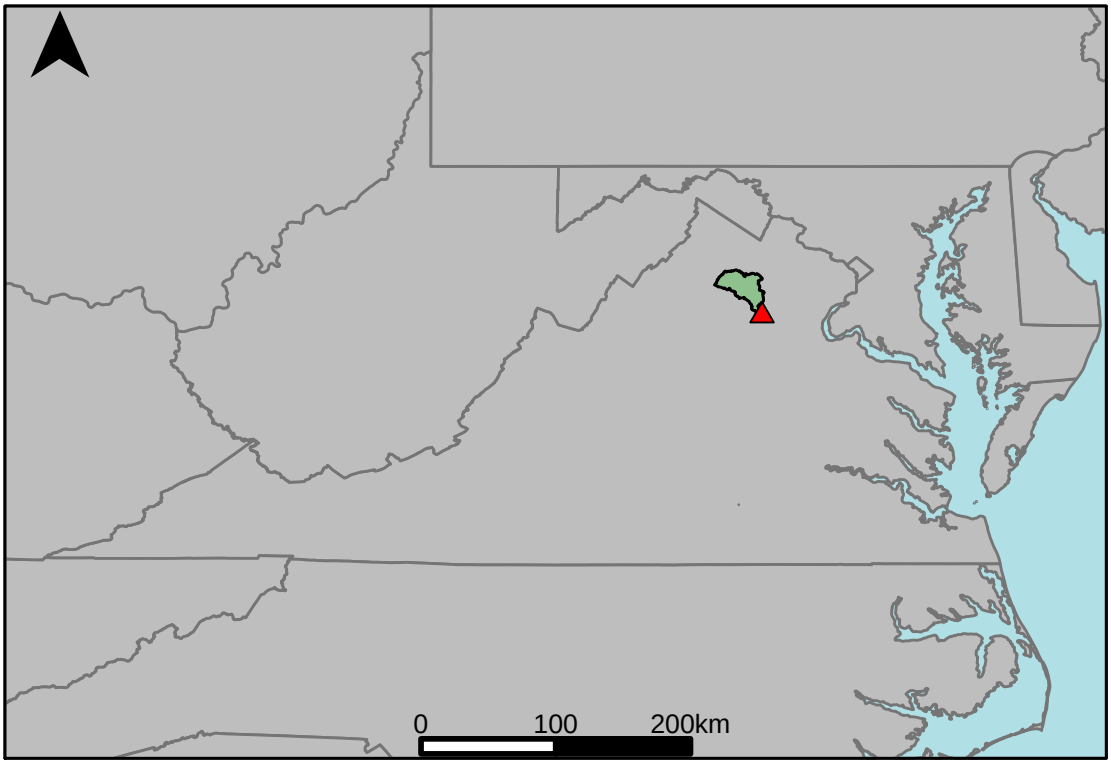
Appendix C.2: USGS Gage 01664000 vs. RU2_5220_5640 Upper Rappahannock River



This river segment follows part of the flow of the Rappahannock River, a tributary of the Rappahannock. The gage is located in Fauquier County (Lat. 38°31'50.4", Long. -77°48'49.0"), approximately 0.4 mile southwest of Fauquier, VA. Drainage area is 619 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 5.81%, with 49.6% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	108	90.7	-16
Feb. Low Flow	189	117	-38.1
Mar. Low Flow	271	286	5.54
Apr. Low Flow	320	335	4.69
May Low Flow	423	439	3.78
Jun. Low Flow	431	366	-15.1
Jul. Low Flow	543	297	-45.3
Aug. Low Flow	351	179	-49
Sep. Low Flow	176	146	-17
Oct. Low Flow	85	71.7	-15.6
Nov. Low Flow	80.1	68.4	-14.6
Dec. Low Flow	50.1	36.1	-27.9

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	723	681	-5.81
Jan. Mean Flow	927	916	-1.19
Feb. Mean Flow	912	1060	16.2
Mar. Mean Flow	1240	1220	-1.61
Apr. Mean Flow	1040	868	-16.5
May Mean Flow	878	697	-20.6
Jun. Mean Flow	605	411	-32.1
Jul. Mean Flow	372	310	-16.7
Aug. Mean Flow	282	285	1.06
Sep. Mean Flow	533	593	11.3
Oct. Mean Flow	421	403	-4.28
Nov. Mean Flow	699	647	-7.44
Dec. Mean Flow	790	783	-0.89

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	680	732	7.65
Feb. High Flow	2490	2530	1.61
Mar. High Flow	2270	2230	-1.76
Apr. High Flow	2420	2060	-14.9
May High Flow	1420	2000	40.8
Jun. High Flow	3500	3570	2
Jul. High Flow	1940	2130	9.79
Aug. High Flow	2230	1570	-29.6
Sep. High Flow	1560	837	-46.3
Oct. High Flow	901	550	-39
Nov. High Flow	447	277	-38
Dec. High Flow	851	518	-39.1

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	5.1	11.4	124
Med. 1 Day Min	23	28.1	22.2
Min. 3 Day Min	5.63	11.9	111
Med. 3 Day Min	25	30.4	21.6
Min. 7 Day Min	6.11	13.2	116
Med. 7 Day Min	26.1	34.9	33.7
Min. 30 Day Min	14.6	25.9	77.4
Med. 30 Day Min	46.8	66.7	42.5
Min. 90 Day Min	31.2	49.9	59.9
Med. 90 Day Min	128	209	63.3
7Q10	8.86	16.5	86.2
Year of 90-Day Min. Flow	2002	1999	100
Drought Year Mean	195	189	-3.08
Mean Baseflow	365	322	-11.8

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	28200	31500	11.7
Med. 1 Day Max	11100	8910	-19.7
Max. 3 Day Max	14500	14300	-1.38
Med. 3 Day Max	6940	5590	-19.5
Max. 7 Day Max	8240	10700	29.9
Med. 7 Day Max	4440	3000	-32.4
Max. 30 Day Max	4020	4010	-0.25
Med. 30 Day Max	2080	1660	-20.2
Max. 90 Day Max	2890	2800	-3.11
Med. 90 Day Max	1290	1090	-15.5

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	13	22.3	71.5
5% Non-Exceedance	34	45.3	33.2
50% Non-Exceedance	433	381	-12
95% Non-Exceedance	2140	2070	-3.27
99% Non-Exceedance	5400	5800	7.41
Sept. 10% Non-Exceedance	18	36.3	102

Fig. 1: Hydrograph

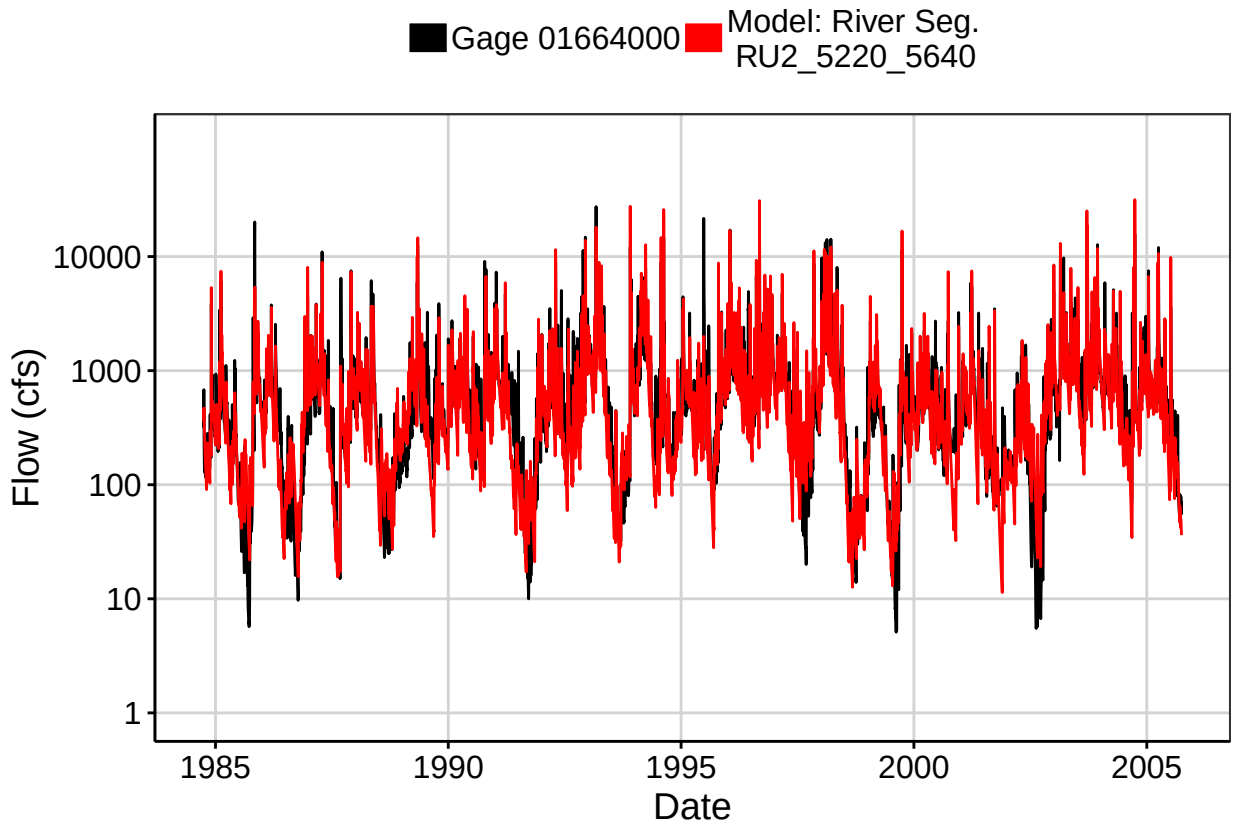


Fig. 2: Zoomed Hydrograph

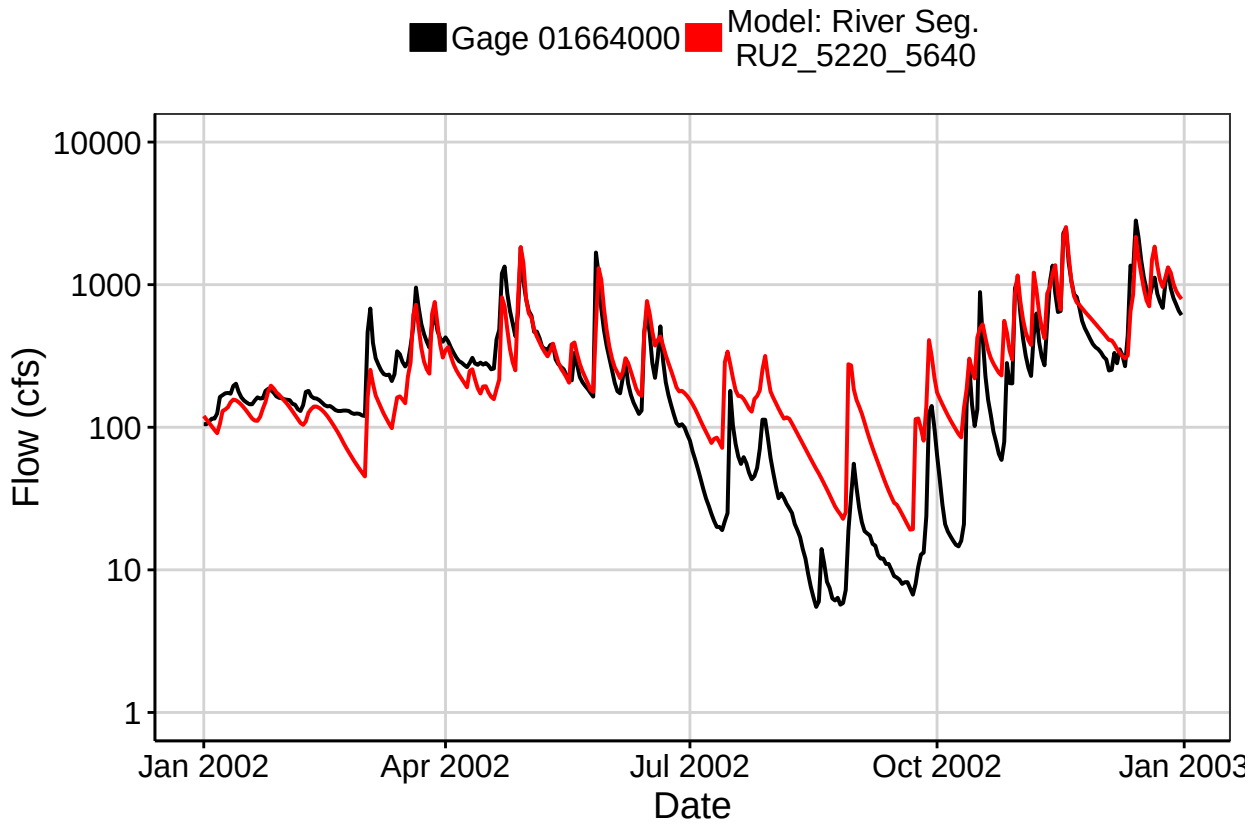


Fig. 3: Flow Exceedance

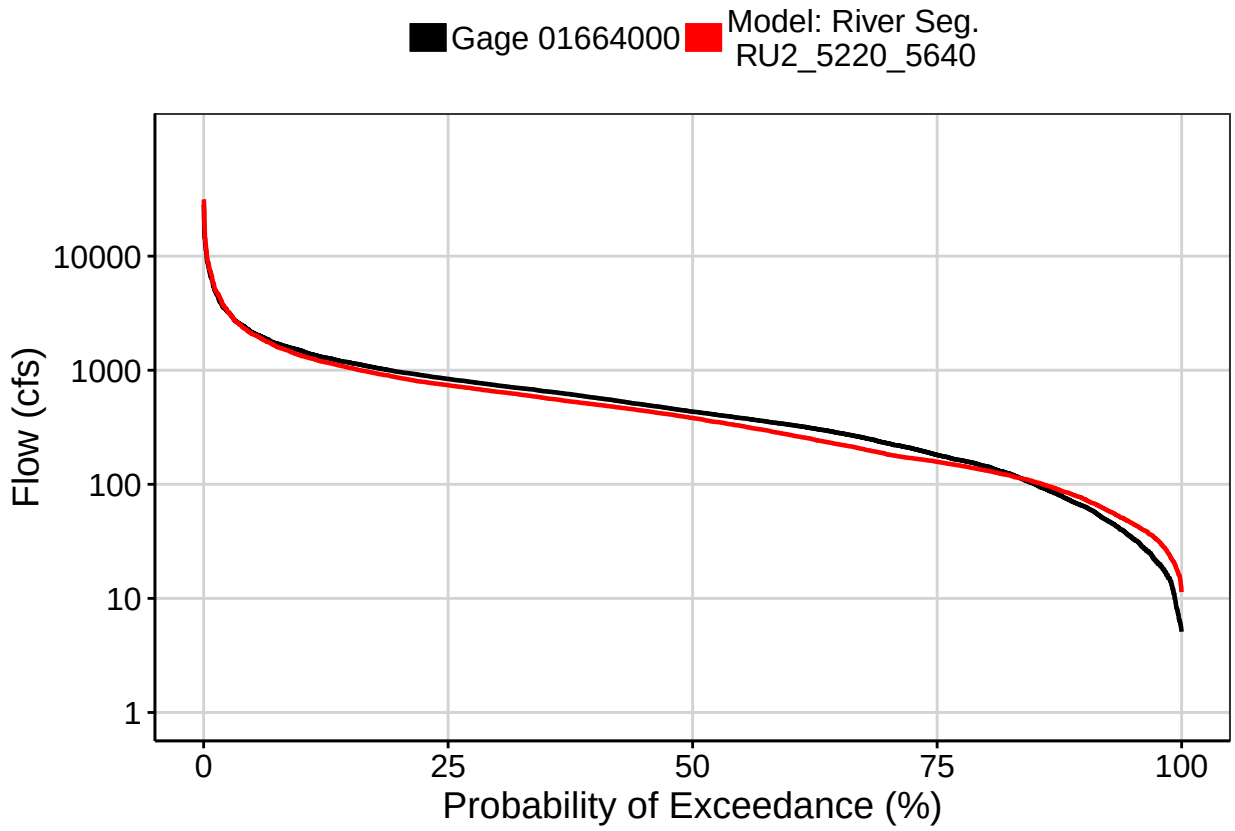


Fig. 4: Baseflow

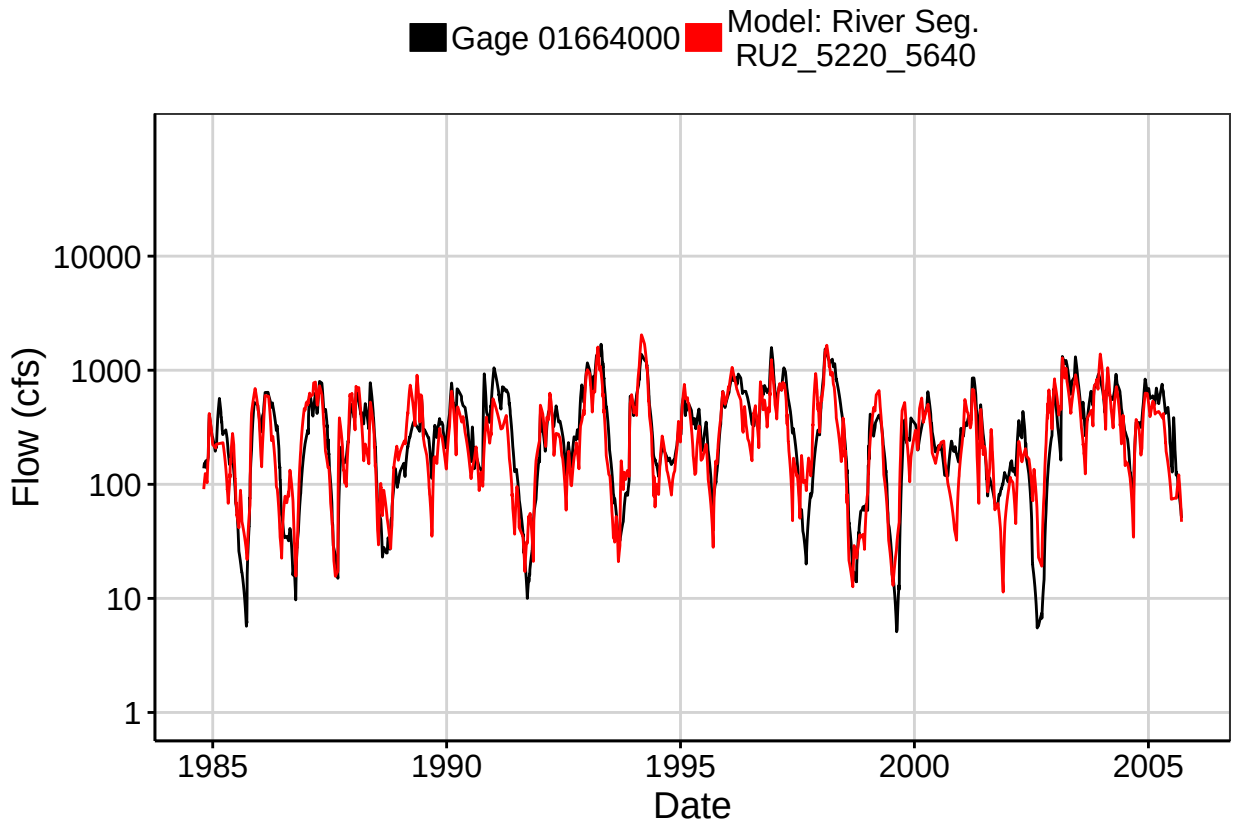


Fig. 5: Combined Baseflow

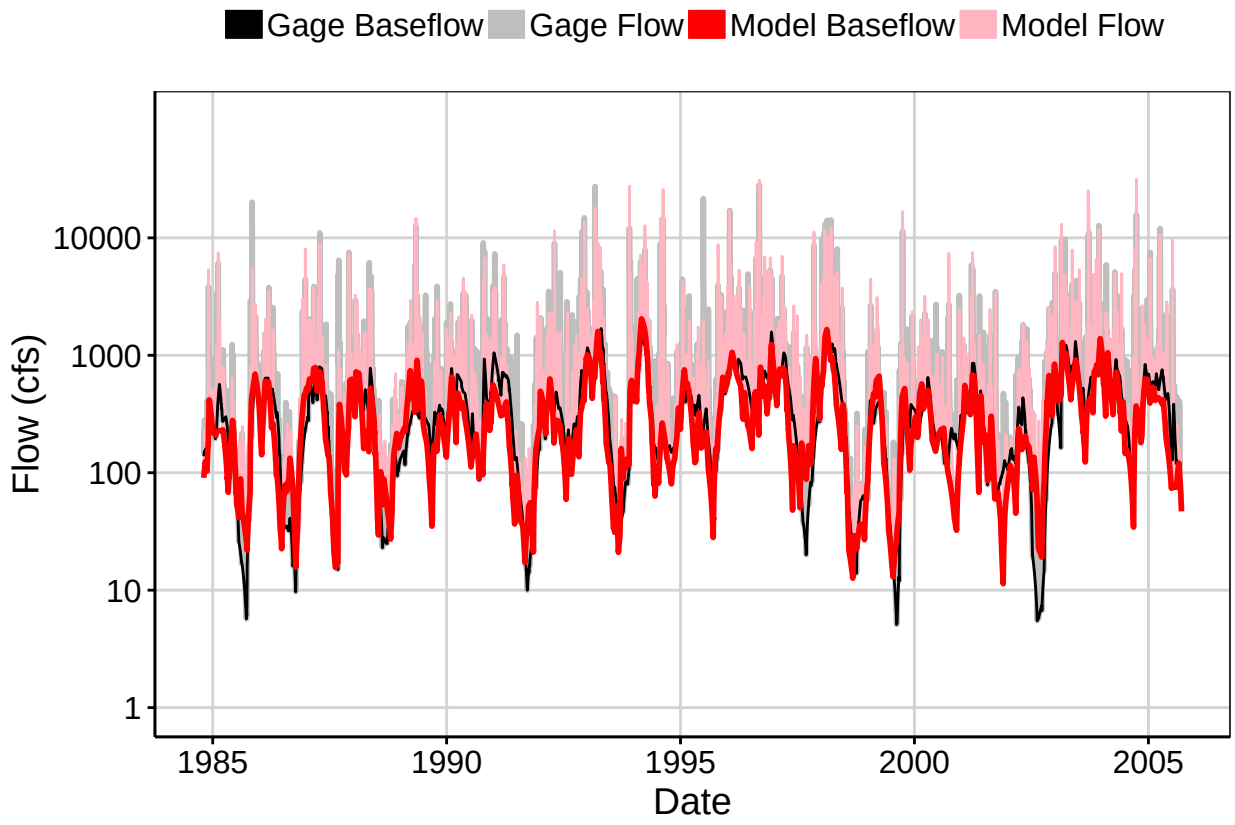


Fig. 6: Largest Error Segment

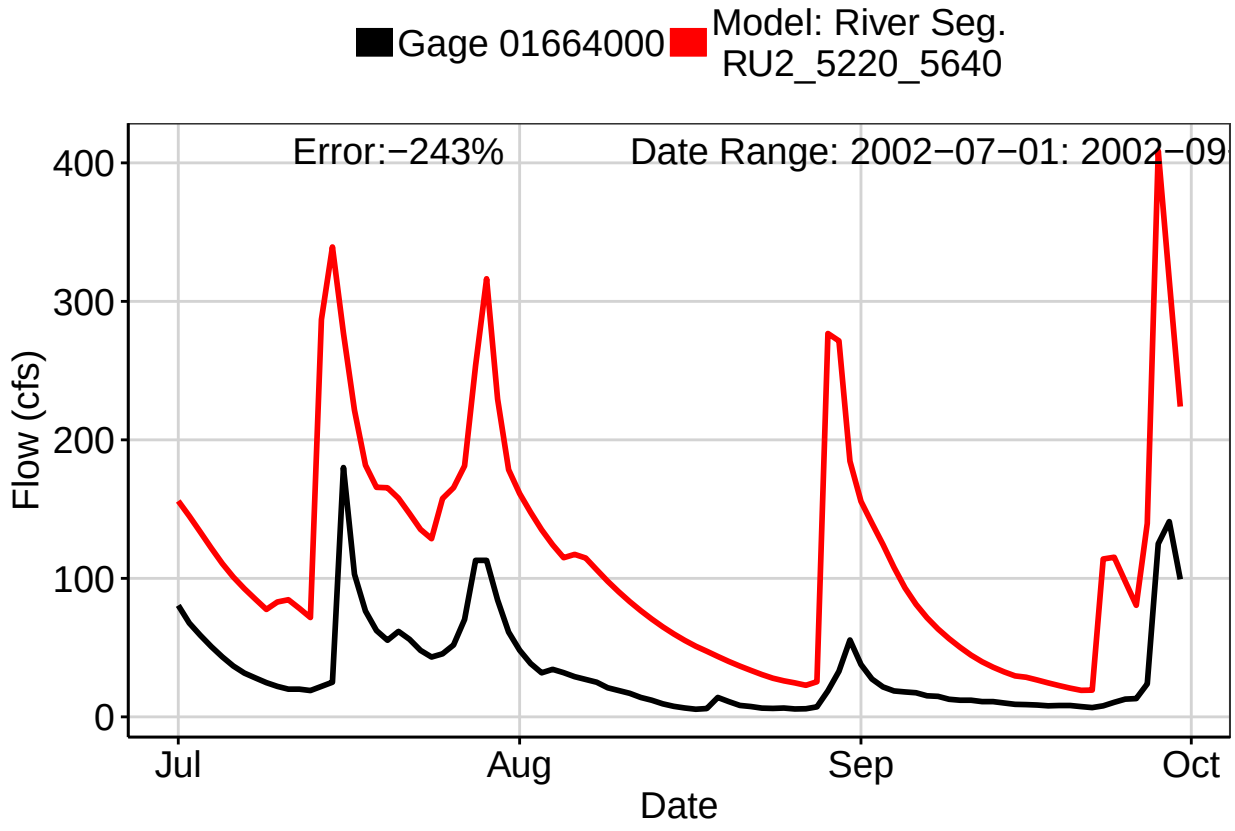


Fig. 7: Second Largest Error Segment

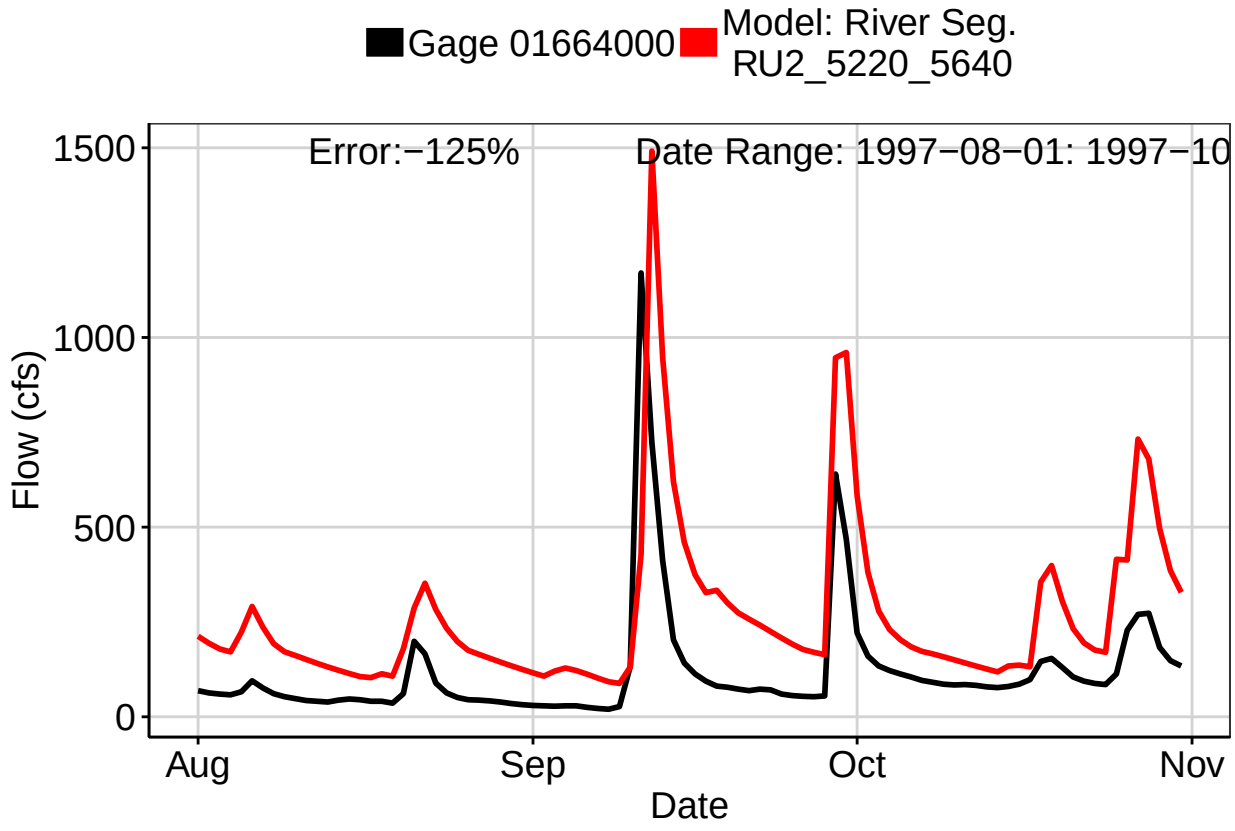


Fig. 8: Third Largest Error Segment

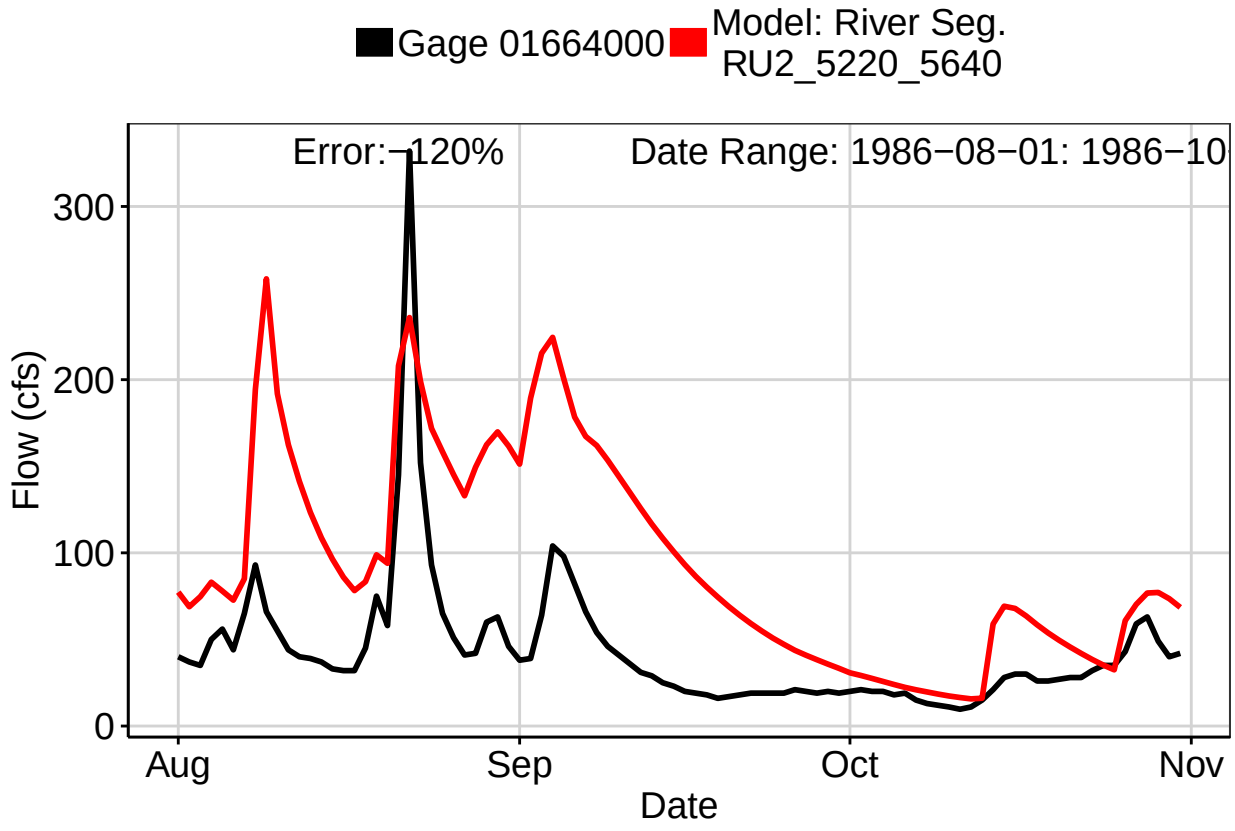


Fig. 9: Residuals Plot