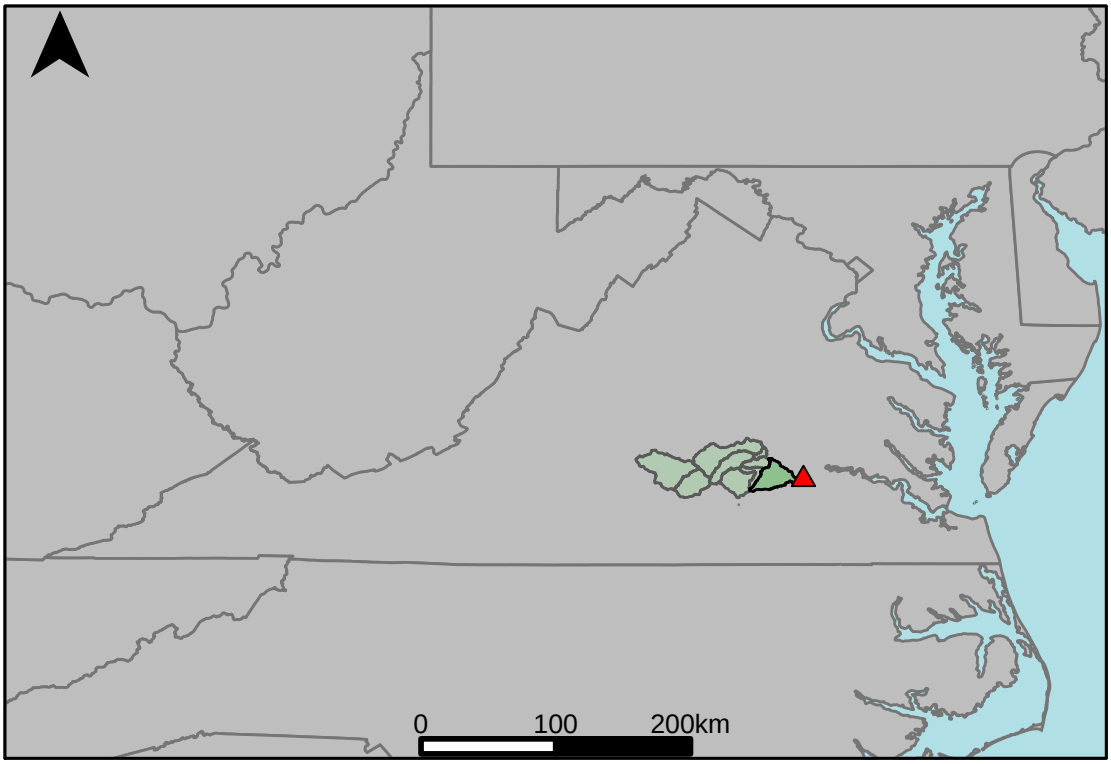
Appendix A.38: USGS Gage 02041650 vs. JA5_7480_0001 Appomattox River



This river segment follows part of the flow of the Appomattox, a tributary of the James. The gage is located in Dinwiddie County (Lat. 37°13'30.5", Long. -77°28'30.9"), approximately 5.1 miles southwest of Colonial Heights, VA. Drainage area is 1342 sq. miles. This gage started taking data in 1969 and is still taking data. Flow in this area is regulated by Appomattox Water Authority at Lake Chesdin, 2.8 mi upstream, but records do not include flow of the Upper Appomattox Canal of the city of Petersburg which diverts around this station. The average daily discharge error between the model and gage data for the 20 year timespan was 4.03%, with 37.1% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	129	164	27.1
Feb. Low Flow	306	209	-31.7
Mar. Low Flow	457	281	-38.5
Apr. Low Flow	580	565	-2.59
May Low Flow	829	904	9.05
Jun. Low Flow	824	810	-1.7
Jul. Low Flow	644	507	-21.3
Aug. Low Flow	415	324	-21.9
Sep. Low Flow	206	240	16.5
Oct. Low Flow	139	183	31.7
Nov. Low Flow	118	191	61.9
Dec. Low Flow	93	164	76.3

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	1240	1190	-4.03
Jan. Mean Flow	1690	1540	-8.88
Feb. Mean Flow	2010	2110	4.98
Mar. Mean Flow	2370	2540	7.17
Apr. Mean Flow	1910	1770	-7.33
May Mean Flow	1260	1120	-11.1
Jun. Mean Flow	761	667	-12.4
Jul. Mean Flow	506	443	-12.5
Aug. Mean Flow	537	469	-12.7
Sep. Mean Flow	889	956	7.54
Oct. Mean Flow	477	521	9.22
Nov. Mean Flow	1080	1010	-6.48
Dec. Mean Flow	1390	1160	-16.5

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	704	419	-40.5
Feb. High Flow	1760	2310	31.2
Mar. High Flow	2200	1650	-25
Apr. High Flow	4090	4510	10.3
May High Flow	4510	4050	-10.2
Jun. High Flow	6300	6350	0.79
Jul. High Flow	5630	5510	-2.13
Aug. High Flow	2700	2130	-21.1
Sep. High Flow	1200	706	-41.2
Oct. High Flow	742	337	-54.6
Nov. High Flow	1120	474	-57.7
Dec. High Flow	280	252	-10

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	18.3	55.7	204
Med. 1 Day Min	71	101	42.3
Min. 3 Day Min	18.6	55.9	201
Med. 3 Day Min	74.3	104	40
Min. 7 Day Min	18.9	56	196
Med. 7 Day Min	82.2	107	30.2
Min. 30 Day Min	25.8	59	129
Med. 30 Day Min	96.4	144	49.4
Min. 90 Day Min	32.9	64.8	97
Med. 90 Day Min	287	218	-24
7Q10	38.9	68.7	76.6
Year of 90-Day Min. Flow	2002	1999	100
Drought Year Mean	255	202	-20.8
Mean Baseflow	524	576	9.92

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	21200	15100	-28.8
Med. 1 Day Max	8750	13600	55.4
Max. 3 Day Max	18300	15100	-17.5
Med. 3 Day Max	8390	10700	27.5
Max. 7 Day Max	15300	15100	-1.31
Med. 7 Day Max	7250	6790	-6.34
Max. 30 Day Max	7240	7480	3.31
Med. 30 Day Max	3670	3170	-13.6
Max. 90 Day Max	5510	5580	1.27
Med. 90 Day Max	2170	2050	-5.53

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	36.8	66.8	81.5
5% Non-Exceedance	84	88.9	5.83
50% Non-Exceedance	640	556	-13.1
95% Non-Exceedance	5030	4140	-17.7
99% Non-Exceedance	9550	13200	38.2
Sept. 10% Non-Exceedance	70	87.5	25

Fig. 1: Hydrograph

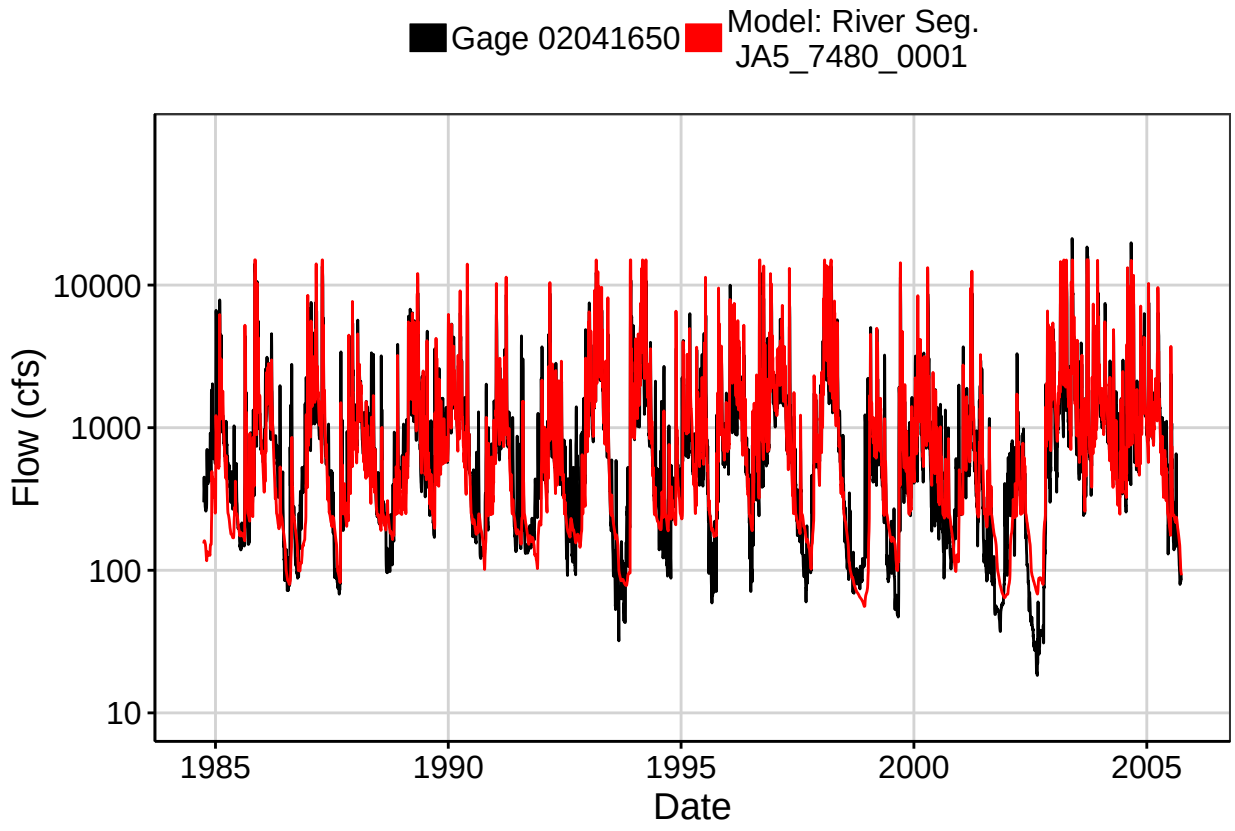


Fig. 2: Zoomed Hydrograph

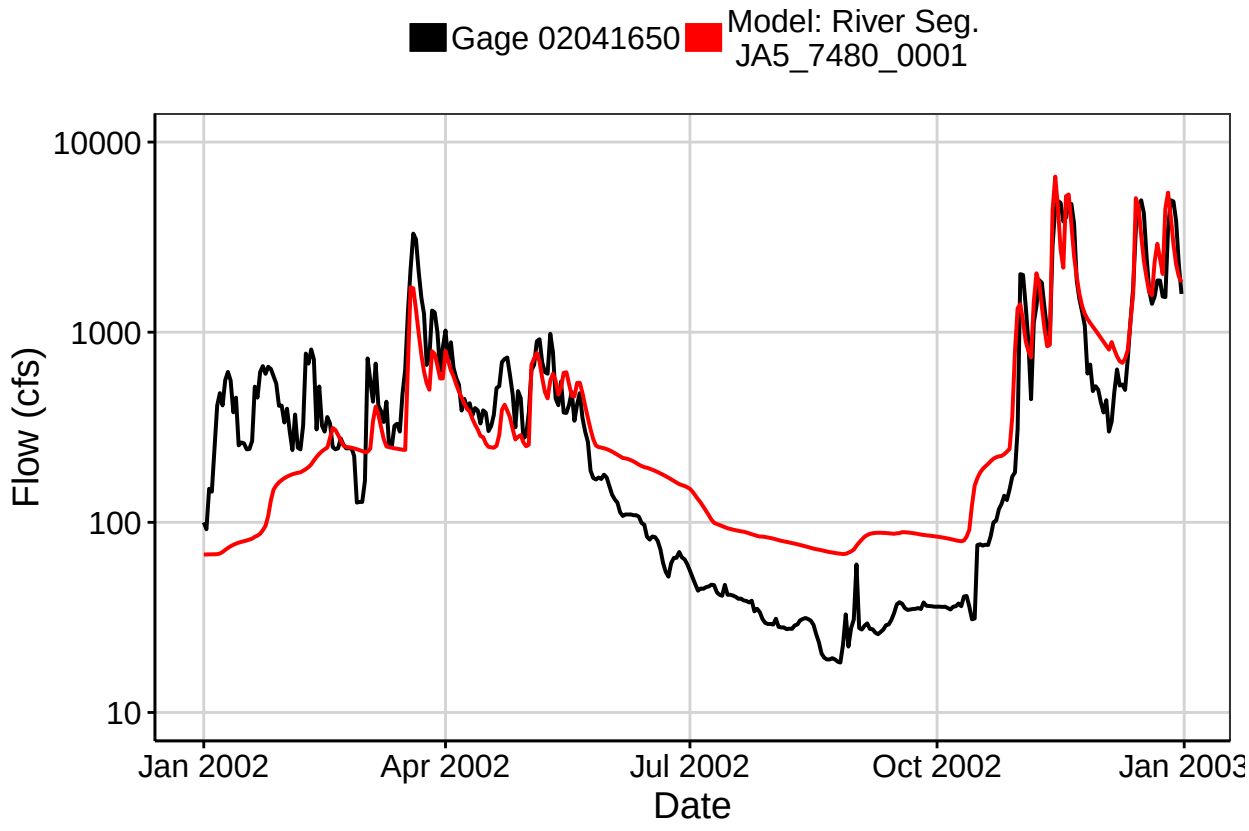


Fig. 3: Flow Exceedance

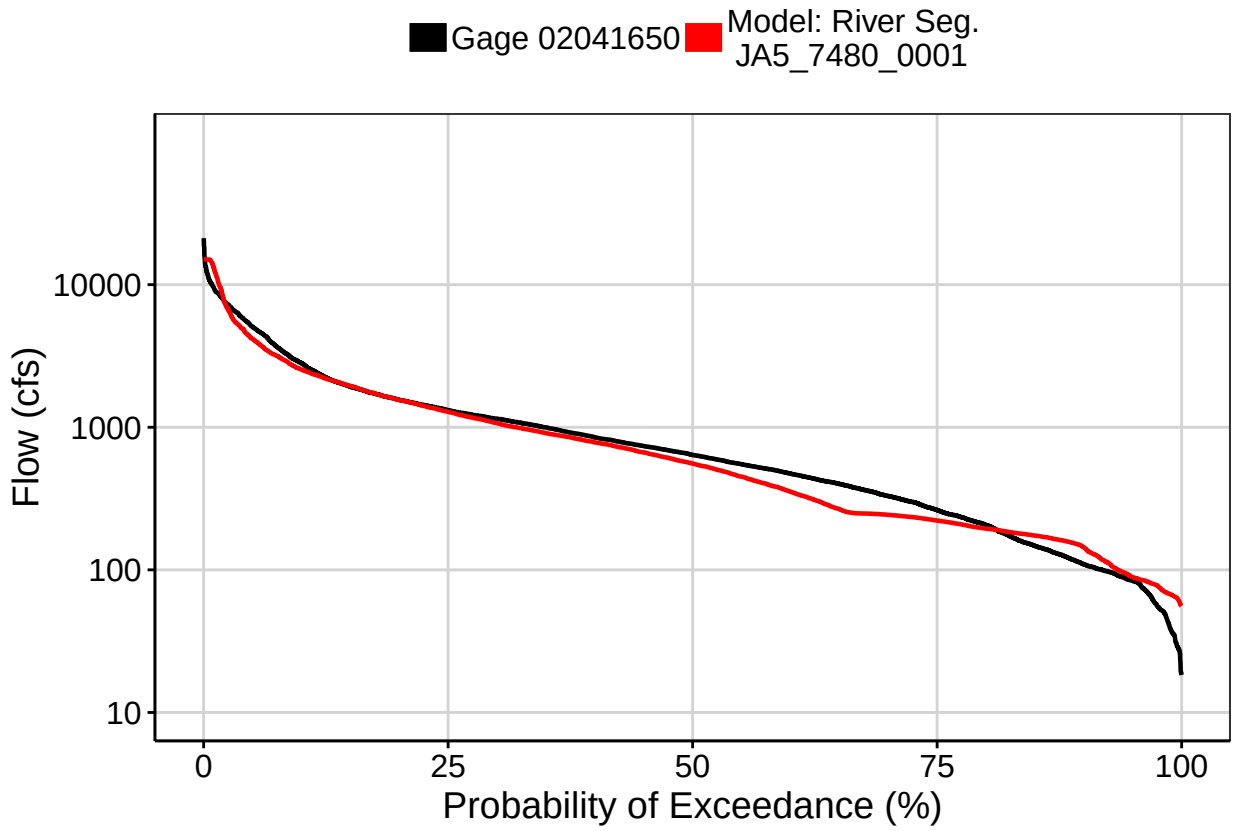


Fig. 4: Baseflow

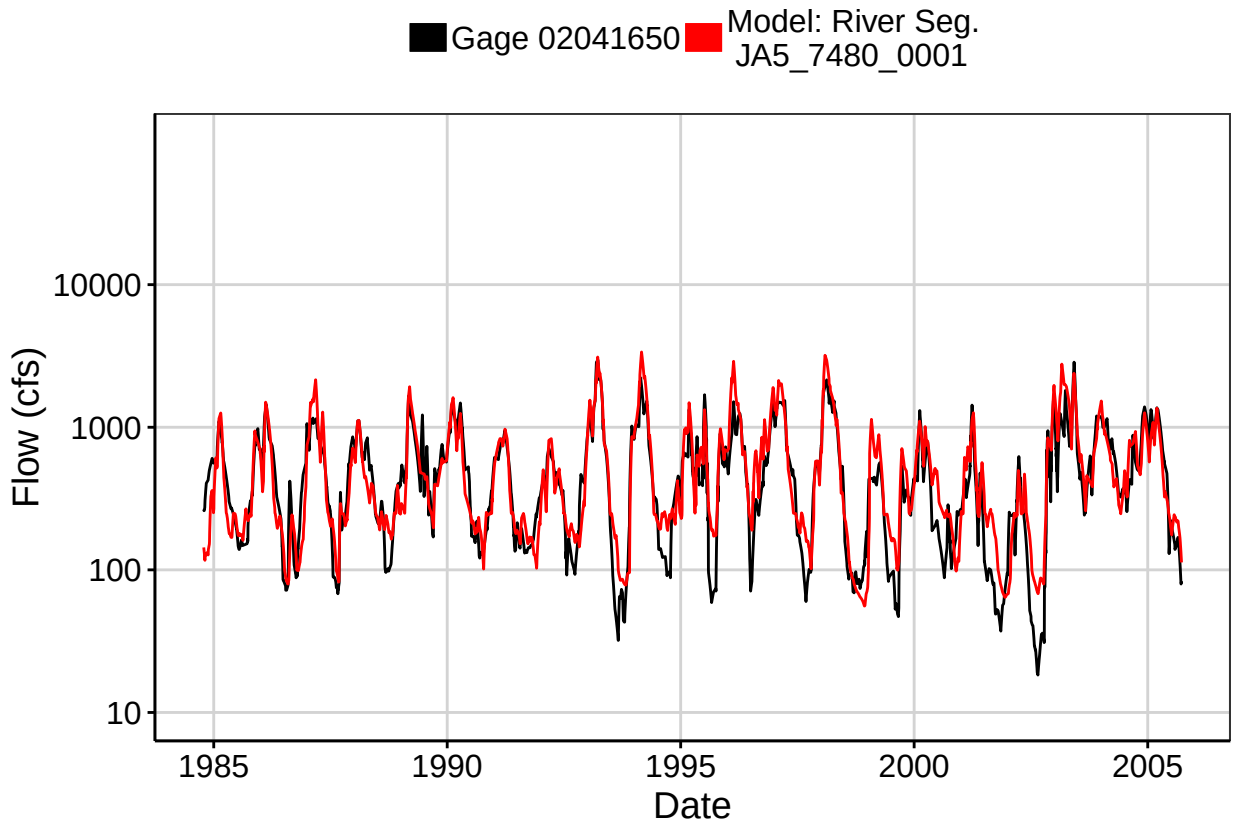


Fig. 5: Combined Baseflow

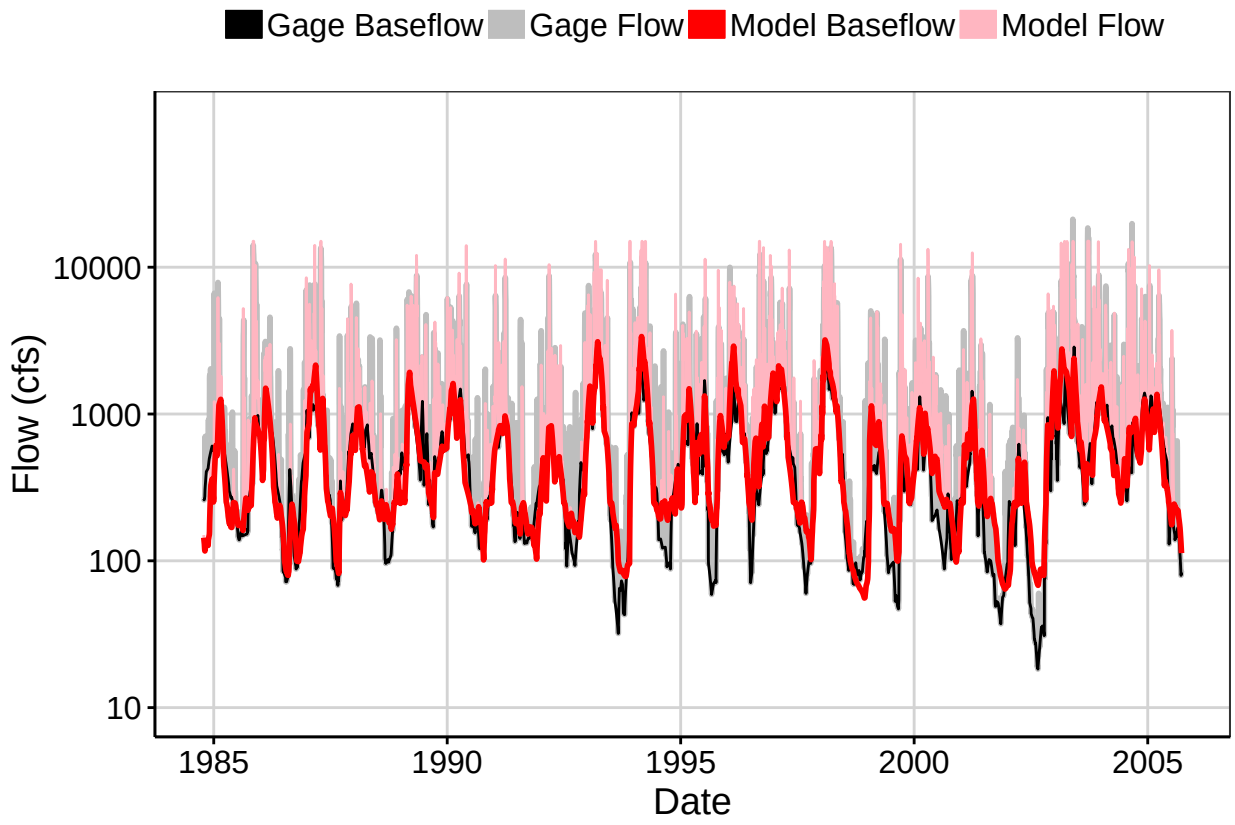


Fig. 6: Largest Error Segment

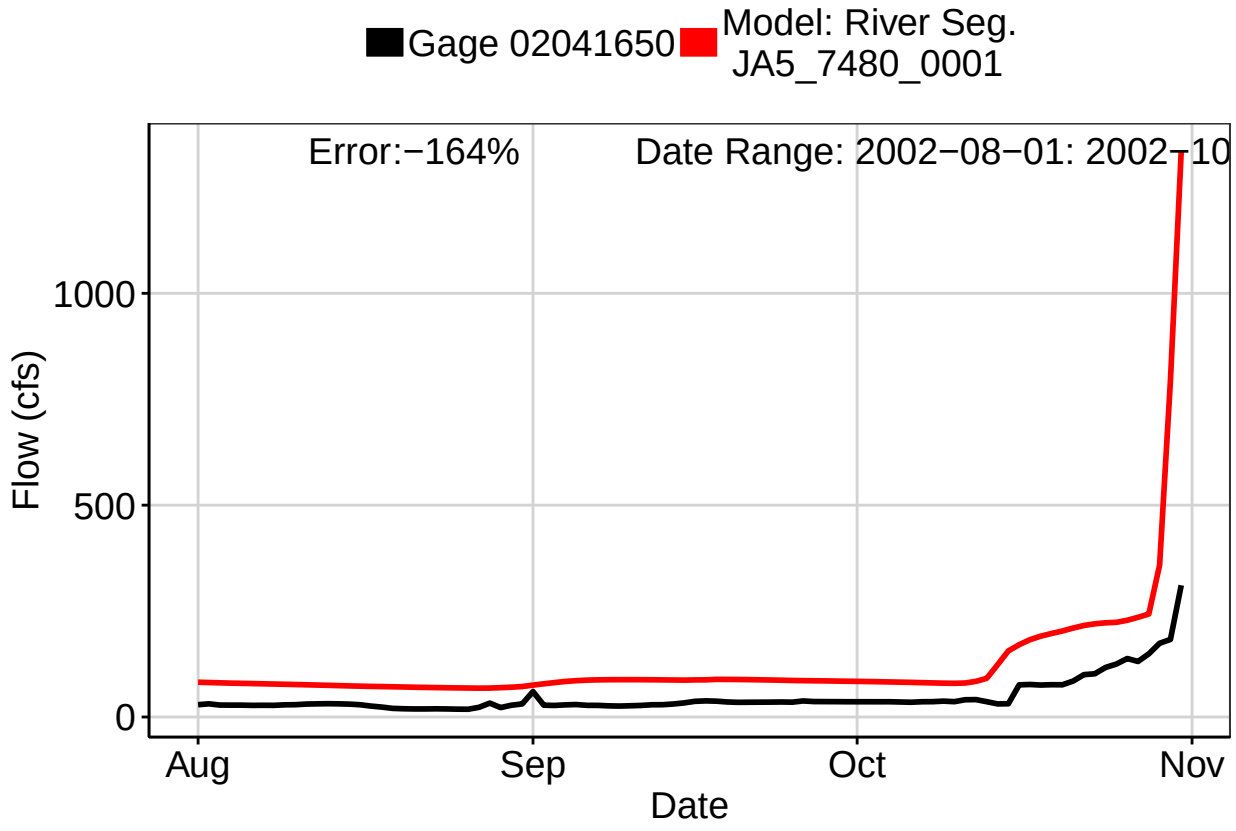


Fig. 7: Second Largest Error Segment

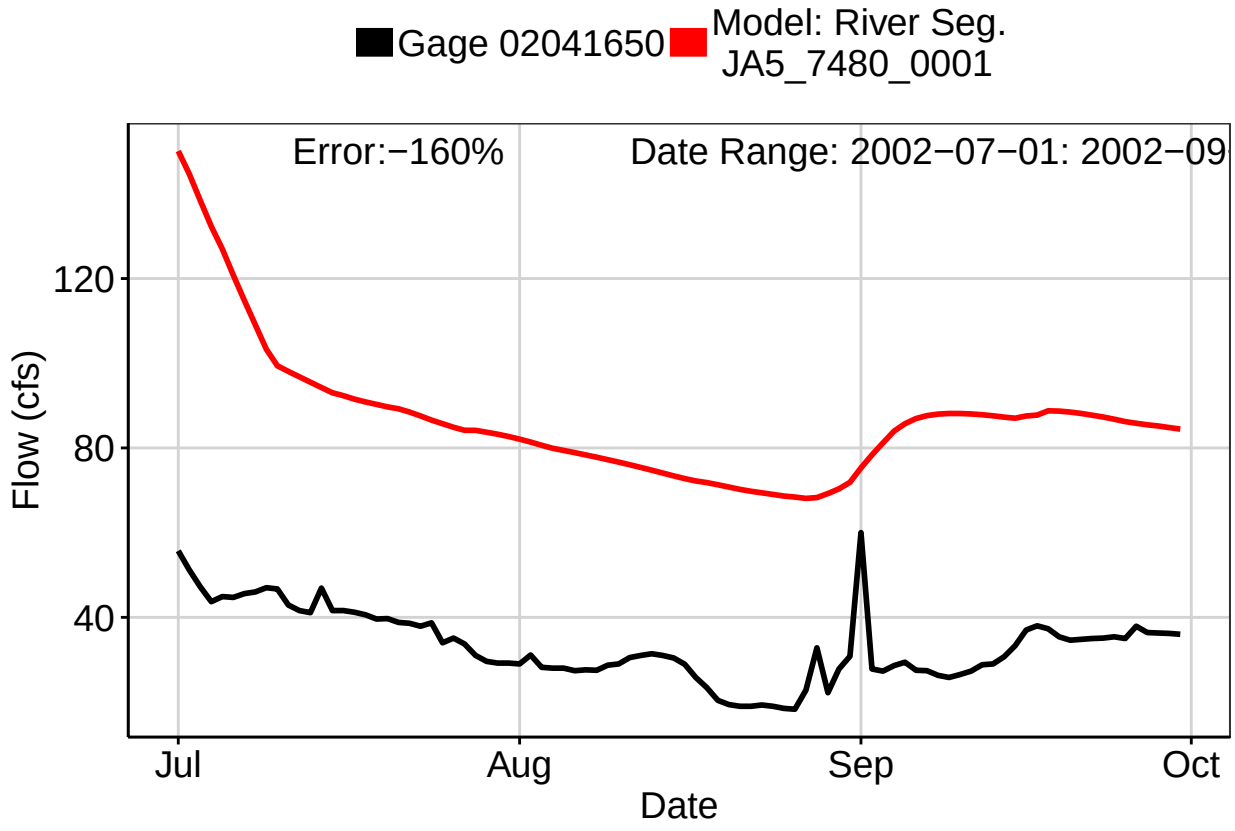


Fig. 8: Third Largest Error Segment

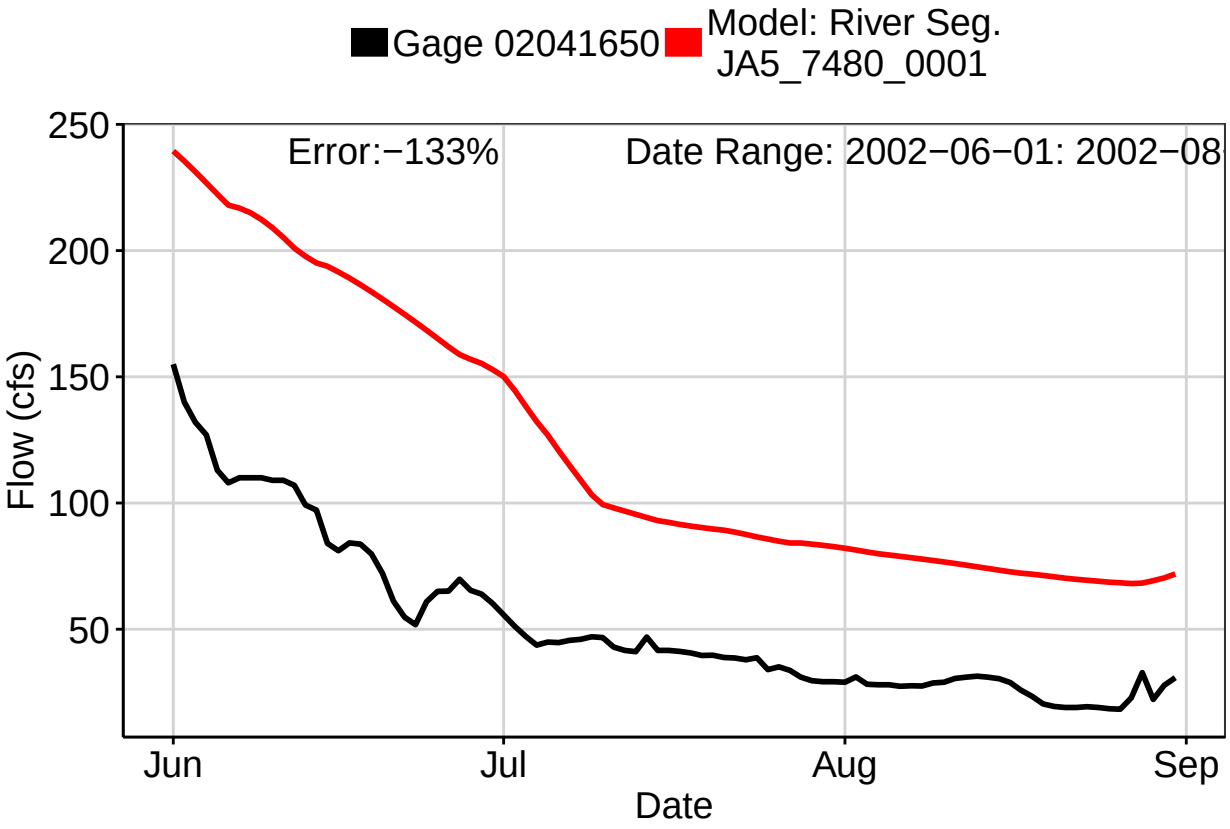


Fig. 9: Residuals Plot