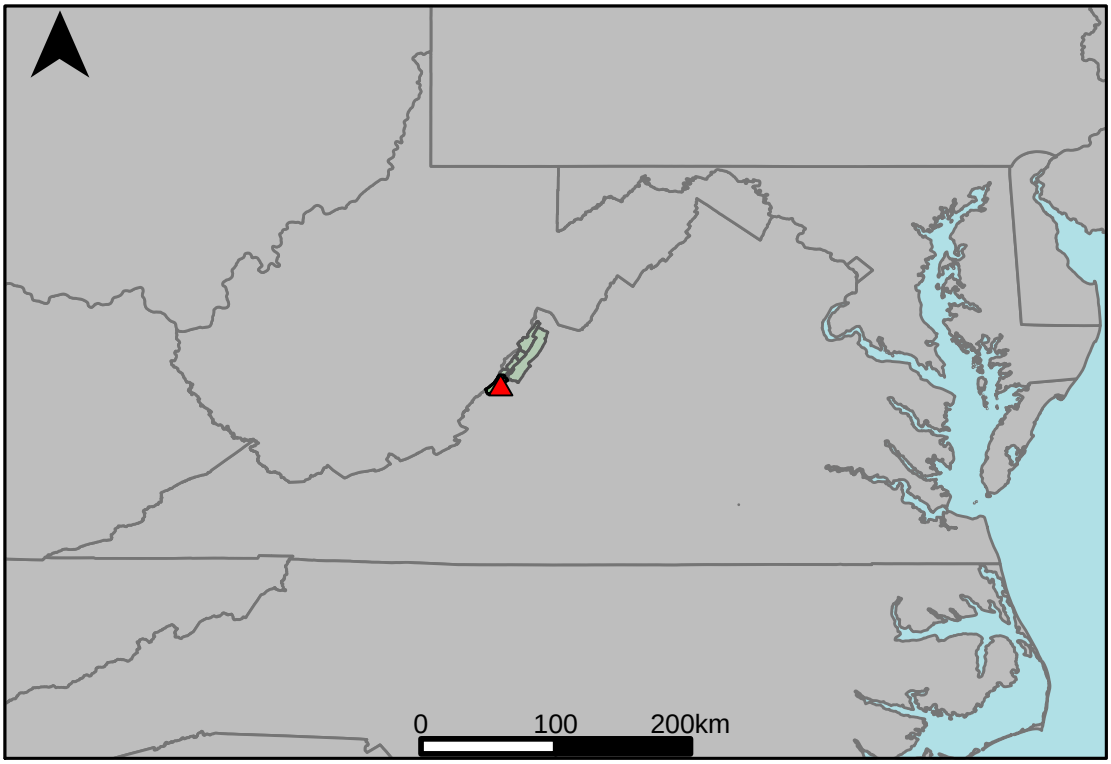
Appendix A.5: USGS Gage 02011800 vs. JU3_6900_6950 Upper James River



This river segment follows part of the flow of the Jackson River, a tributary of the James. The gage is located in Alleghany County (Lat. 37°56'54.4", Long. -79°56'57.2"), approximately 11 miles northwest of Clifton Forge, VA. Drainage area is 345 sq. miles. This gage started taking data in 1973 and is still taking data. Flow has been regulated since December 1979 by Lake Moomaw (station 02011795) 0.5 mi upstream; since October 1984 by Back Creek Lake 28.5 mi upstream; and since January 1985 by Little Back Creek Lake 31.6 mi upstream, amounts unknown. The average daily discharge error between the model and gage data for the 20 year timespan was -2.03%, with 29.6% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	178	193	8.43
Feb. Low Flow	156	160	2.56
Mar. Low Flow	162	160	-1.23
Apr. Low Flow	164	171	4.27
May Low Flow	169	234	38.5
Jun. Low Flow	217	398	83.4
Jul. Low Flow	217	248	14.3
Aug. Low Flow	243	234	-3.7
Sep. Low Flow	260	234	-10
Oct. Low Flow	281	289	2.85
Nov. Low Flow	274	285	4.01
Dec. Low Flow	245	251	2.45

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	444	453	2.03
Jan. Mean Flow	465	437	-6.02
Feb. Mean Flow	556	633	13.8
Mar. Mean Flow	838	916	9.31
Apr. Mean Flow	692	681	-1.59
May Mean Flow	620	507	-18.2
Jun. Mean Flow	420	397	-5.48
Jul. Mean Flow	294	310	5.44
Aug. Mean Flow	284	315	10.9
Sep. Mean Flow	288	330	14.6
Oct. Mean Flow	213	310	45.5
Nov. Mean Flow	351	298	-15.1
Dec. Mean Flow	322	317	-1.55

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	220	195	-11.4
Feb. High Flow	195	177	-9.23
Mar. High Flow	175	256	46.3
Apr. High Flow	1070	490	-54.2
May High Flow	1060	729	-31.2
Jun. High Flow	2510	1340	-46.6
Jul. High Flow	1920	1440	-25
Aug. High Flow	1920	892	-53.5
Sep. High Flow	401	592	47.6
Oct. High Flow	299	291	-2.68
Nov. High Flow	292	288	-1.37
Dec. High Flow	267	269	0.75

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	112	160	42.9
Med. 1 Day Min	153	160	4.58
Min. 3 Day Min	112	160	42.9
Med. 3 Day Min	154	160	3.9
Min. 7 Day Min	114	160	40.4
Med. 7 Day Min	155	160	3.23
Min. 30 Day Min	115	160	39.1
Med. 30 Day Min	157	160	1.91
Min. 90 Day Min	115	160	39.1
Med. 90 Day Min	174	171	-1.72
7Q10	131	160	22.1
Year of 90-Day Min. Flow	2000	1987	100
Drought Year Mean	282	335	18.8
Mean Baseflow	254	335	31.9

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	8670	4580	-47.2
Med. 1 Day Max	4620	2460	-46.8
Max. 3 Day Max	7450	4120	-44.7
Med. 3 Day Max	4000	2300	-42.5
Max. 7 Day Max	4540	3390	-25.3
Med. 7 Day Max	2660	1880	-29.3
Max. 30 Day Max	2180	2310	5.96
Med. 30 Day Max	1340	1250	-6.72
Max. 90 Day Max	1330	1710	28.6
Med. 90 Day Max	817	845	3.43

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	115	160	39.1
5% Non-Exceedance	151	160	5.96
50% Non-Exceedance	268	285	6.34
95% Non-Exceedance	1160	1320	13.8
99% Non-Exceedance	3350	2360	-29.6
Sept. 10% Non-Exceedance	223	251	12.6

Fig. 1: Hydrograph

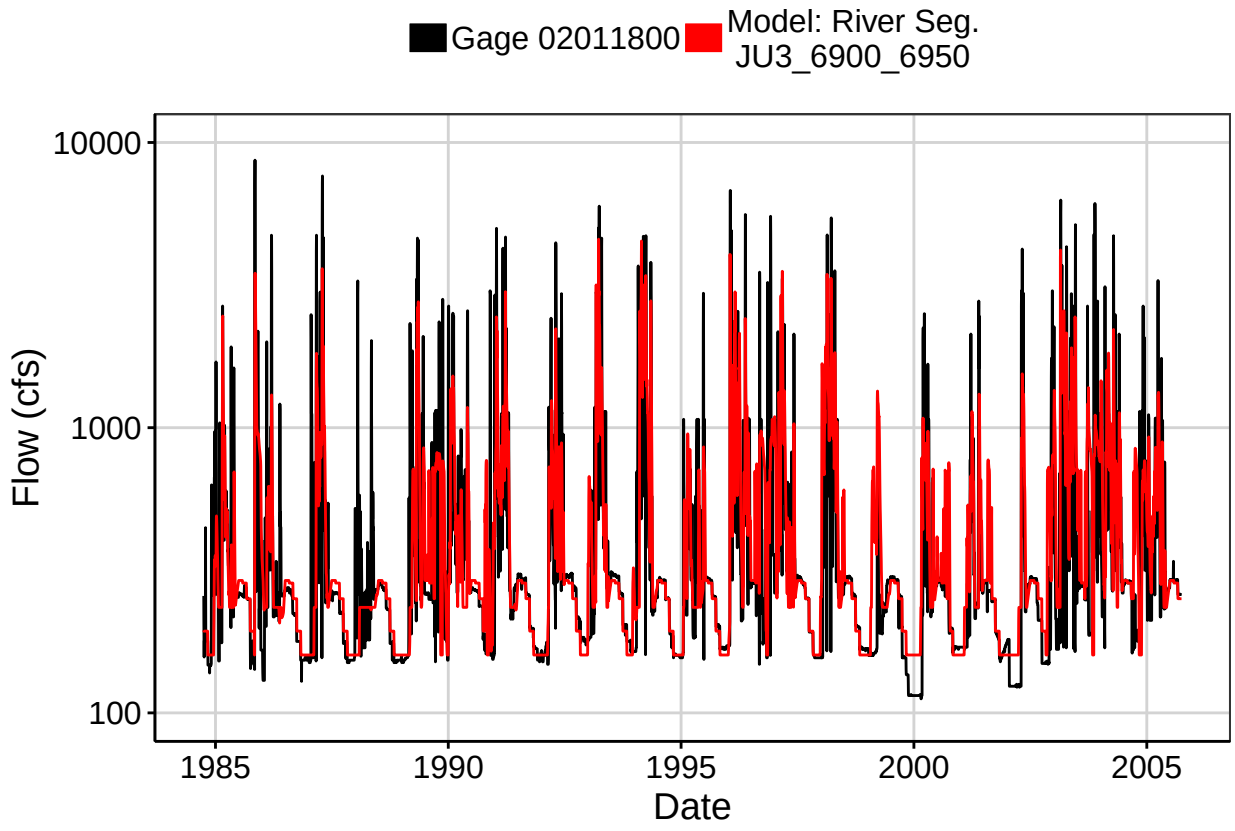


Fig. 2: Zoomed Hydrograph

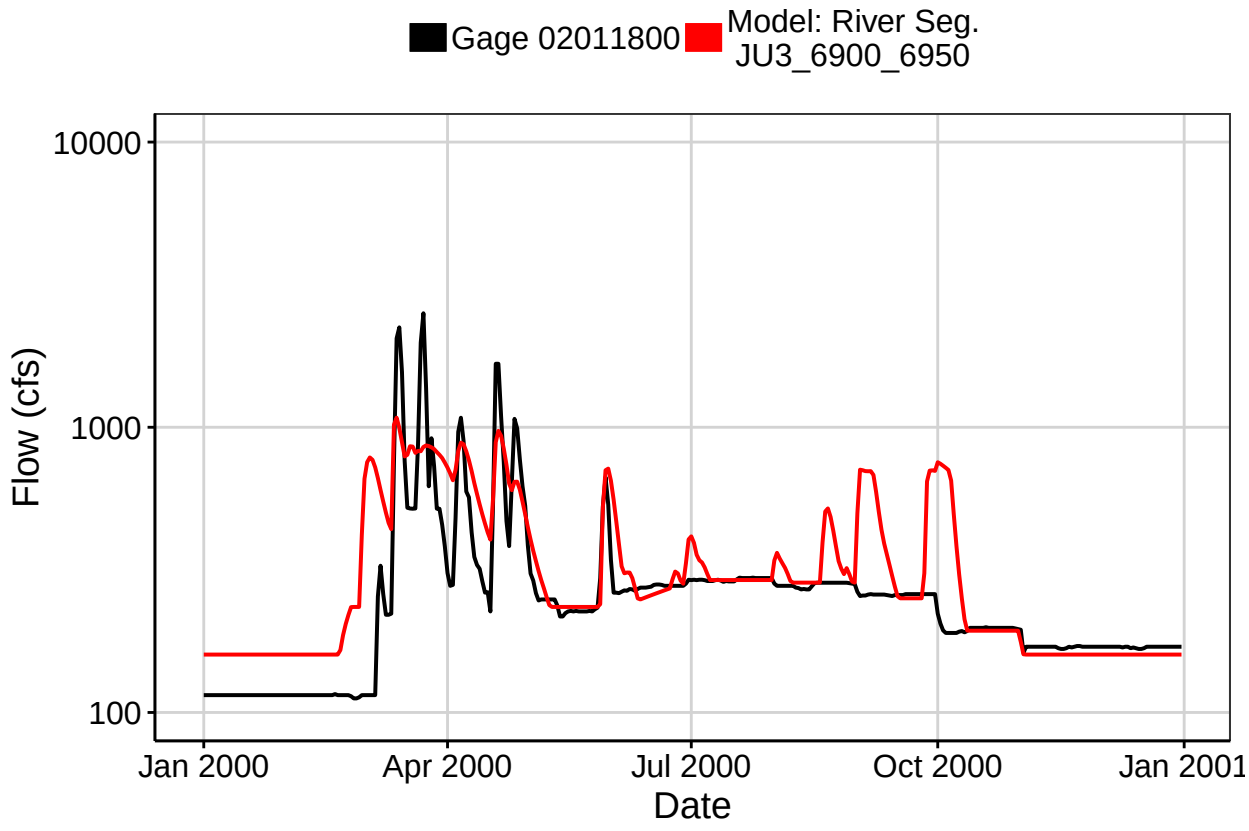


Fig. 3: Flow Exceedance

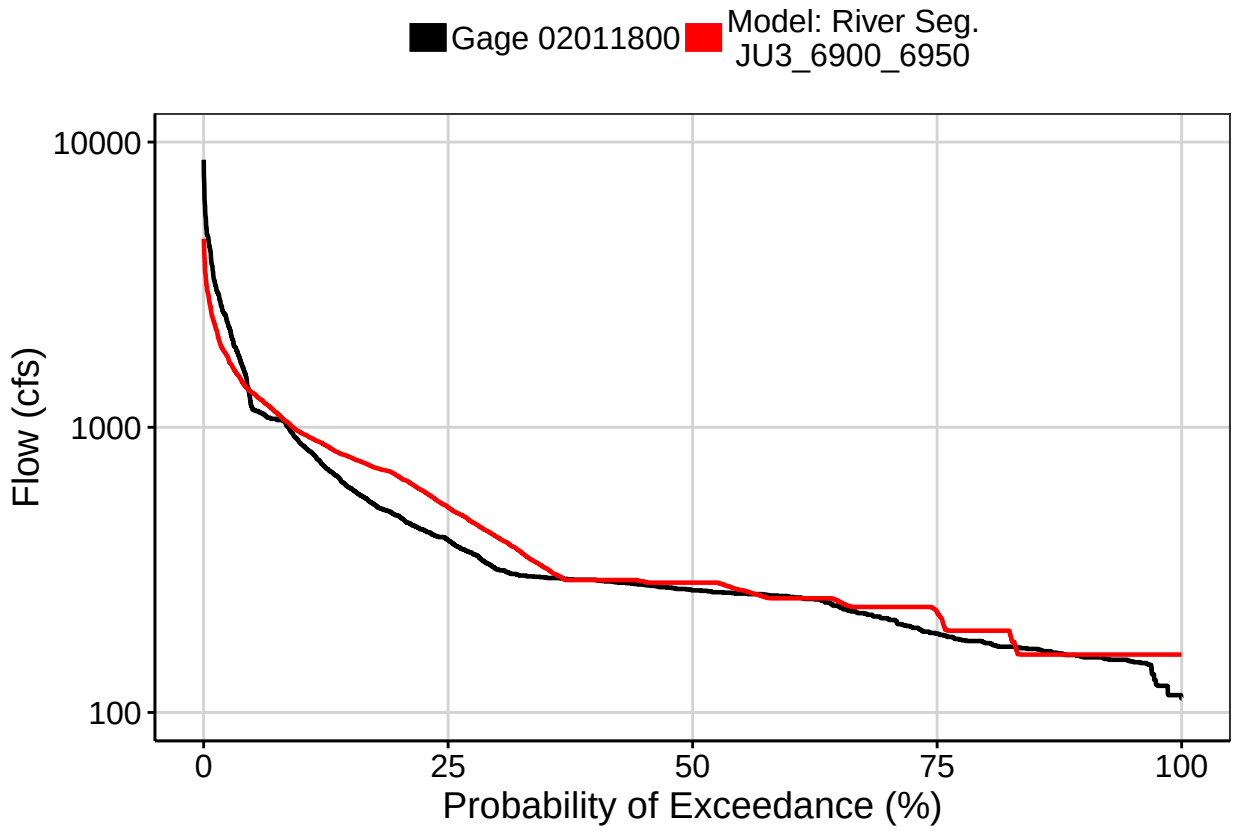


Fig. 4: Baseflow

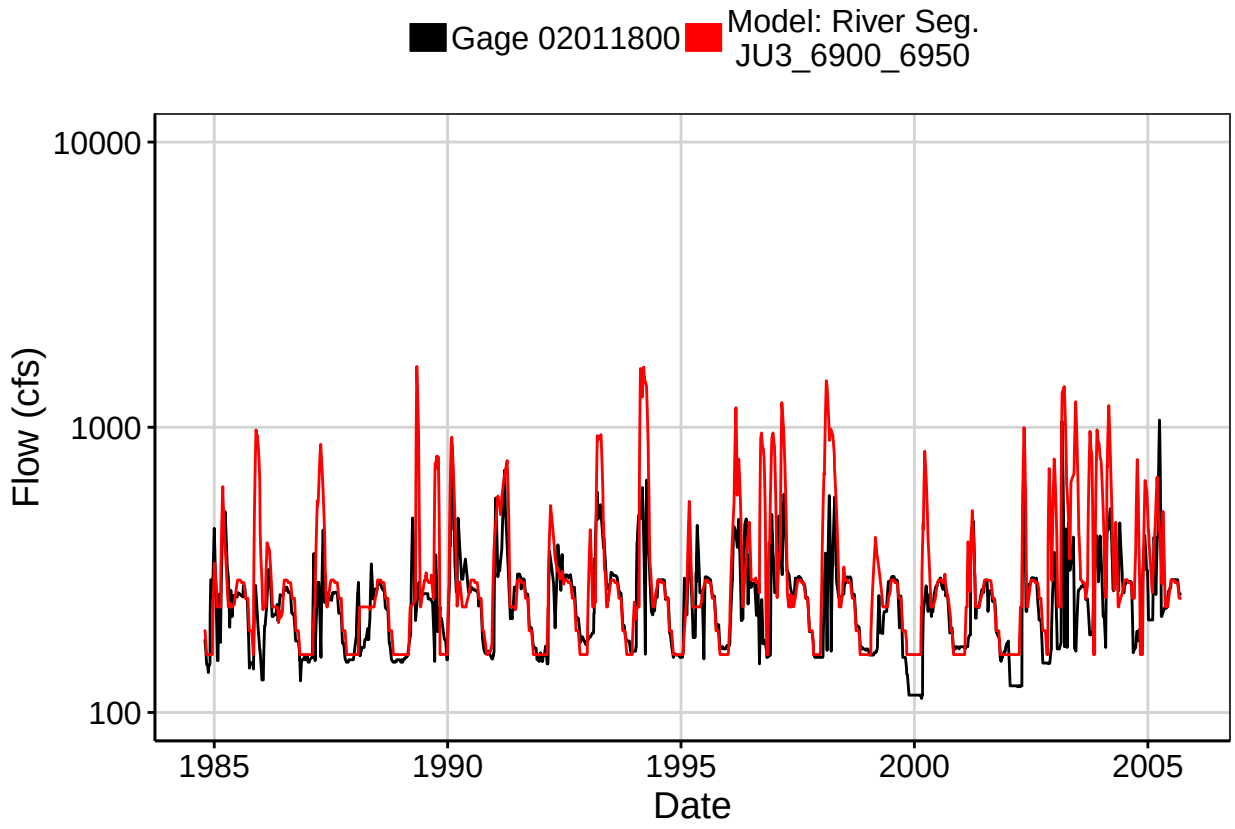


Fig. 5: Combined Baseflow

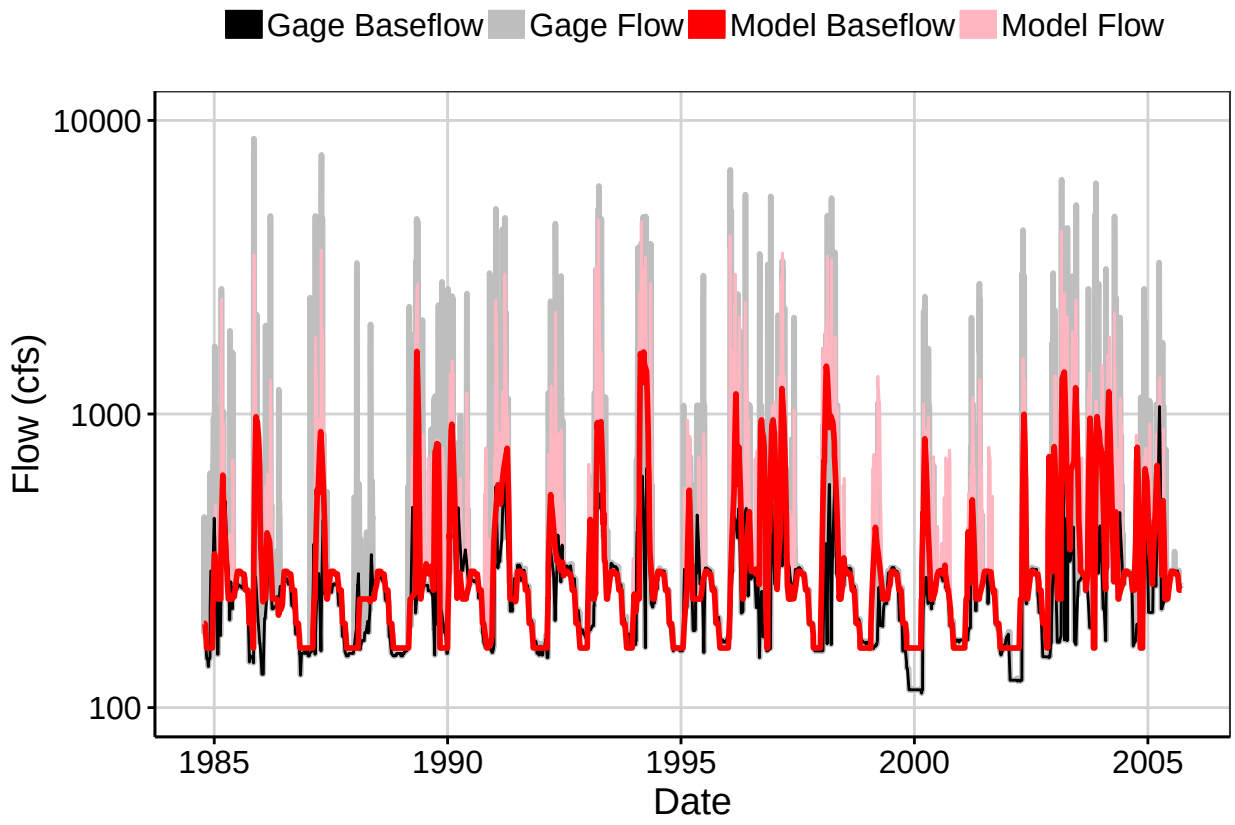


Fig. 6: Largest Error Segment

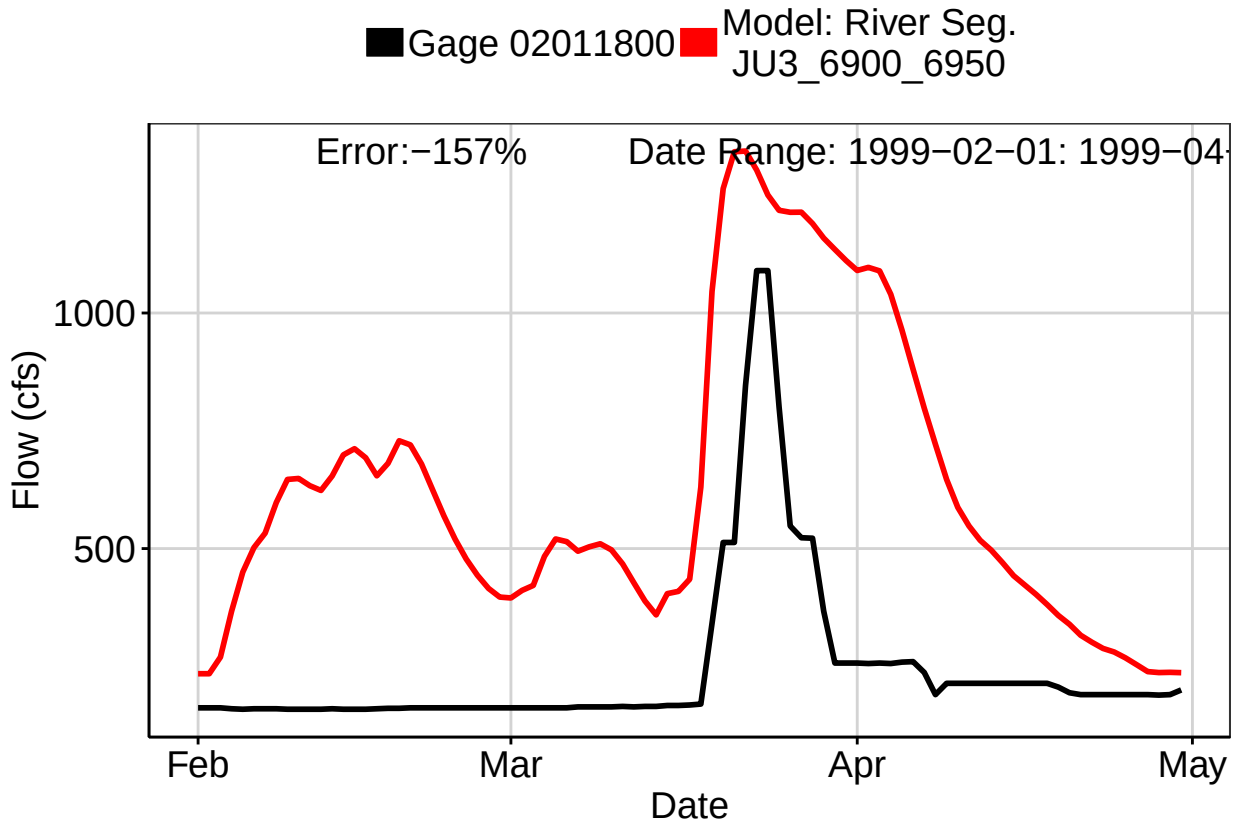


Fig. 7: Second Largest Error Segment

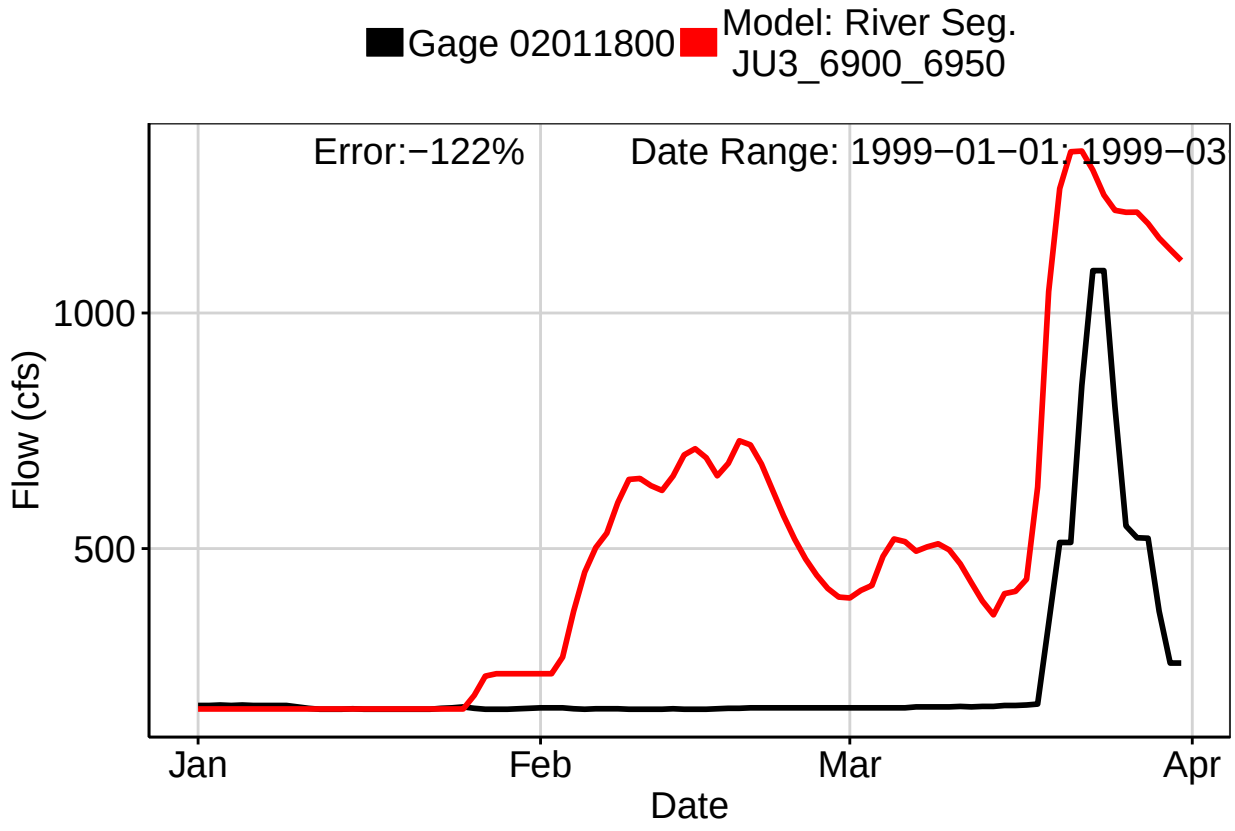


Fig. 8: Third Largest Error Segment

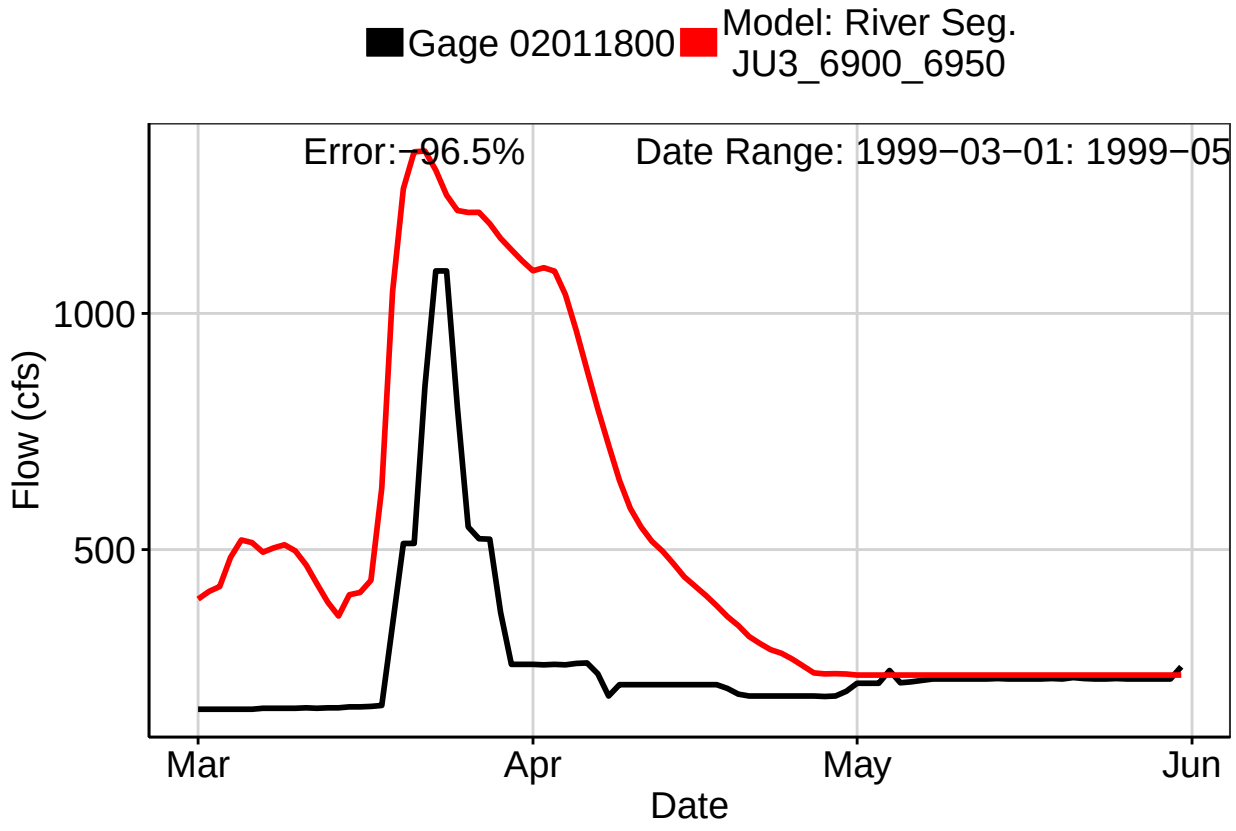


Fig. 9: Residuals Plot