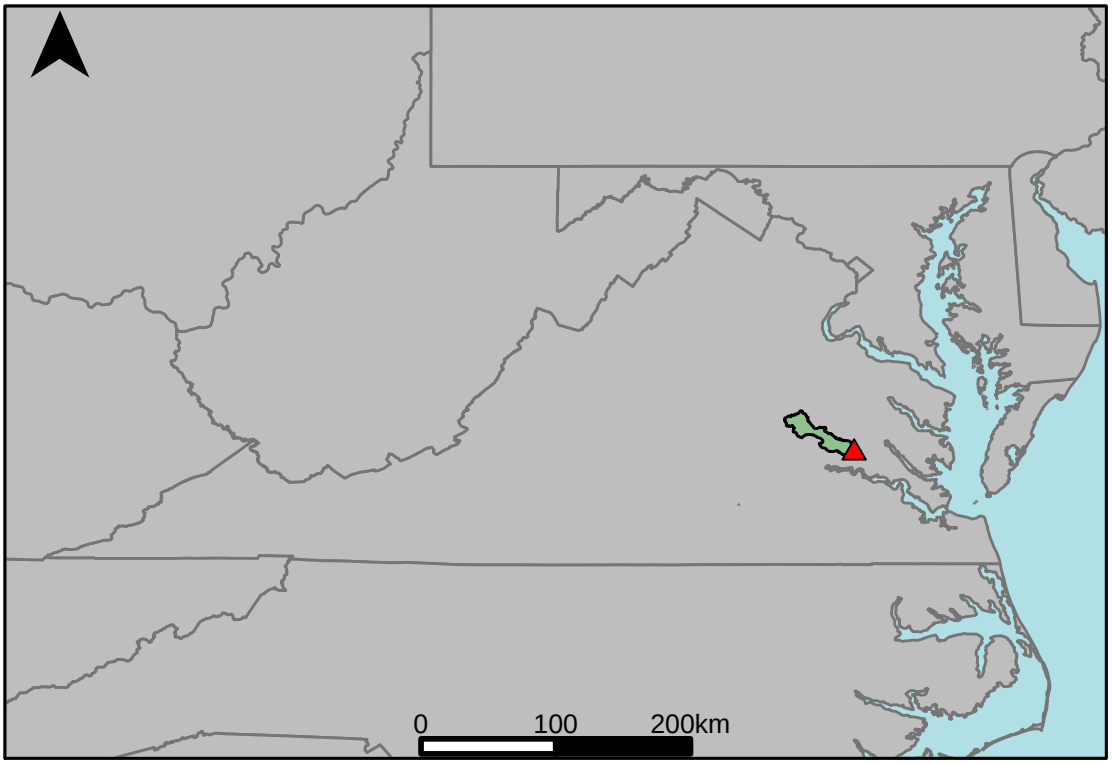
Appendix A.39: USGS Gage 02042500 vs. JB3_6820_7053 James River, below Richmond



This river segment follows part of the flow of the Chickahominy River, a tributary of the James. The gage is located in New Kent County (Lat. 37°26'10.5", Long. -77°03'38.9"), approximately 15.3 miles northwest of Claremont, VA. Drainage area is 251 sq. miles. This gage started taking data in 1942 and is still taking data. There are no known anthropogenic alterations in this area that would affect the flow conditions. The average daily discharge error between the model and gage data for the 20 year timespan was 0.37%, 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	10	12.9	29
Feb. Low Flow	64	41.5	-35.2
Mar. Low Flow	87	64.7	-25.6
Apr. Low Flow	145	139	-4.14
May Low Flow	181	222	22.7
Jun. Low Flow	163	153	-6.13
Jul. Low Flow	134	103	-23.1
Aug. Low Flow	75	59.9	-20.1
Sep. Low Flow	17	27.9	64.1
Oct. Low Flow	8.7	19.6	125
Nov. Low Flow	15	26.3	75.3
Dec. Low Flow	6.6	18.2	176

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	269	268	-0.37
Jan. Mean Flow	350	357	2
Feb. Mean Flow	405	443	9.38
Mar. Mean Flow	456	476	4.39
Apr. Mean Flow	404	344	-14.9
May Mean Flow	245	227	-7.35
Jun. Mean Flow	158	159	0.63
Jul. Mean Flow	125	136	8.8
Aug. Mean Flow	192	202	5.21
Sep. Mean Flow	275	265	-3.64
Oct. Mean Flow	134	155	15.7
Nov. Mean Flow	211	197	-6.64
Dec. Mean Flow	284	267	-5.99

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	192	205	6.77
Feb. High Flow	222	393	77
Mar. High Flow	456	501	9.87
Apr. High Flow	639	758	18.6
May High Flow	713	920	29
Jun. High Flow	924	1470	59.1
Jul. High Flow	1010	1130	11.9
Aug. High Flow	544	536	-1.47
Sep. High Flow	325	283	-12.9
Oct. High Flow	339	341	0.59
Nov. High Flow	244	407	66.8
Dec. High Flow	236	222	-5.93

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	0.05	2.19	4280
Med. 1 Day Min	3.65	7.73	112
Min. 3 Day Min	0.06	2.28	3700
Med. 3 Day Min	3.73	8.59	130
Min. 7 Day Min	0.07	2.42	3220
Med. 7 Day Min	4.39	10.1	130
Min. 30 Day Min	0.16	2.86	1630
Med. 30 Day Min	14.6	27.2	86.3
Min. 90 Day Min	2.83	23.6	734
Med. 90 Day Min	57.7	84.6	46.6
7Q10	0.24	3.84	1510
Year of 90-Day Min. Flow	2002	2002	0
Drought Year Mean	67.7	75.3	11.2
Mean Baseflow	130	129	-0.77

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	14700	9010	-38.7
Med. 1 Day Max	1710	2870	67.8
Max. 3 Day Max	9470	7580	-20
Med. 3 Day Max	1550	1740	12.3
Max. 7 Day Max	5250	4280	-18.5
Med. 7 Day Max	1240	1250	0.81
Max. 30 Day Max	1940	1450	-25.3
Med. 30 Day Max	734	706	-3.81
Max. 90 Day Max	1080	1100	1.85
Med. 90 Day Max	448	474	5.8

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	0.22	4.88	2120
5% Non-Exceedance	5.51	14.3	160
50% Non-Exceedance	169	166	-1.78
95% Non-Exceedance	889	817	-8.1
99% Non-Exceedance	1630	1700	4.29
Sept. 10% Non-Exceedance	3.6	12.9	258

Fig. 1: Hydrograph

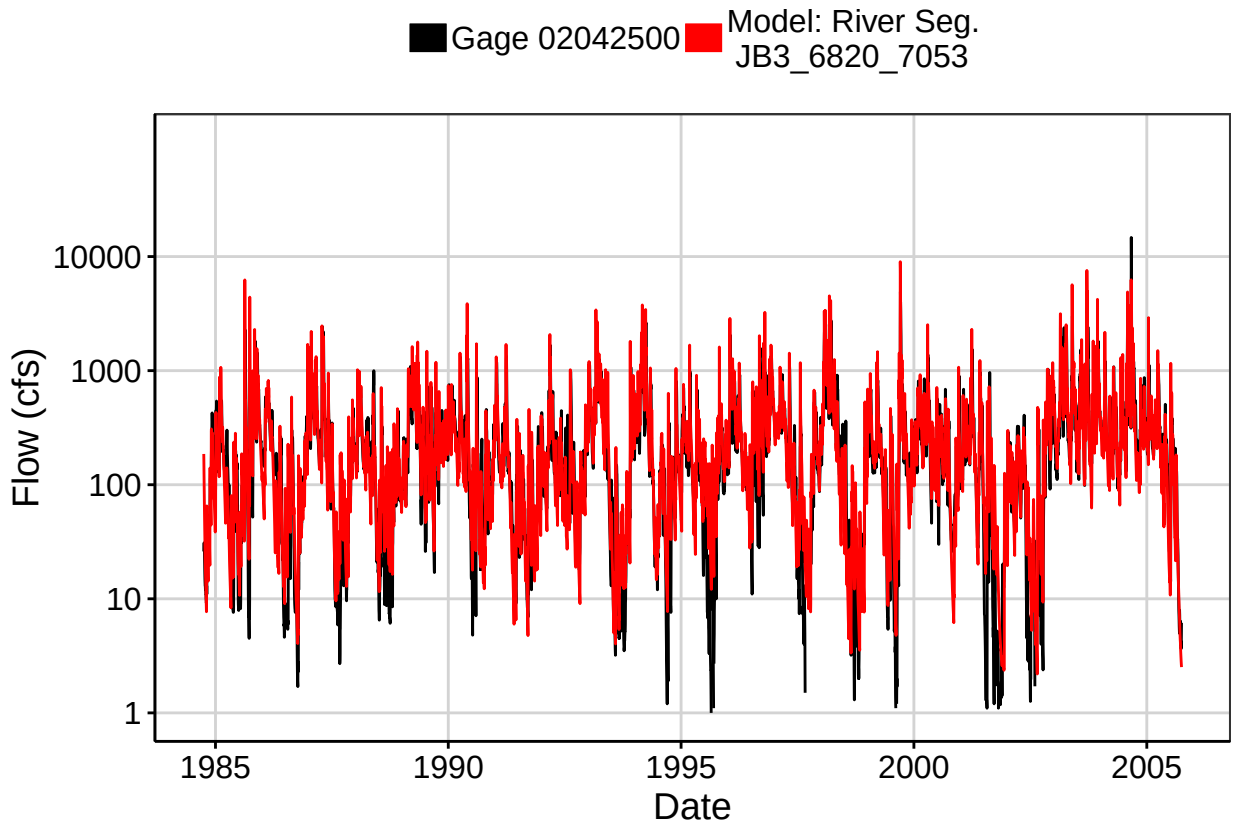


Fig. 2: Zoomed Hydrograph

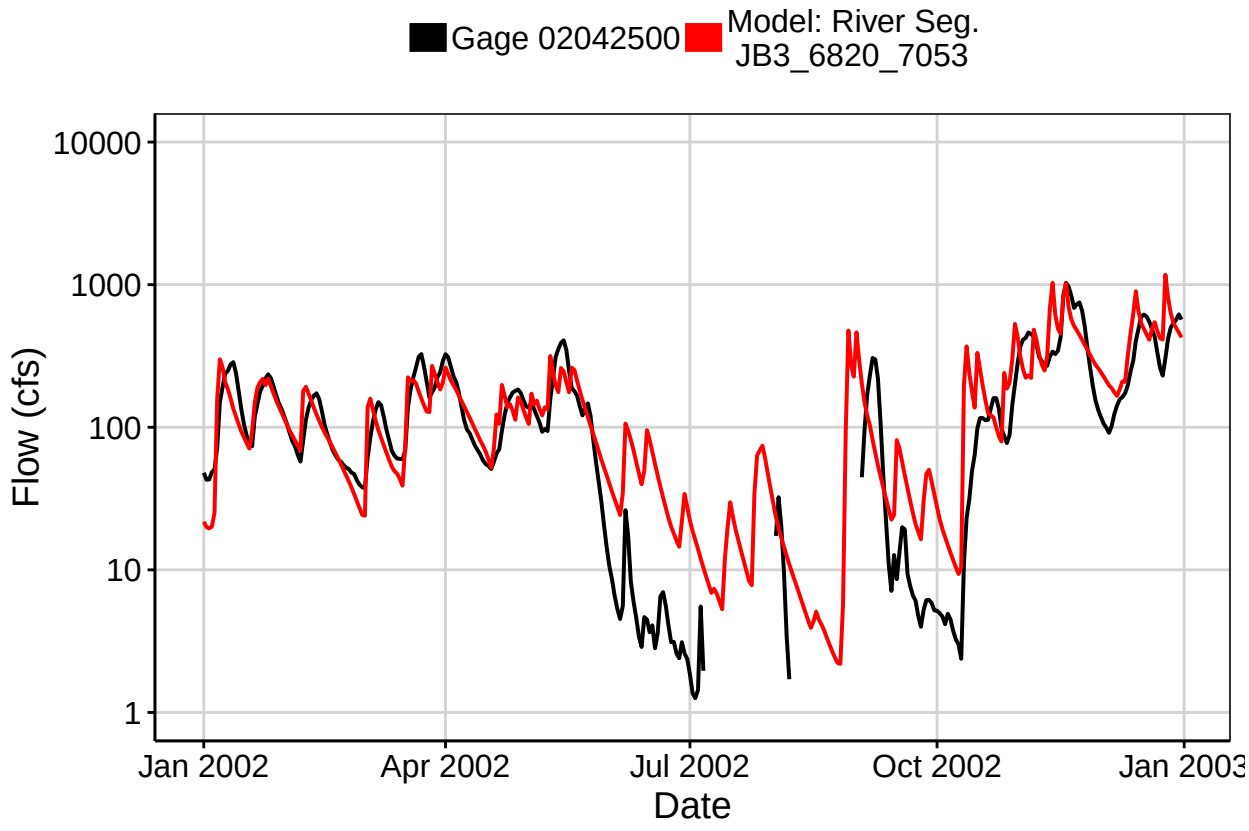


Fig. 3: Flow Exceedance

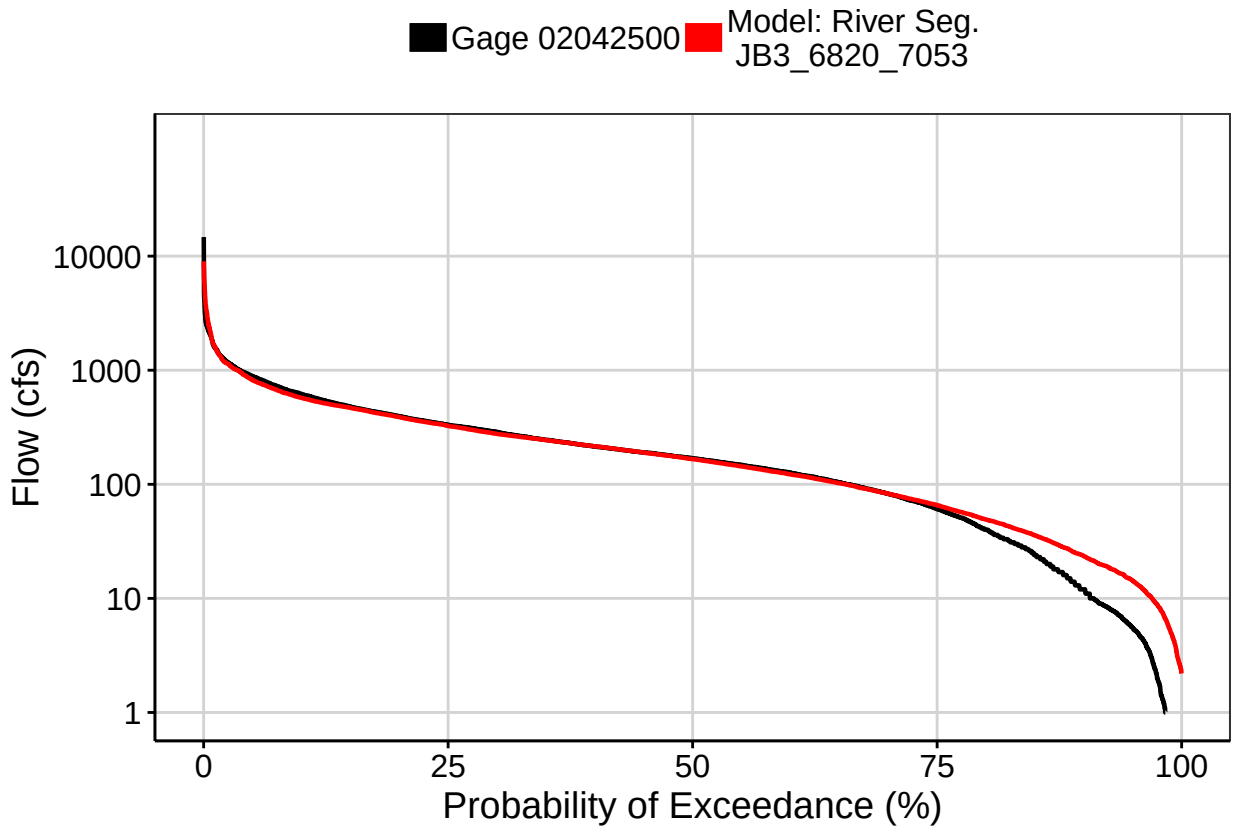


Fig. 4: Baseflow

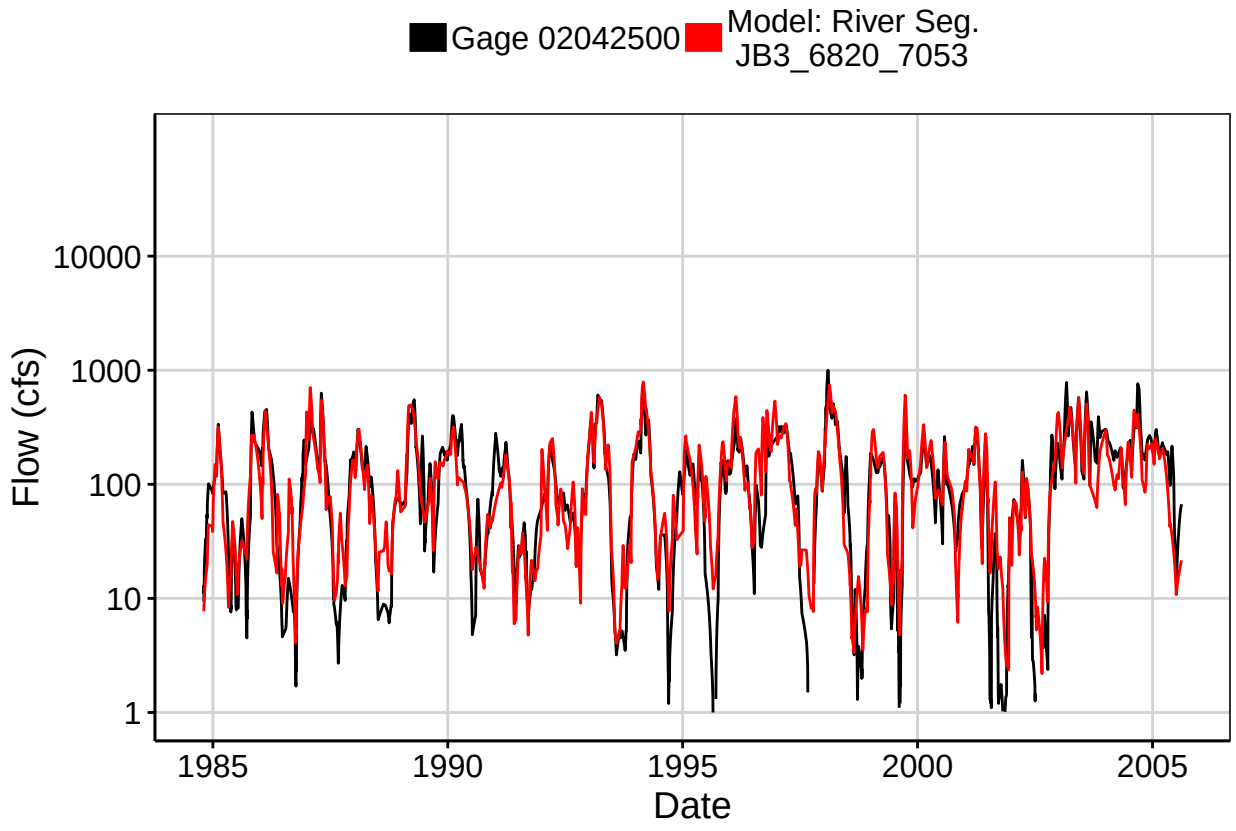


Fig. 5: Combined Baseflow

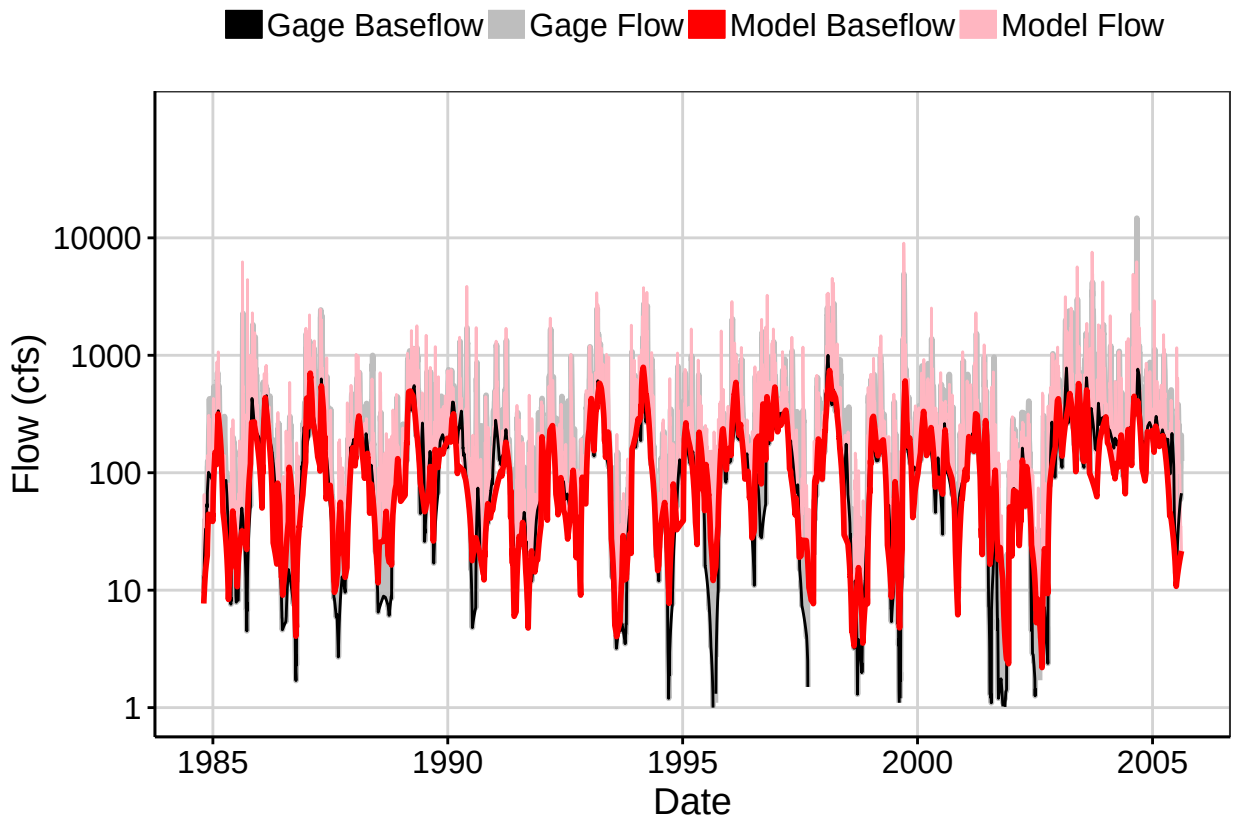


Fig. 6: Largest Error Segment

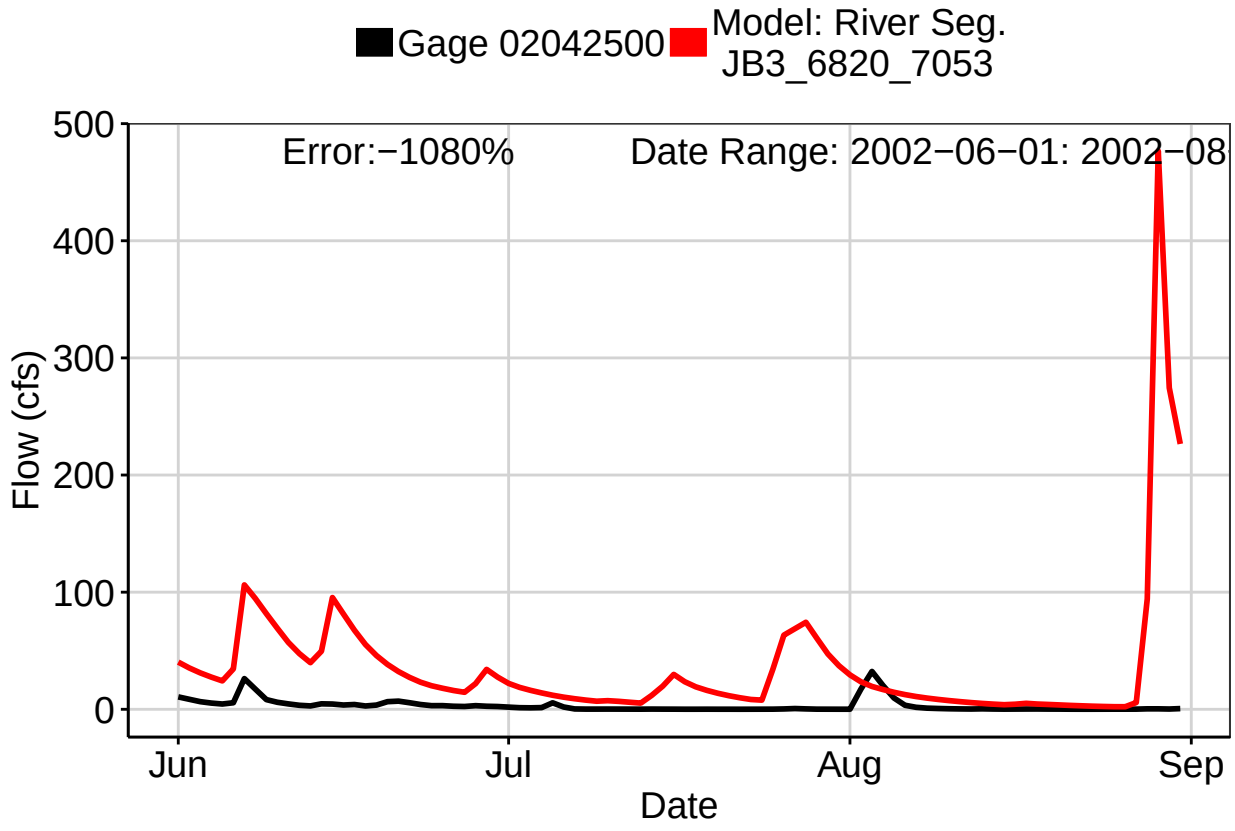


Fig. 7: Second Largest Error Segment

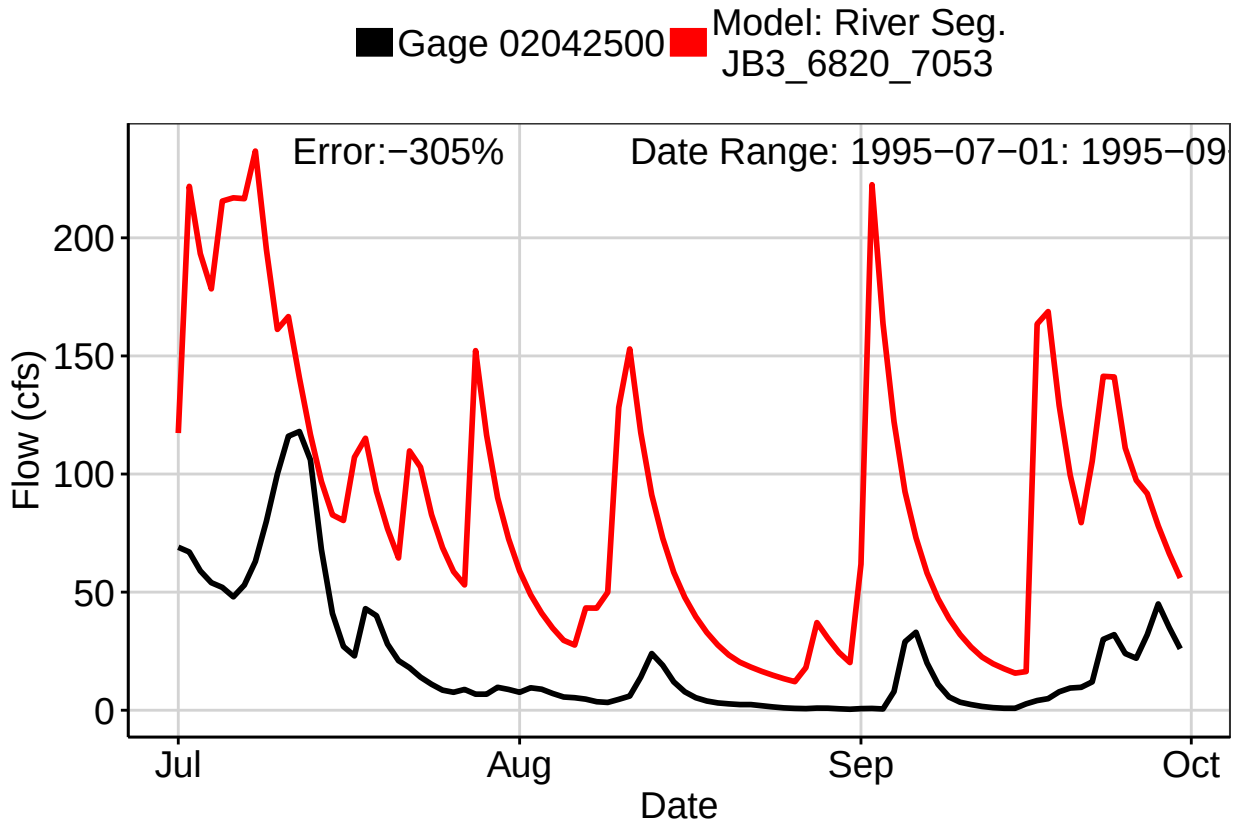


Fig. 8: Third Largest Error Segment

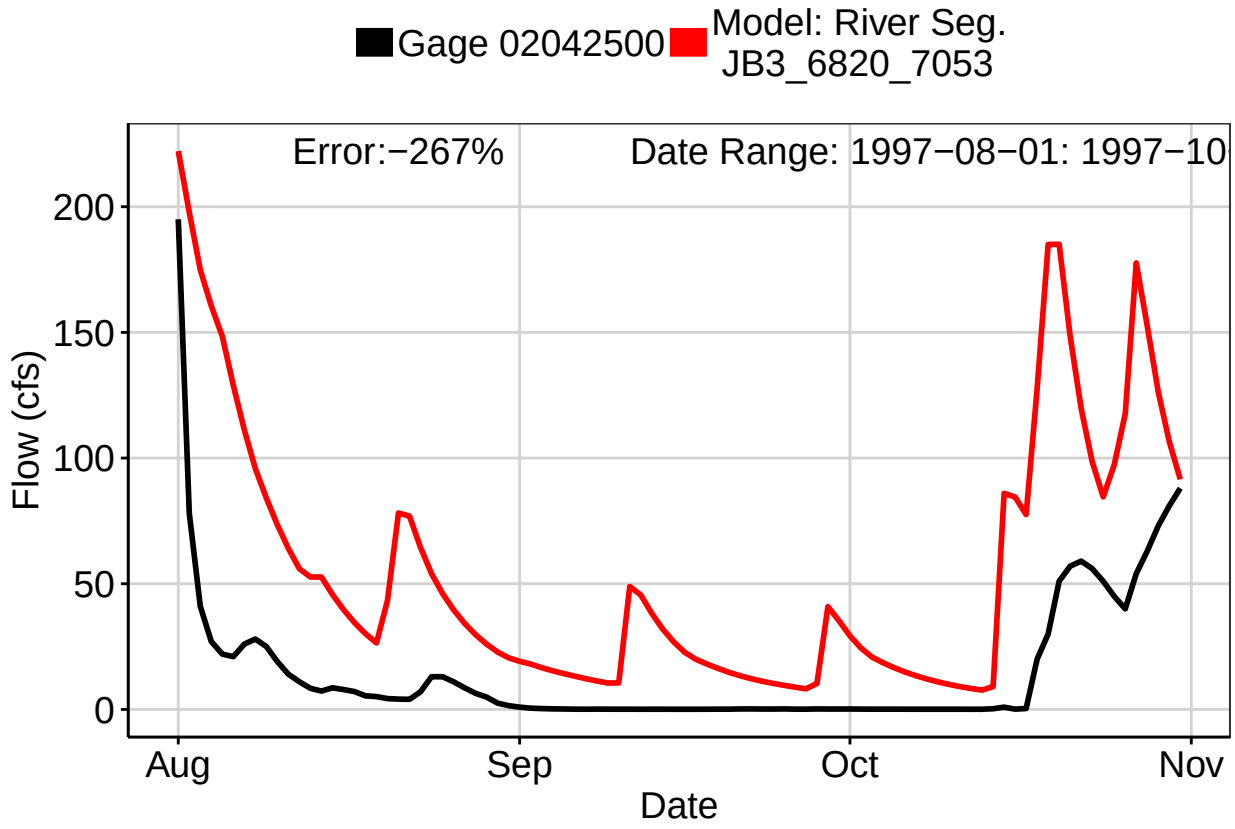


Fig. 9: Residuals Plot