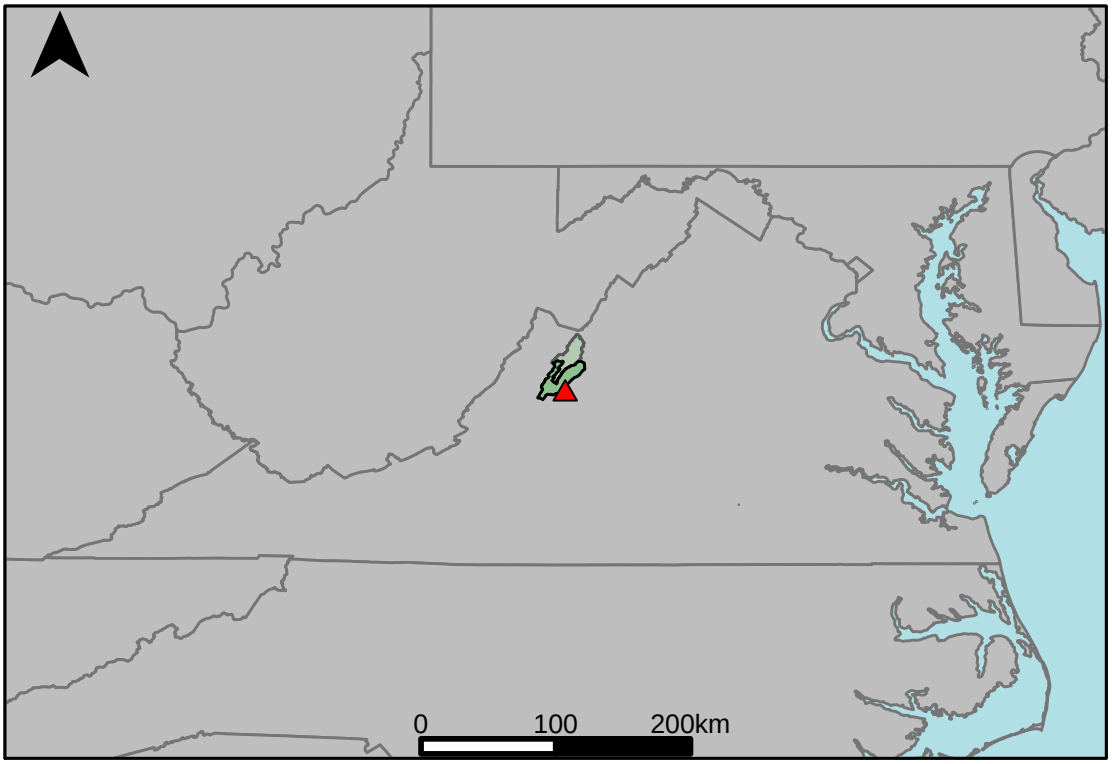
Appendix A.17: USGS Gage 02021500 vs. JU3_6640_6790 Upper James River



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°54'26.5", Long. -79°25'19.1"), approximately 8.7 miles north of Lexington, VA. Drainage area is 329 sq. miles. This gage started taking data in 1928 and is still taking data. Since 1966, there have 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 5.12%, with 50.4% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	33	33.5	1.52
Feb. Low Flow	47	76.9	63.6
Mar. Low Flow	107	162	51.4
Apr. Low Flow	119	191	60.5
May Low Flow	154	231	50
Jun. Low Flow	233	261	12
Jul. Low Flow	152	164	7.89
Aug. Low Flow	109	134	22.9
Sep. Low Flow	52	60.4	16.2
Oct. Low Flow	35	38.7	10.6
Nov. Low Flow	30	30.5	1.67
Dec. Low Flow	25	15.8	-36.8

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	410	389	-5.12
Jan. Mean Flow	614	503	-18.1
Feb. Mean Flow	585	625	6.84
Mar. Mean Flow	803	702	-12.6
Apr. Mean Flow	649	526	-19
May Mean Flow	488	396	-18.9
Jun. Mean Flow	295	316	7.12
Jul. Mean Flow	128	171	33.6
Aug. Mean Flow	113	143	26.5
Sep. Mean Flow	242	338	39.7
Oct. Mean Flow	155	217	40
Nov. Mean Flow	415	388	-6.51
Dec. Mean Flow	447	365	-18.3

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	142	288	103
Feb. High Flow	1110	908	-18.2
Mar. High Flow	2090	763	-63.5
Apr. High Flow	2260	1680	-25.7
May High Flow	1190	781	-34.4
Jun. High Flow	2850	3310	16.1
Jul. High Flow	1480	1740	17.6
Aug. High Flow	1490	1030	-30.9
Sep. High Flow	299	736	146
Oct. High Flow	307	586	90.9
Nov. High Flow	207	266	28.5
Dec. High Flow	125	214	71.2

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	9.56	4.66	-51.3
Med. 1 Day Min	23	15	-34.8
Min. 3 Day Min	9.59	4.73	-50.7
Med. 3 Day Min	23.3	16.1	-30.9
Min. 7 Day Min	10.3	5.04	-51.1
Med. 7 Day Min	24.4	17.3	-29.1
Min. 30 Day Min	12.8	7.15	-44.1
Med. 30 Day Min	31.3	34	8.63
Min. 90 Day Min	23.8	20.9	-12.2
Med. 90 Day Min	66.4	99.5	49.8
7Q10	14.8	7.6	-48.6
Year of 90-Day Min. Flow	1999	1999	0
Drought Year Mean	188	200	6.38
Mean Baseflow	155	180	16.1

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	41500	26700	-35.7
Med. 1 Day Max	6480	6510	0.46
Max. 3 Day Max	19600	13200	-32.7
Med. 3 Day Max	4420	3590	-18.8
Max. 7 Day Max	9250	6640	-28.2
Med. 7 Day Max	2600	2440	-6.15
Max. 30 Day Max	2800	2100	-25
Med. 30 Day Max	1570	1260	-19.7
Max. 90 Day Max	1620	1500	-7.41
Med. 90 Day Max	839	702	-16.3

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	17.3	8.88	-48.7
5% Non-Exceedance	24	19	-20.8
50% Non-Exceedance	166	214	28.9
95% Non-Exceedance	1500	1240	-17.3
99% Non-Exceedance	3390	3630	7.08
Sept. 10% Non-Exceedance	21	15.5	-26.2

Fig. 1: Hydrograph

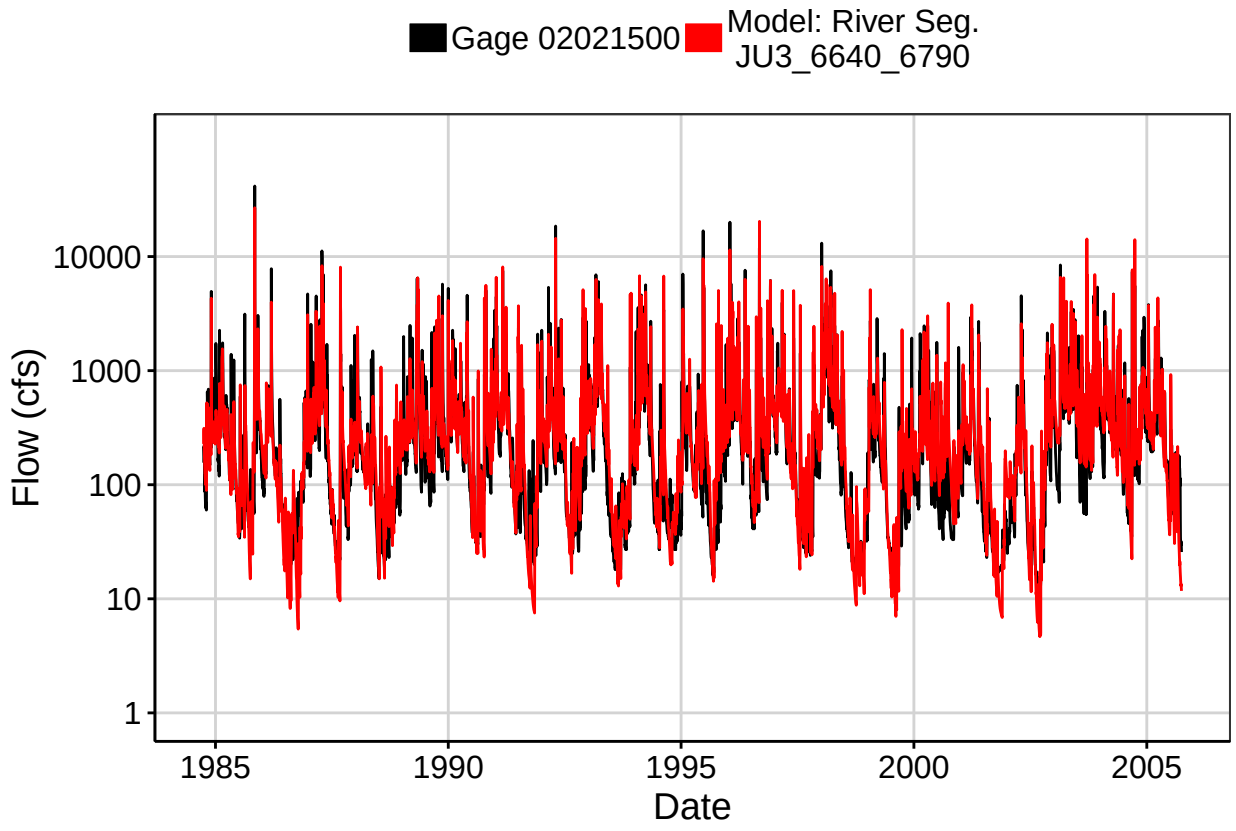


Fig. 2: Zoomed Hydrograph

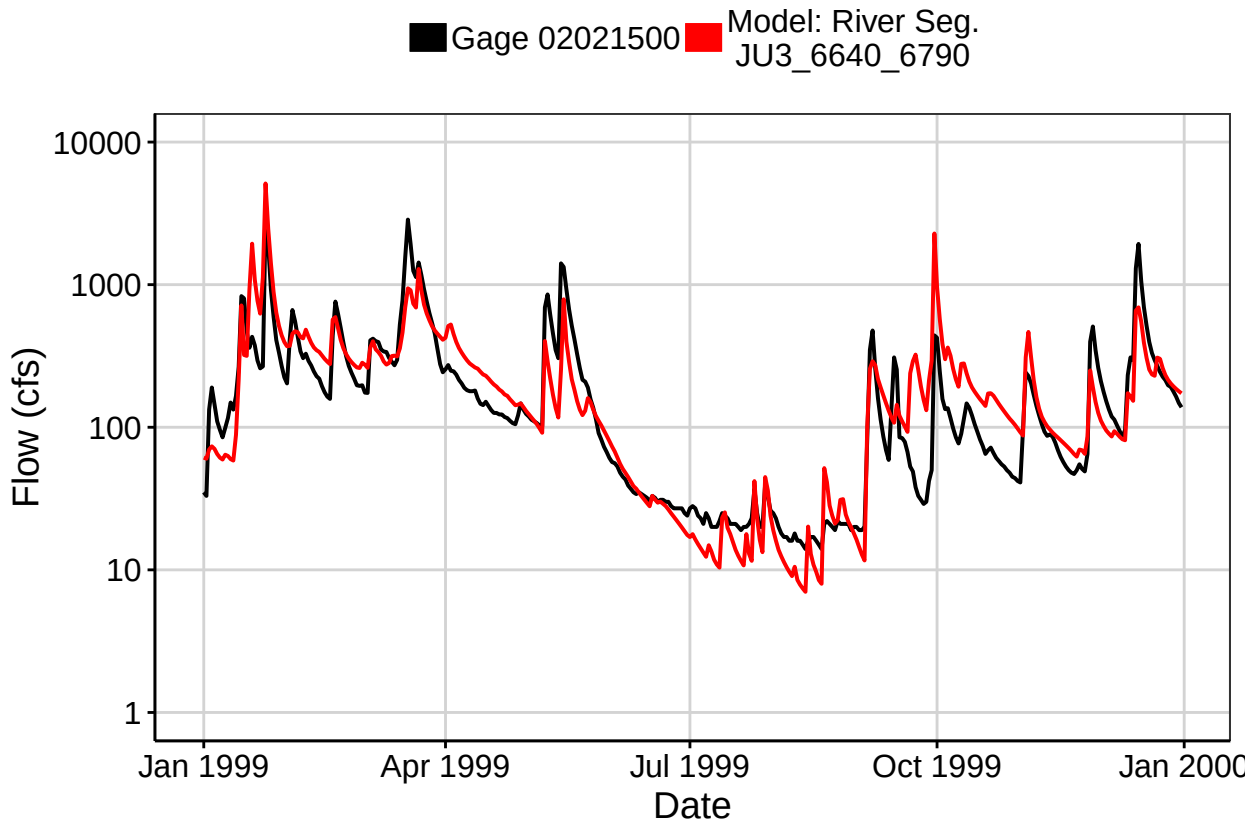


Fig. 3: Flow Exceedance

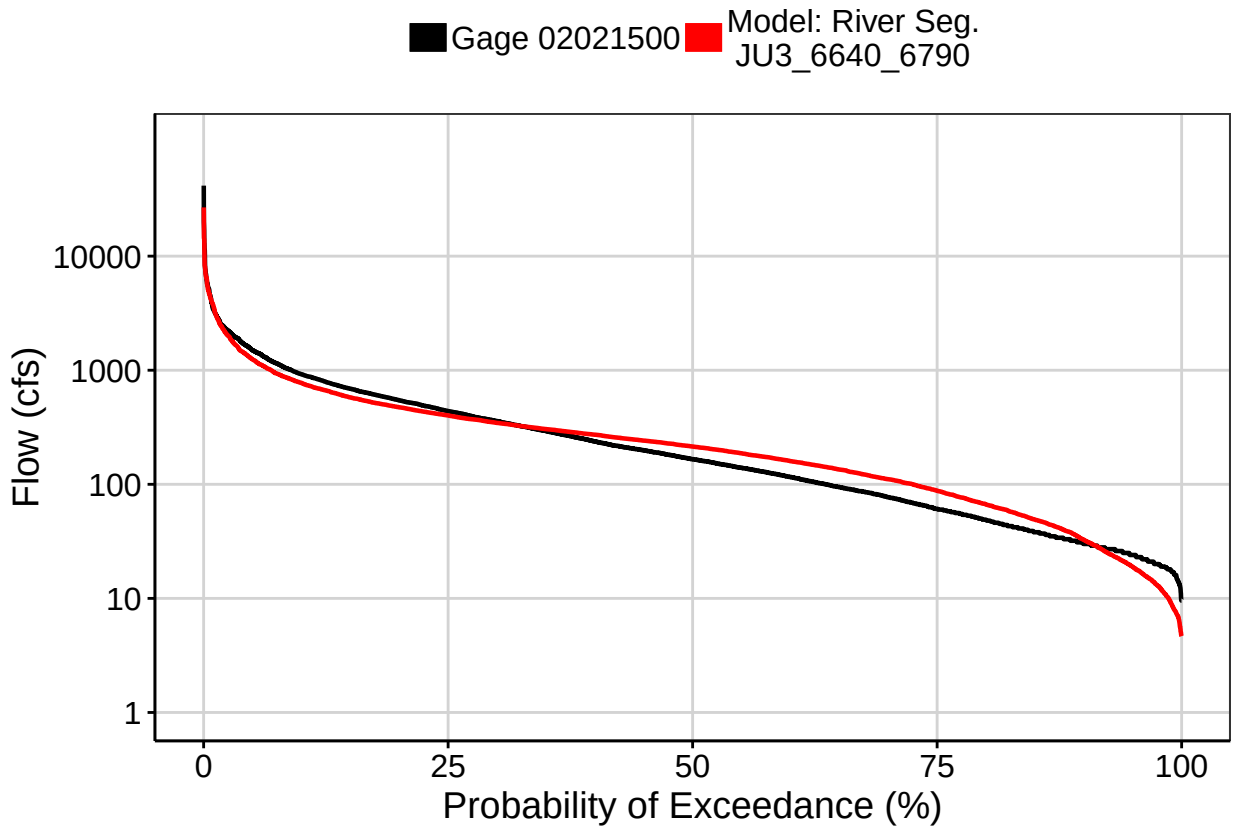


Fig. 4: Baseflow

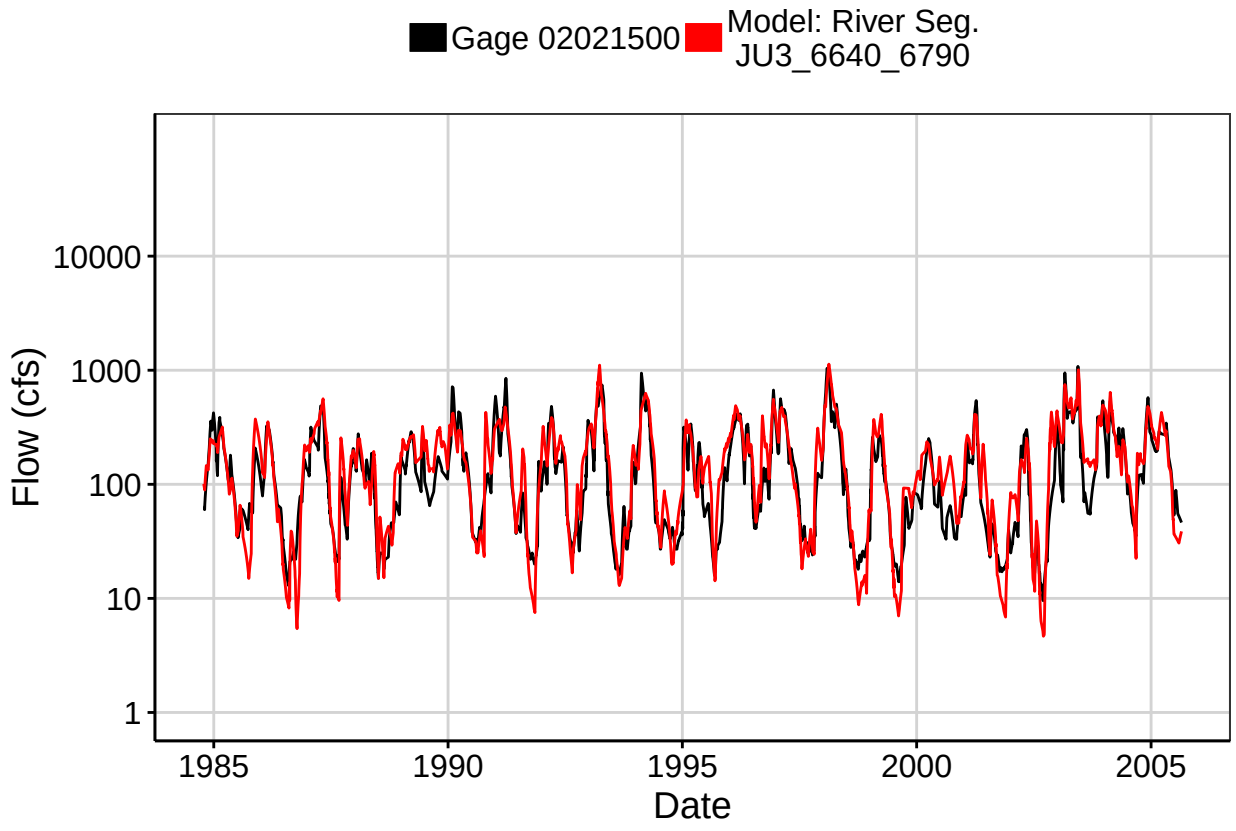


Fig. 5: Combined Baseflow

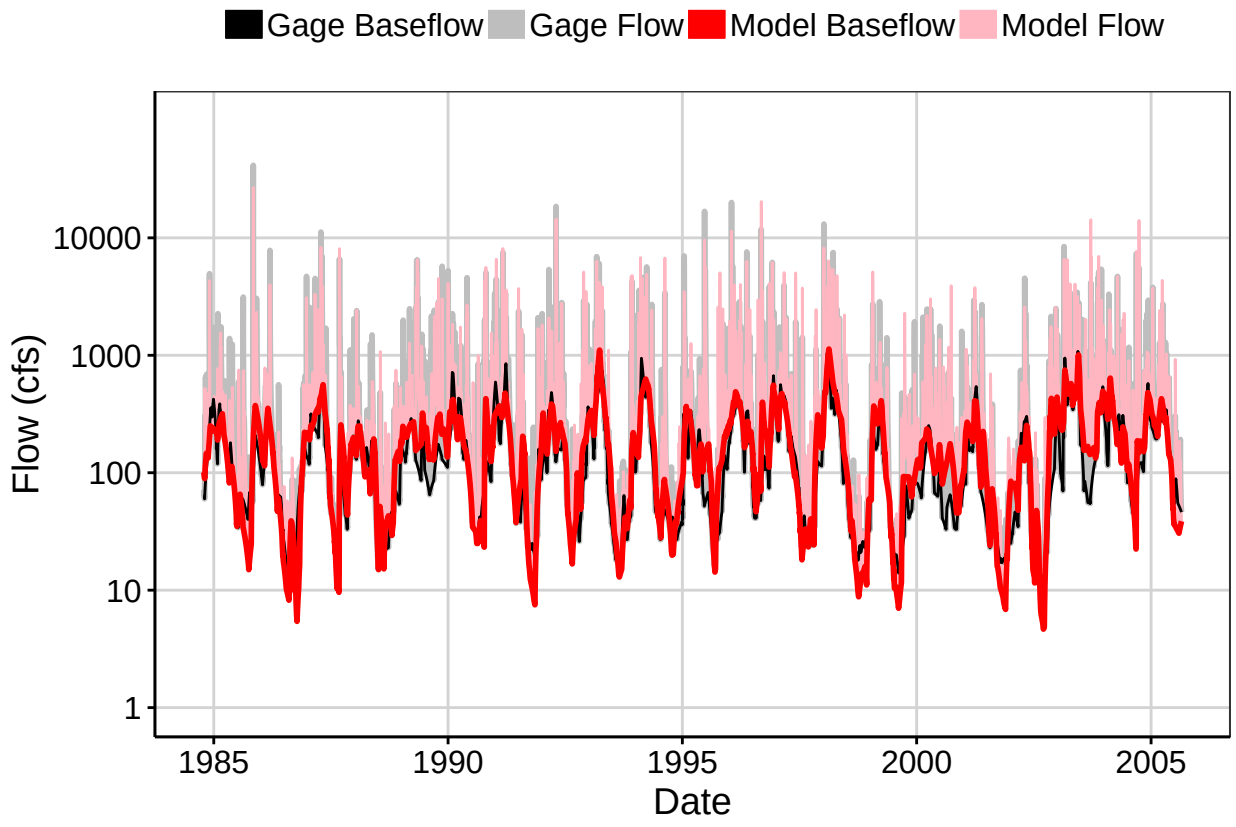


Fig. 6: Largest Error Segment

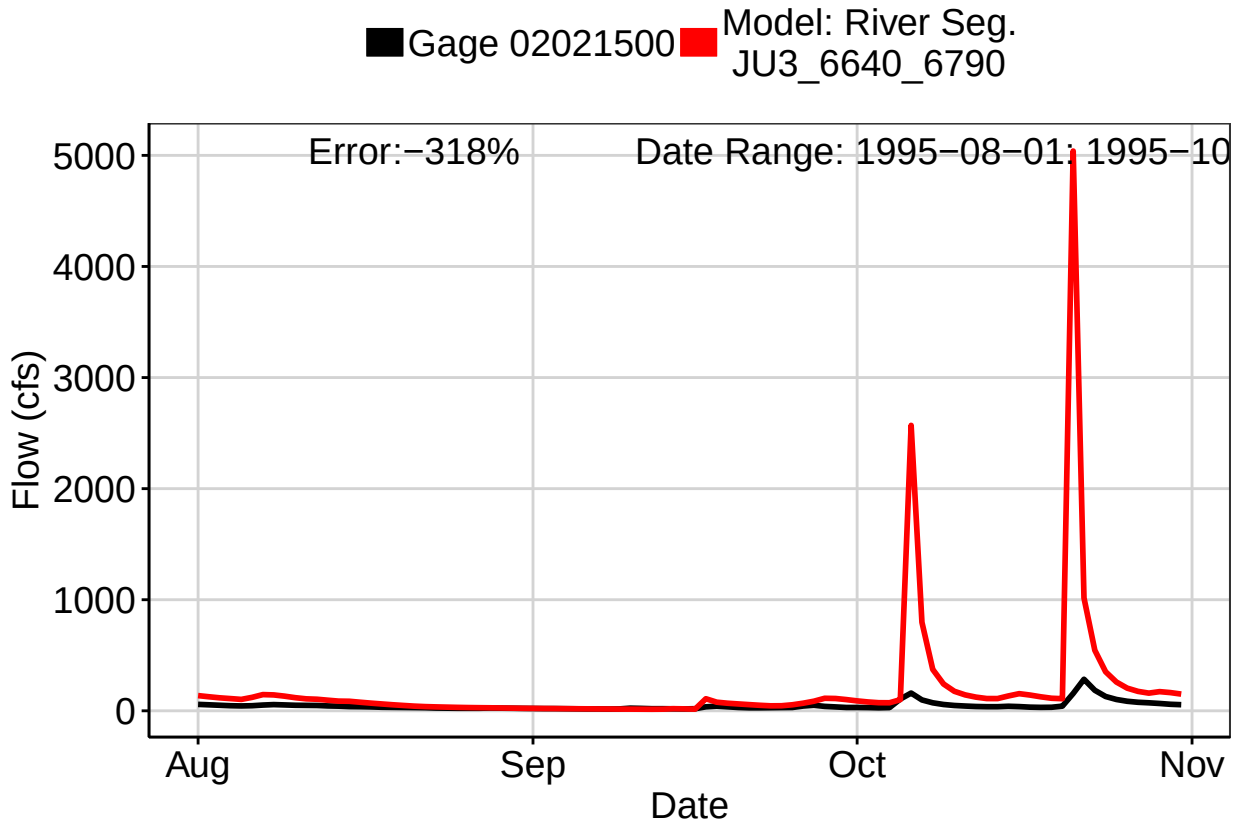


Fig. 7: Second Largest Error Segment

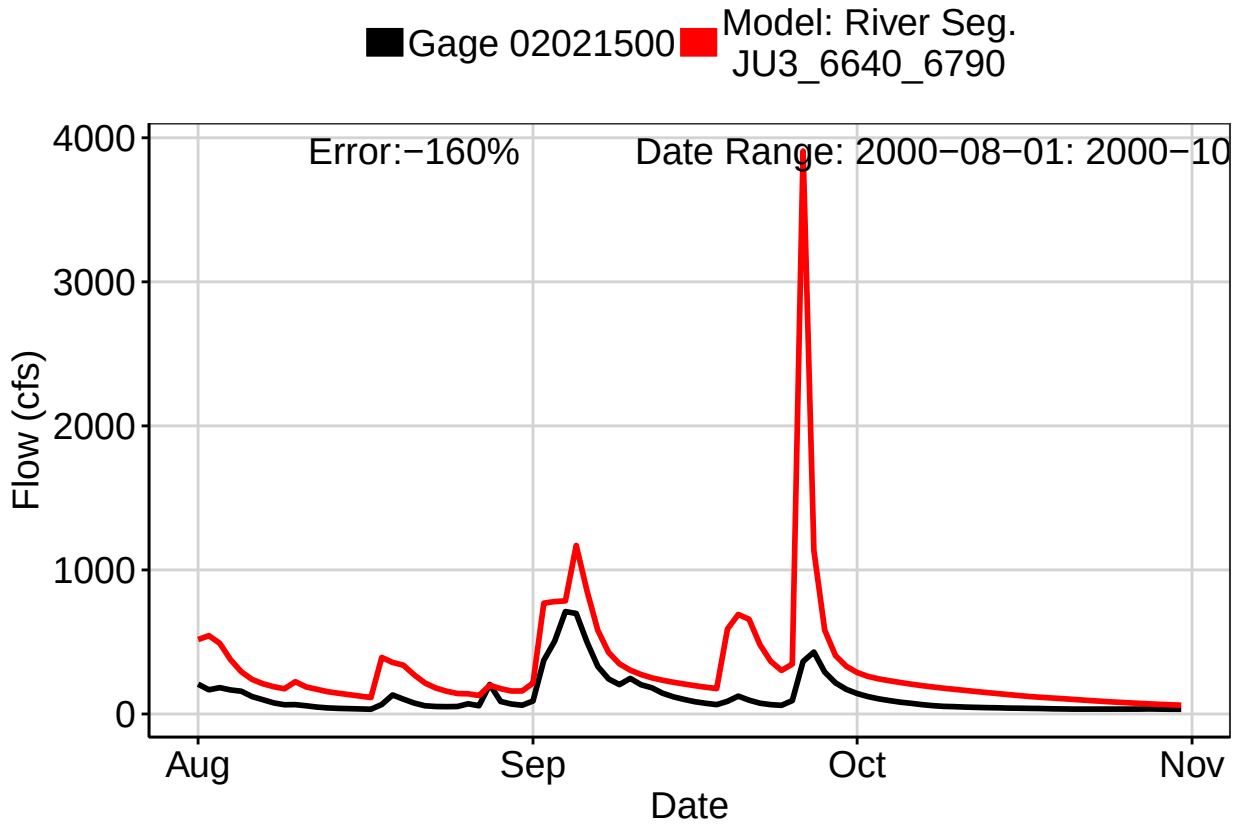


Fig. 8: Third Largest Error Segment

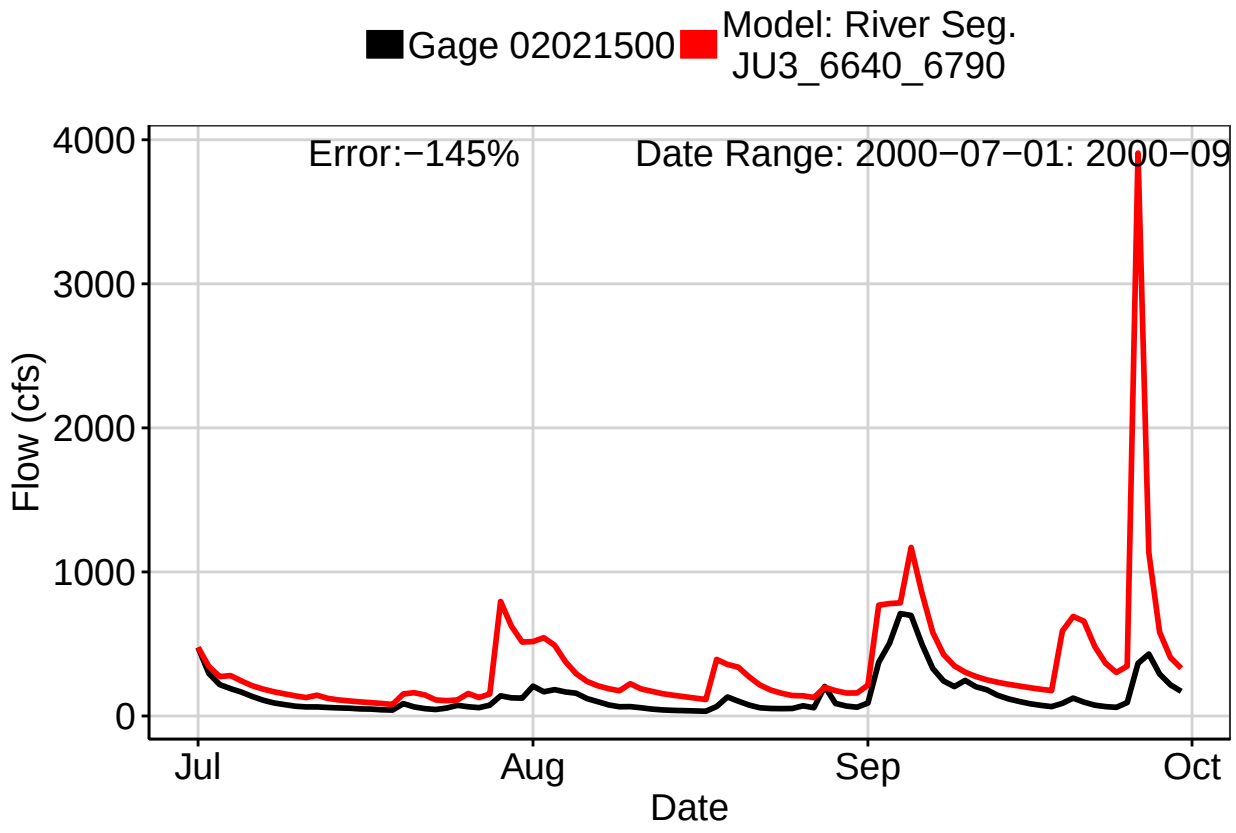


Fig. 9: Residuals Plot