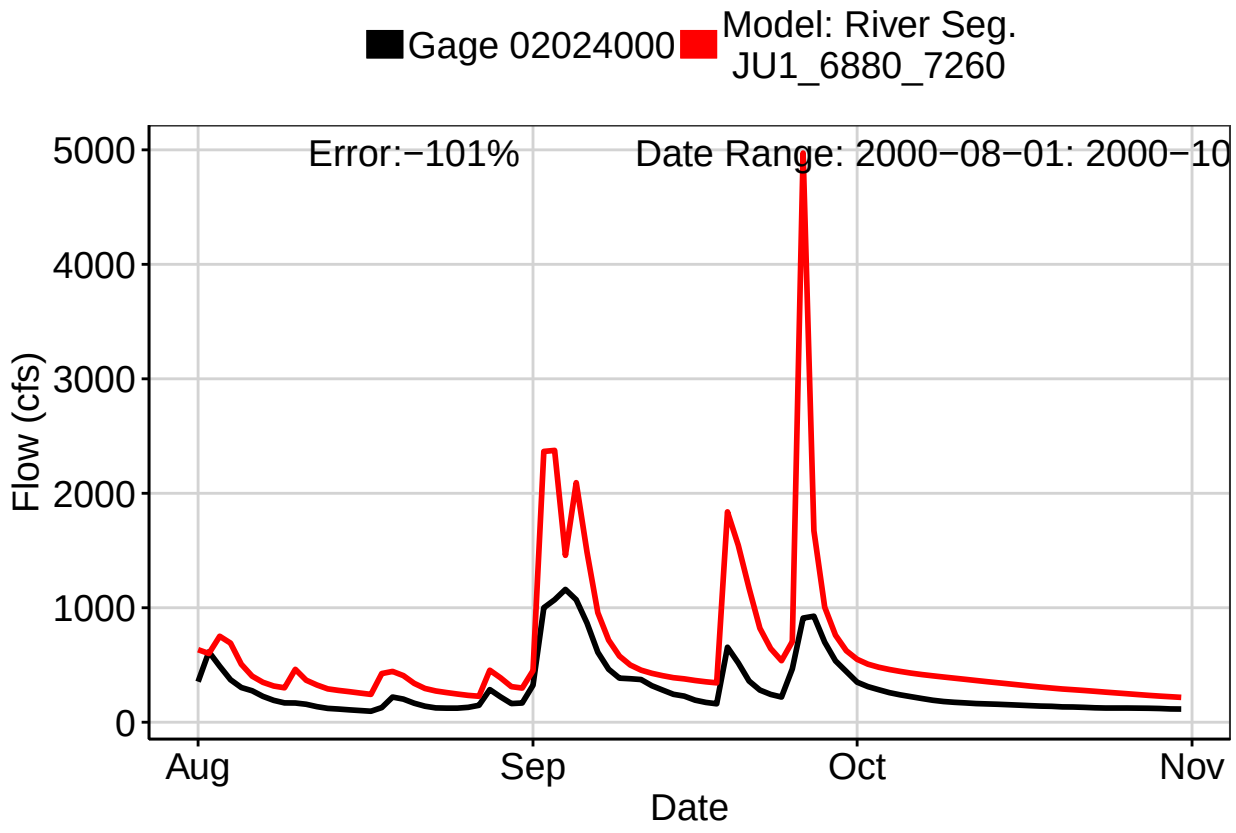


Fig. 7: Second Largest Error Segment

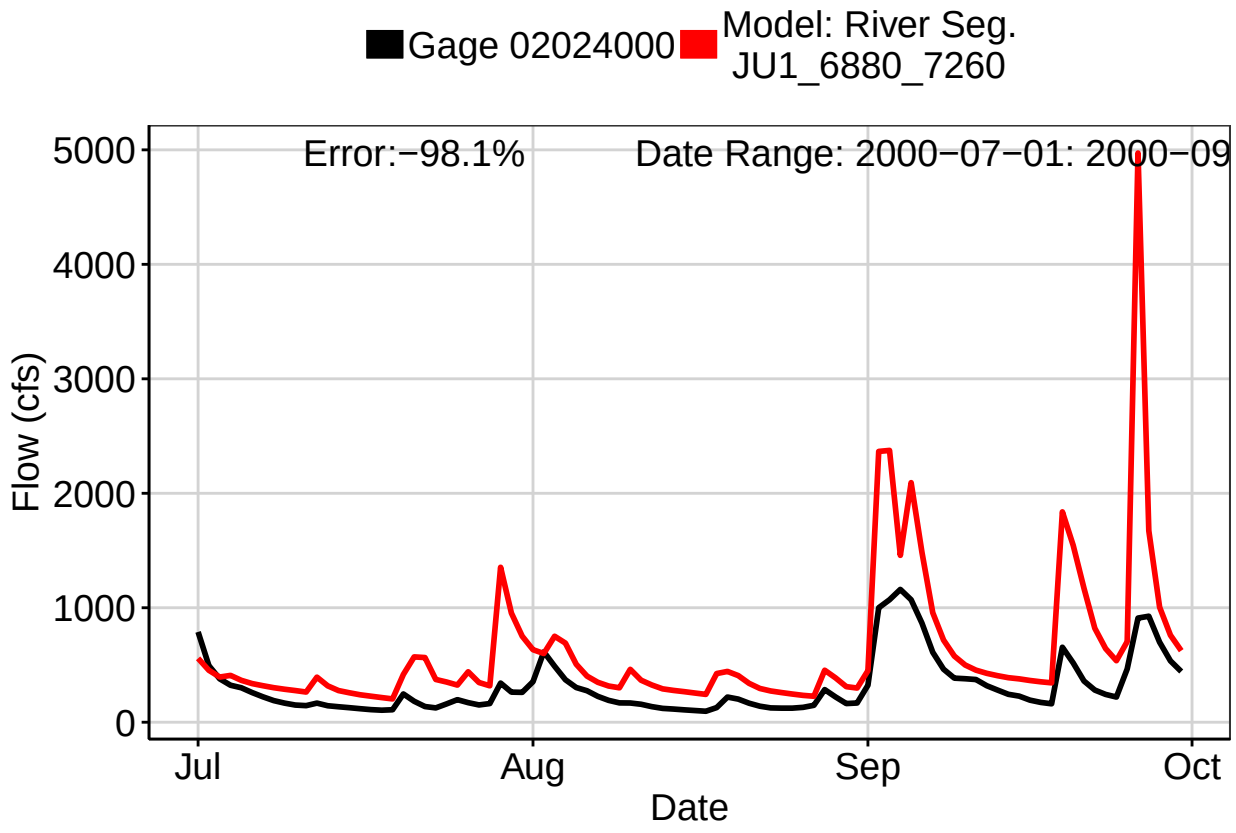


Fig. 8: Third Largest Error Segment

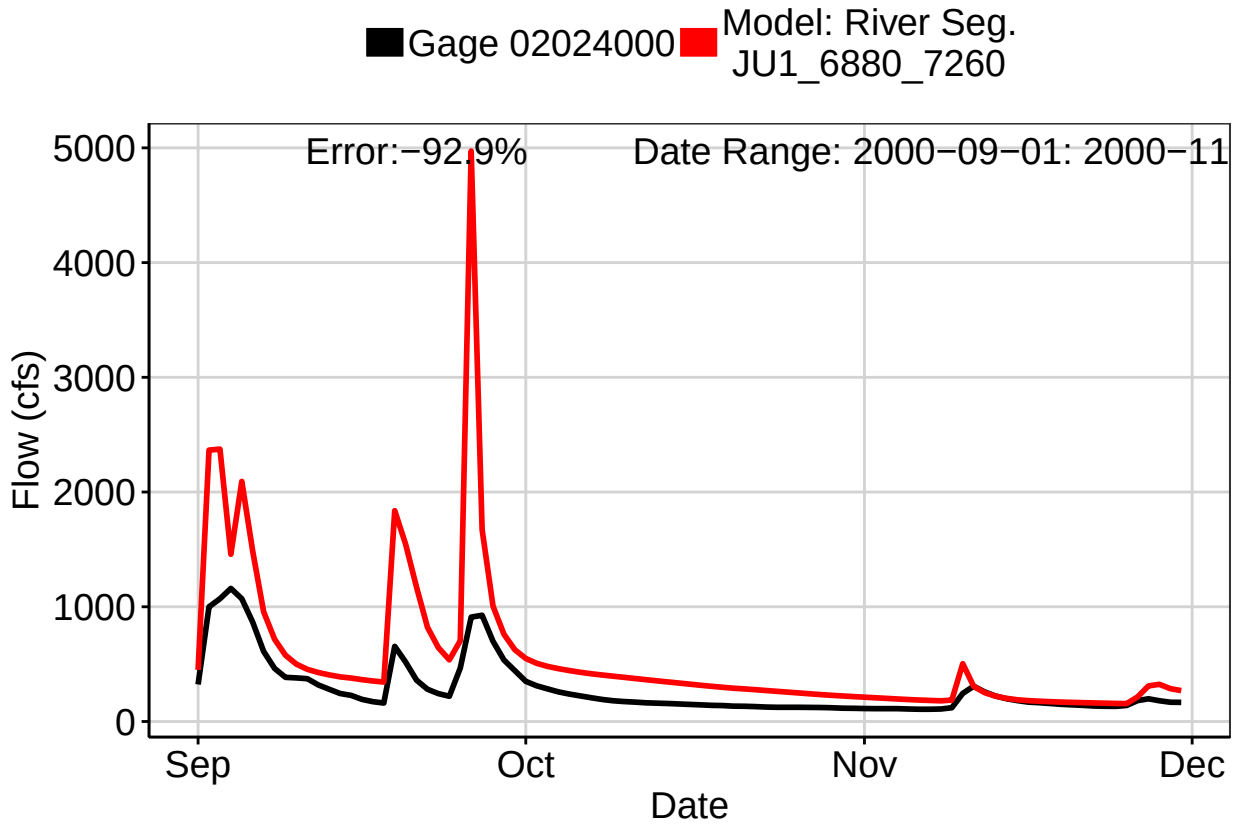


Fig. 9: Residuals Plot