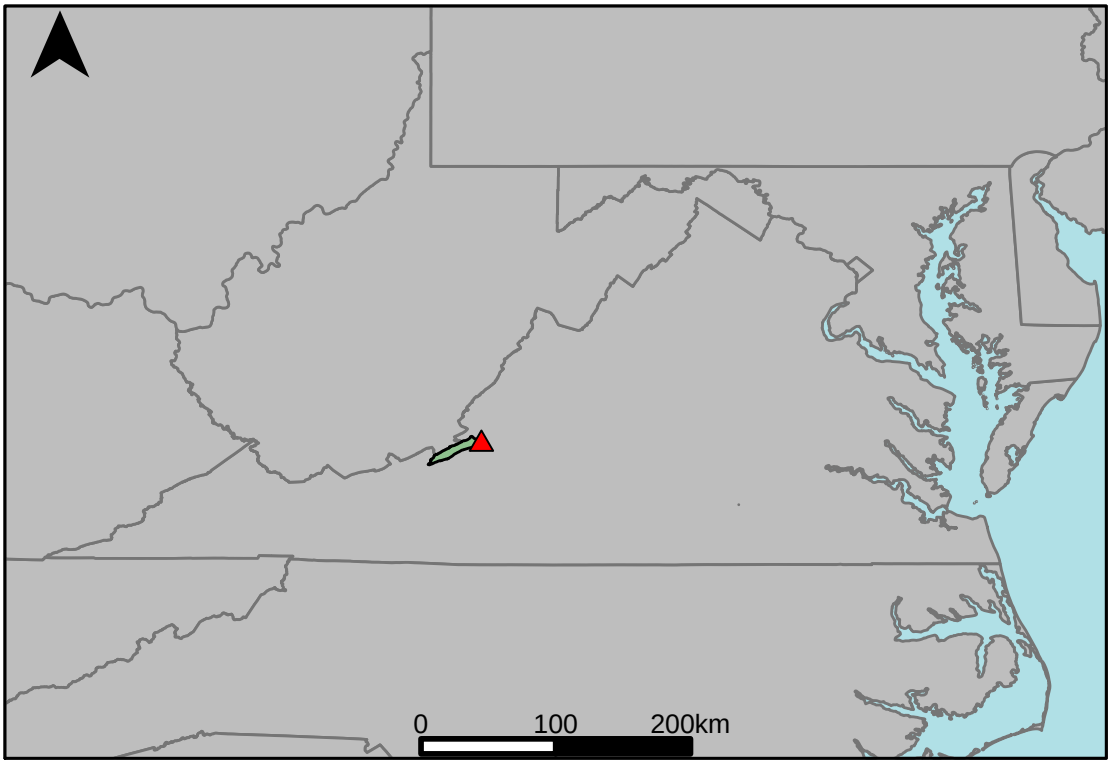
Appendix A.12: USGS Gage 02017500 vs. JU1_7630_7490 Upper James River



This river segment follows part of the flow of the Johns Creek, a tributary of the James. The gage is located in Craig County (Lat. 37°30'22.5", Long. -80°06'24.2"), approximately 0.5 mile north of New Castle, VA. Drainage area is 105 sq. miles. This gage started taking data in 1926 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 12%, with 45.8% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	14	11.9	-15
Feb. Low Flow	24	33.8	40.8
Mar. Low Flow	54	65.4	21.1
Apr. Low Flow	48	63.4	32.1
May Low Flow	106	109	2.83
Jun. Low Flow	78	74.7	-4.23
Jul. Low Flow	62	28.4	-54.2
Aug. Low Flow	38	8.9	-76.6
Sep. Low Flow	14	1.84	-86.9
Oct. Low Flow	12	1.32	-89
Nov. Low Flow	11	0.87	-92.1
Dec. Low Flow	11	3.82	-65.3

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	133	117	-12
Jan. Mean Flow	130	113	-13.1
Feb. Mean Flow	226	197	-12.8
Mar. Mean Flow	257	207	-19.5
Apr. Mean Flow	326	220	-32.5
May Mean Flow	131	104	-20.6
Jun. Mean Flow	39	38.5	-1.28
Jul. Mean Flow	21.2	18.4	-13.2
Aug. Mean Flow	61.9	63	1.78
Sep. Mean Flow	41.7	80.8	93.8
Oct. Mean Flow	20.1	35	74.1
Nov. Mean Flow	195	190	-2.56
Dec. Mean Flow	165	150	-9.09

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	34	73.7	117
Feb. High Flow	268	201	-25
Mar. High Flow	678	395	-41.7
Apr. High Flow	686	258	-62.4
May High Flow	511	480	-6.07
Jun. High Flow	1480	998	-32.6
Jul. High Flow	196	115	-41.3
Aug. High Flow	443	363	-18.1
Sep. High Flow	112	74.5	-33.5
Oct. High Flow	51	37	-27.5
Nov. High Flow	61	107	75.4
Dec. High Flow	273	193	-29.3

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	9.2	0.01	-99.9
Med. 1 Day Min	9.6	0.87	-90.9
Min. 3 Day Min	9.37	0.01	-99.9
Med. 3 Day Min	9.83	1.01	-89.7
Min. 7 Day Min	10.3	0.01	-99.9
Med. 7 Day Min	10.4	1.65	-84.1
Min. 30 Day Min	11.1	1.13	-89.8
Med. 30 Day Min	14.9	6.5	-56.4
Min. 90 Day Min	21.9	13.2	-39.7
Med. 90 Day Min	23.4	24.8	5.98
7Q10	10.3	0.06	-99.4
Year of 90-Day Min. Flow	1987	1987	0
Drought Year Mean	202	171	-15.3
Mean Baseflow	53.6	60.8	13.4

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	3580	5520	54.2
Med. 1 Day Max	3240	1940	-40.1
Max. 3 Day Max	2340	2300	-1.71
Med. 3 Day Max	2310	1470	-36.4
Max. 7 Day Max	1390	1180	-15.1
Med. 7 Day Max	1250	933	-25.4
Max. 30 Day Max	828	575	-30.6
Med. 30 Day Max	478	429	-10.3
Max. 90 Day Max	493	386	-21.7
Med. 90 Day Max	216	199	-7.87

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	10	0.14	-98.6
5% Non-Exceedance	12	2.39	-80.1
50% Non-Exceedance	60	72.1	20.2
95% Non-Exceedance	453	327	-27.8
99% Non-Exceedance	1180	810	-31.4
Sept. 10% Non-Exceedance	12	11.3	-5.83

Fig. 1: Hydrograph

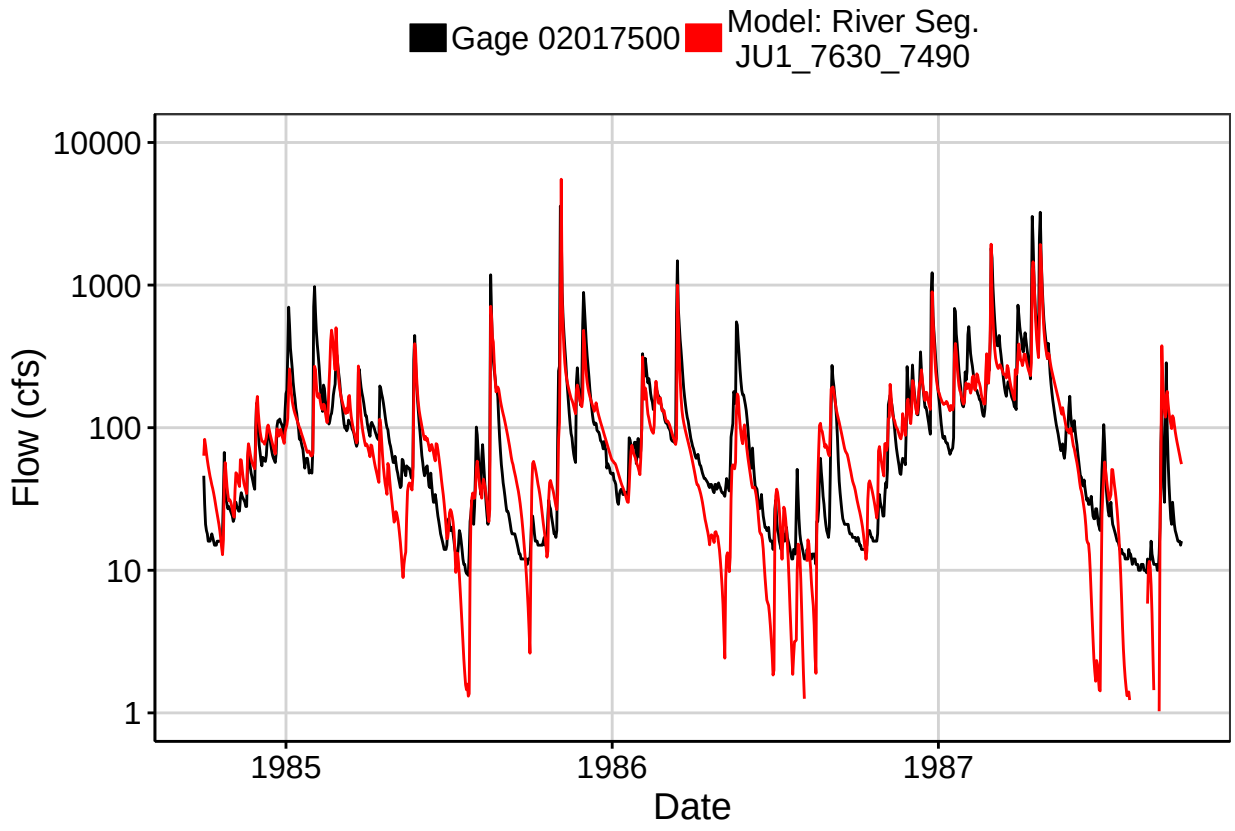


Fig. 2: Zoomed Hydrograph

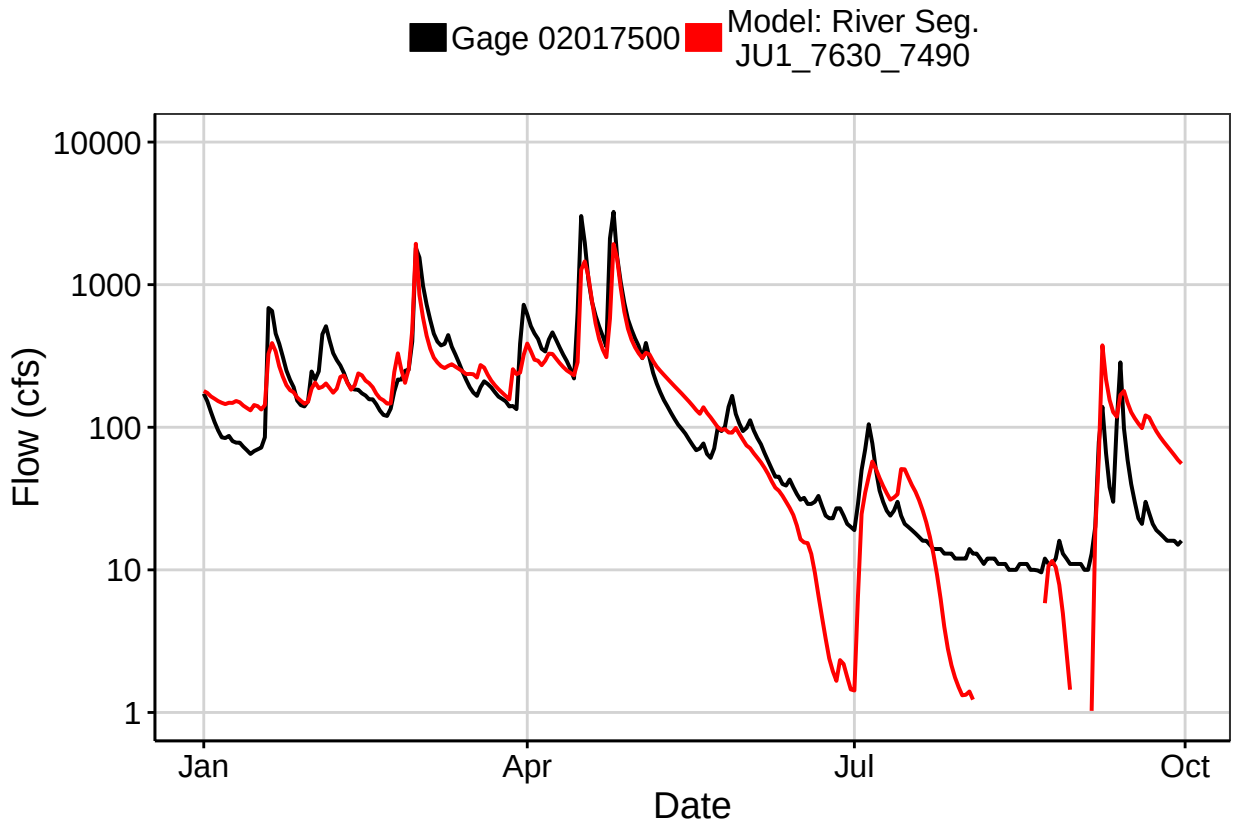


Fig. 3: Flow Exceedance

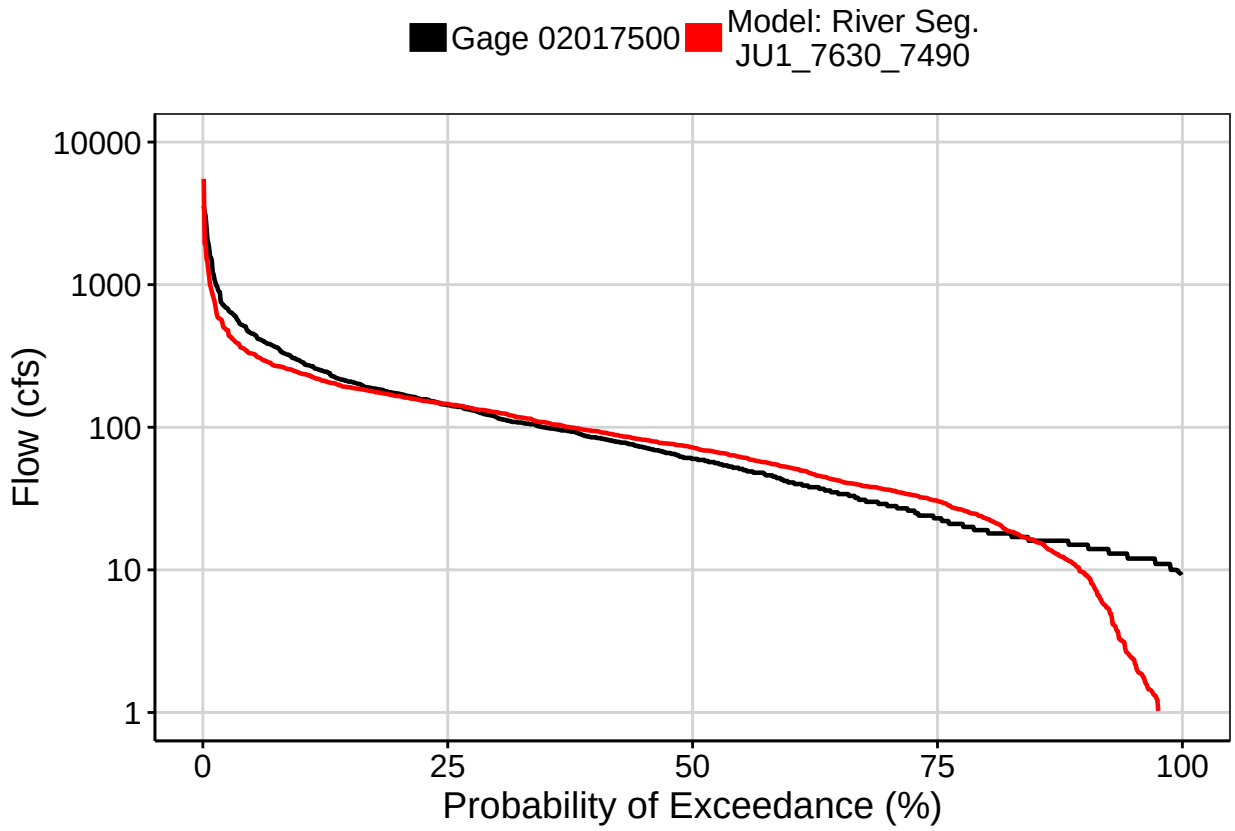


Fig. 4: Baseflow

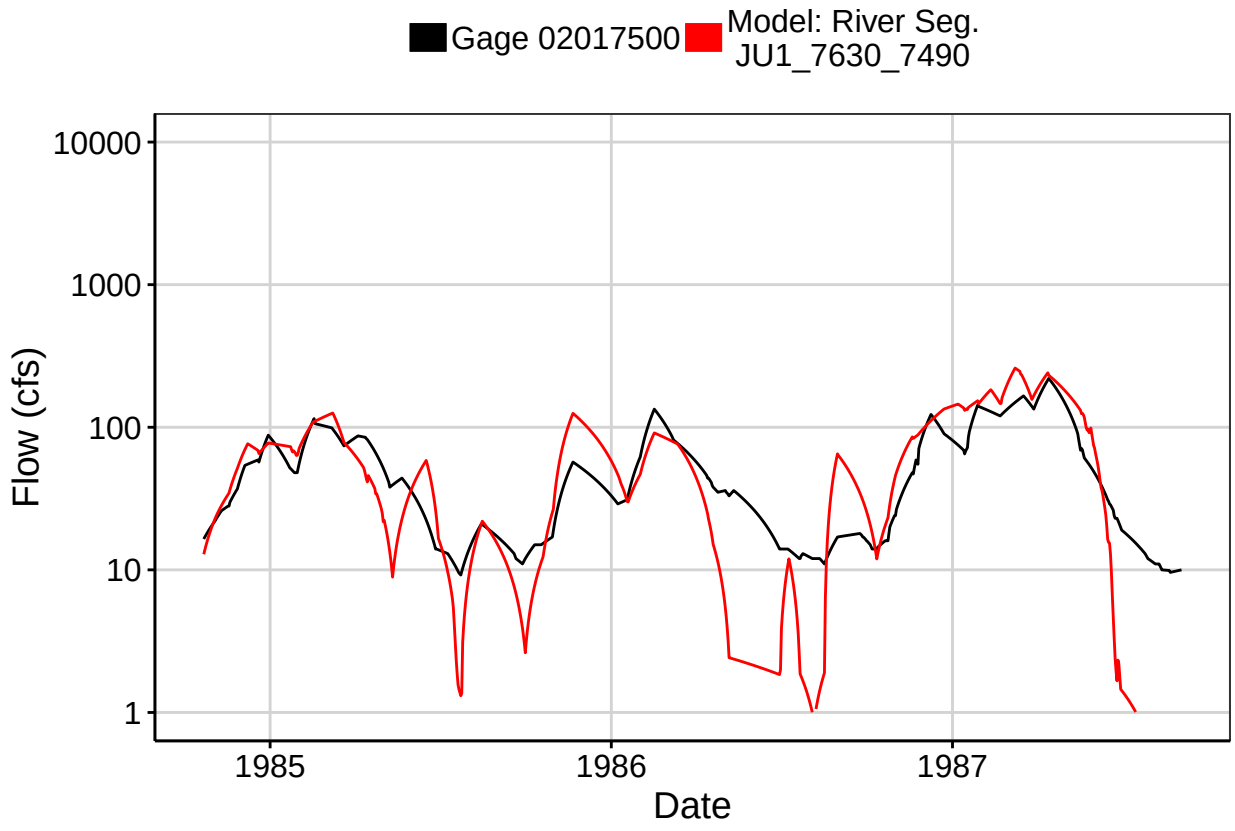


Fig. 5: Combined Baseflow

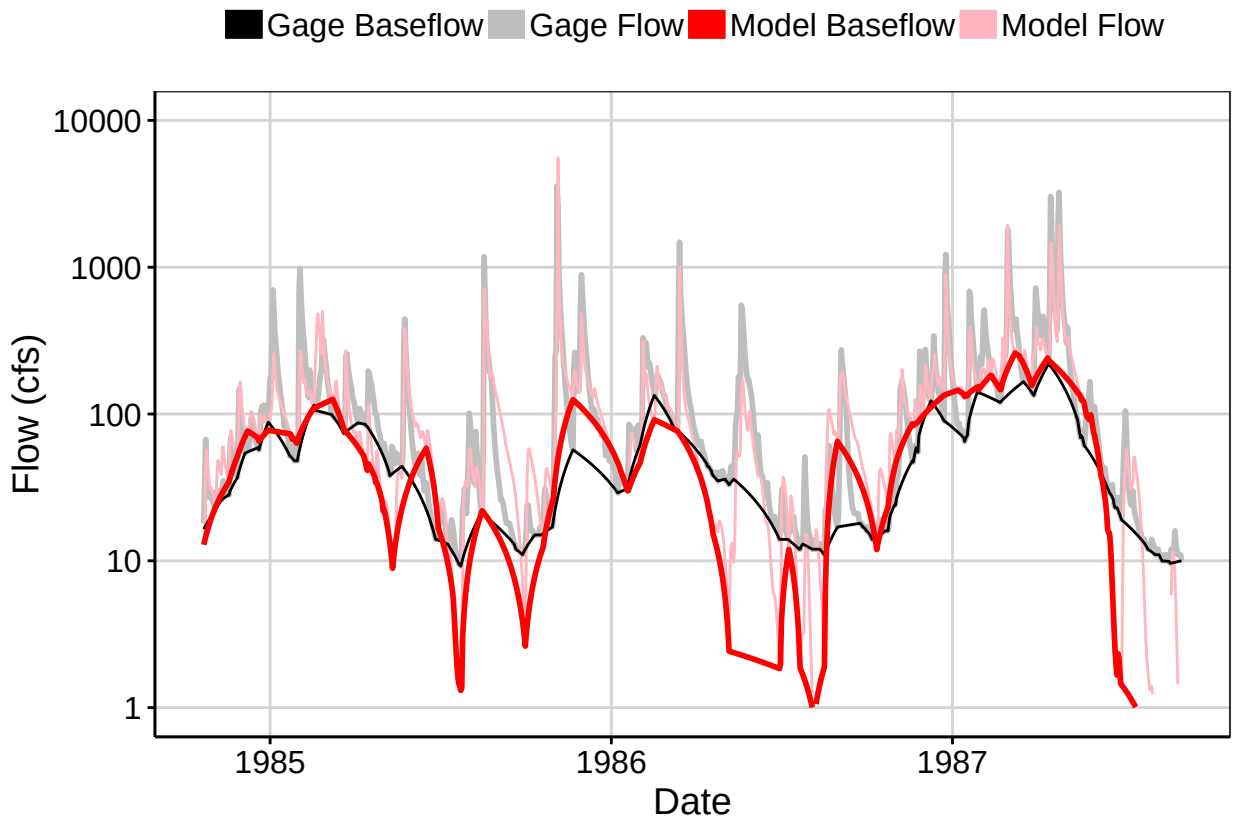


Fig. 6: Largest Error Segment

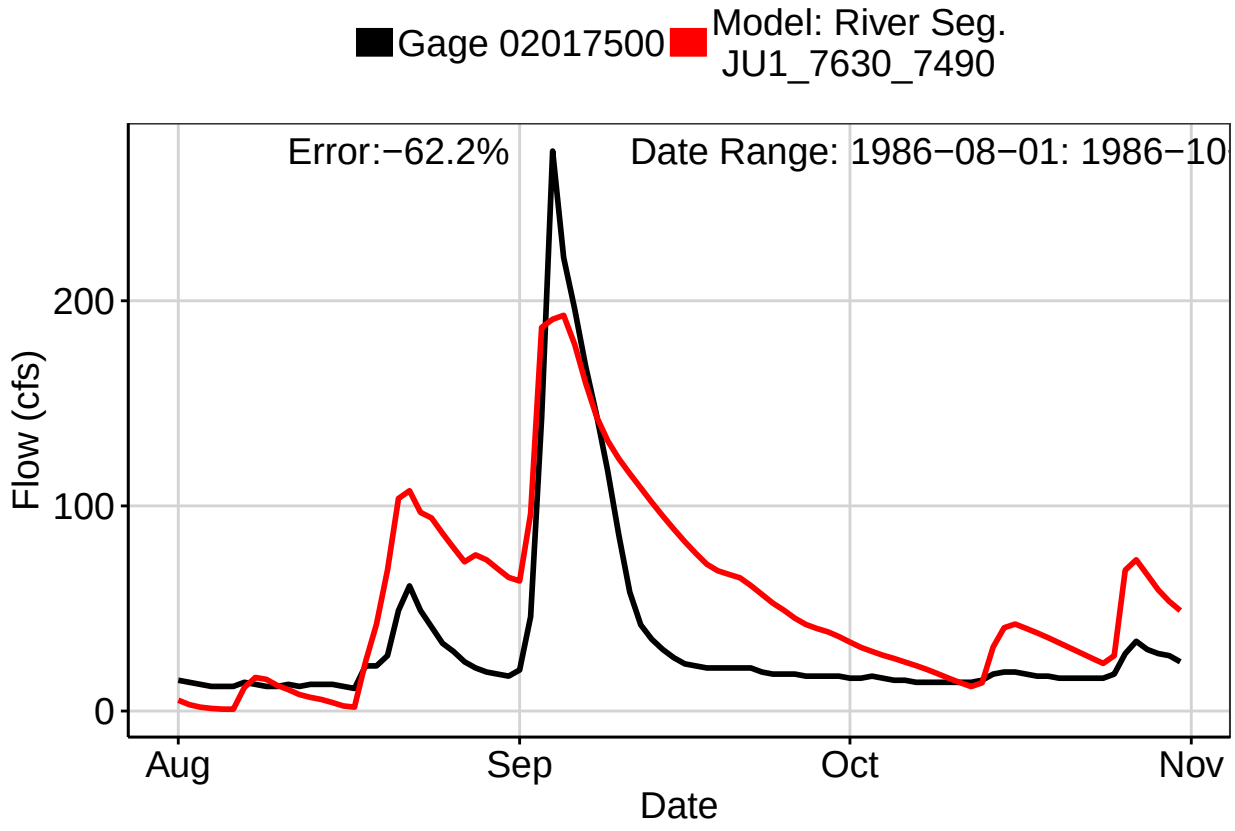


Fig. 7: Second Largest Error Segment

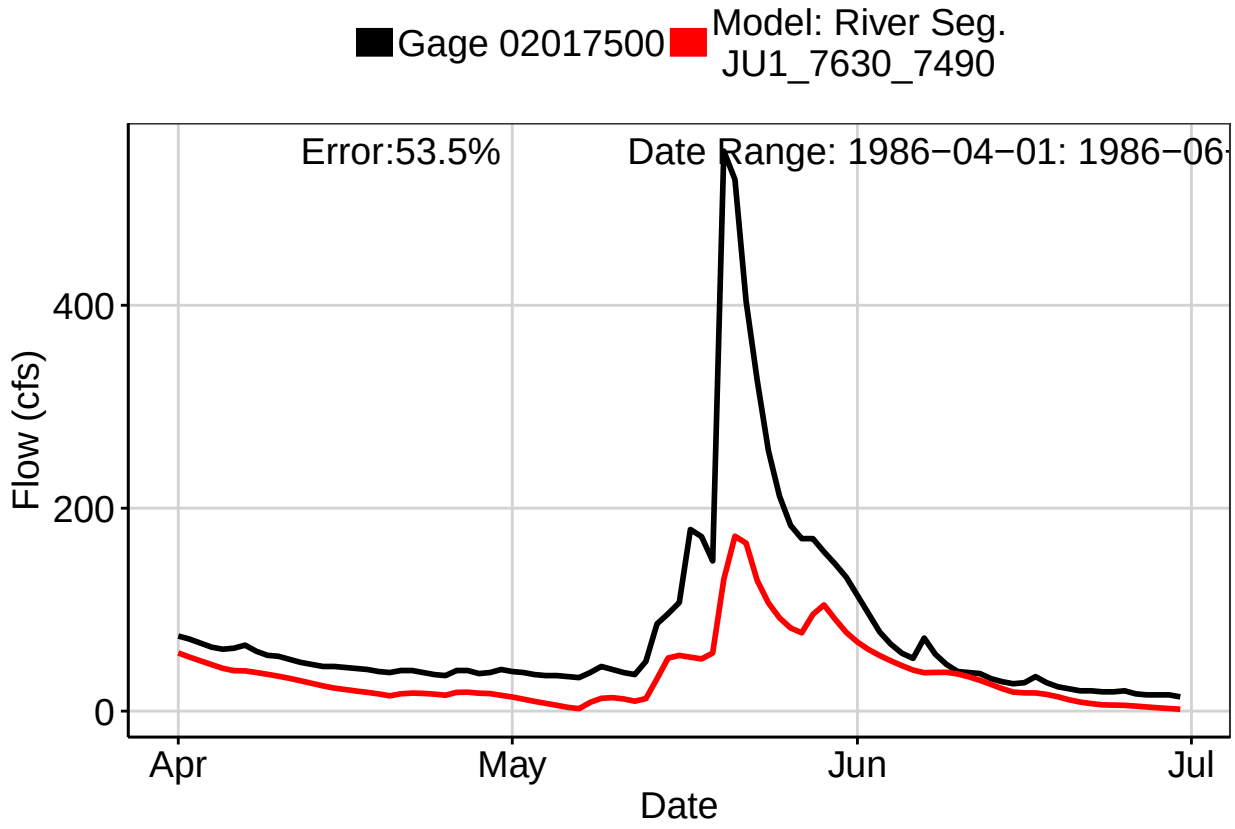


Fig. 8: Third Largest Error Segment

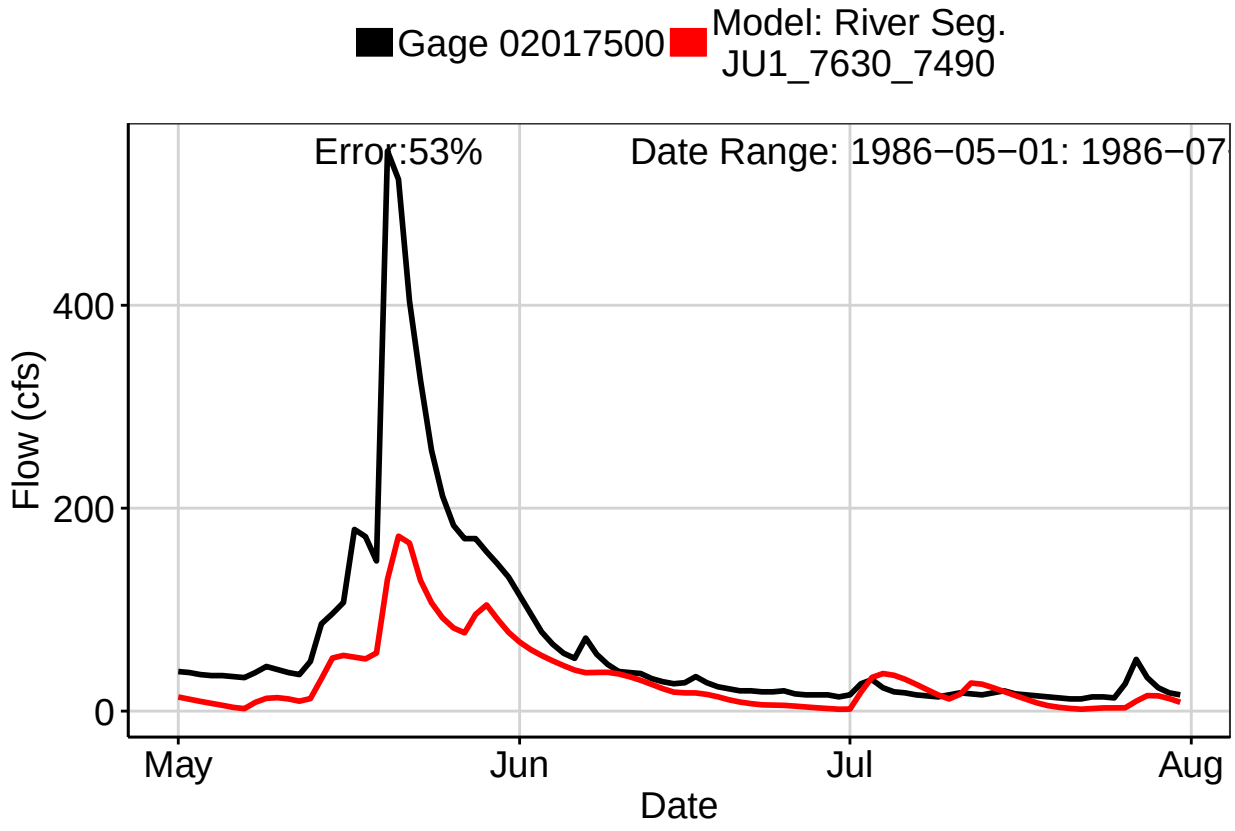


Fig. 9: Residuals Plot