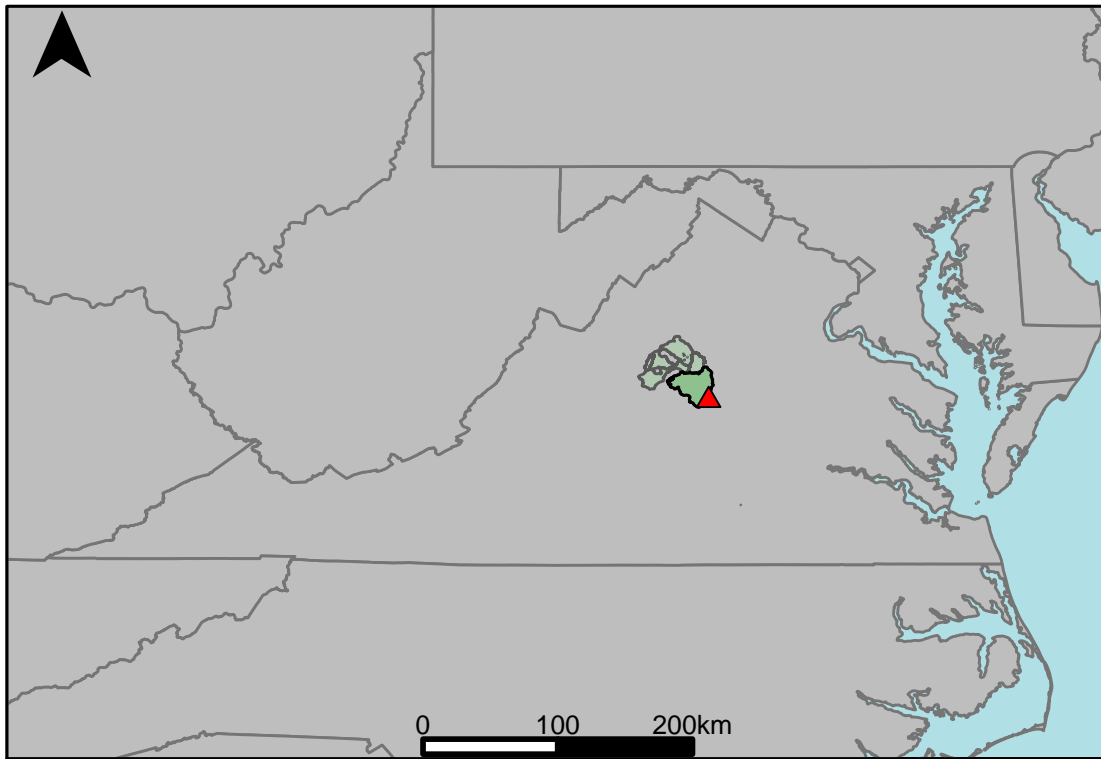


Appendix A.31: USGS Gage 02034000  
vs. JL4\_6520\_6710  
Lower James River



This river segment follows part of the flow of the Rivanna River, a tributary of the James. The gage is located in Fluvanna County (Lat.  $37^{\circ}51'28.5''$ , Long.  $-78^{\circ}15'57.0''$ ), approximately 9 miles northwest of Columbia, VA. Drainage area is 663 sq. miles. This gage started taking data in 1934 and is still taking data. There are some diurnal fluctuations at times, mostly at low and medium flow, caused by the South Fork Rivanna River Reservoir. The diversions and discharge occur upstream at Charlottesville. The average daily discharge error between the model and gage data for the 20 year timespan was -2.22%, with 37.5% of its rolling three month time spans above 20% error.

**Table 1: Monthly Low Flows**

	USGS Gage	Model	Pct. Error
Jan. Low Flow	100	107	7
Feb. Low Flow	220	199	-9.55
Mar. Low Flow	299	335	12
Apr. Low Flow	323	458	41.8
May Low Flow	444	595	34
Jun. Low Flow	422	545	29.1
Jul. Low Flow	426	346	-18.8
Aug. Low Flow	290	250	-13.8
Sep. Low Flow	180	257	42.8
Oct. Low Flow	113	61	-46
Nov. Low Flow	81	79.9	-1.36
Dec. Low Flow	69	57.6	-16.5

**Table 2: Monthly Average Flows**

	USGS Gage	Model	Pct. Error
Overall Mean Flow	720	736	2.22
Jan. Mean Flow	941	939	-0.21
Feb. Mean Flow	952	1110	16.6
Mar. Mean Flow	1140	1260	10.5
Apr. Mean Flow	973	891	-8.43
May Mean Flow	823	713	-13.4
Jun. Mean Flow	576	512	-11.1
Jul. Mean Flow	428	500	16.8
Aug. Mean Flow	276	295	6.88
Sep. Mean Flow	636	688	8.18
Oct. Mean Flow	414	447	7.97
Nov. Mean Flow	759	749	-1.32
Dec. Mean Flow	748	751	0.4

**Table 3: Monthly High Flows**

	USGS Gage	Model	Pct. Error
Jan. High Flow	661	696	5.3
Feb. High Flow	2030	1520	-25.1
Mar. High Flow	2340	1680	-28.2
Apr. High Flow	3000	1740	-42
May High Flow	1860	1560	-16.1
Jun. High Flow	3860	3400	-11.9
Jul. High Flow	1830	2600	42.1
Aug. High Flow	1320	1280	-3.03
Sep. High Flow	1450	1050	-27.6
Oct. High Flow	1190	1020	-14.3
Nov. High Flow	556	382	-31.3
Dec. High Flow	670	387	-42.2

**Table 4: Period Low Flows**

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	18	24.4	35.6
Med. 1 Day Min	52	44.9	-13.7
Min. 3 Day Min	18.2	25	37.4
Med. 3 Day Min	56.7	45.9	-19
Min. 7 Day Min	18.6	27.1	45.7
Med. 7 Day Min	67.4	47.9	-28.9
Min. 30 Day Min	28.5	36.2	27
Med. 30 Day Min	94.4	69.5	-26.4
Min. 90 Day Min	42.1	55.1	30.9
Med. 90 Day Min	233	169	-27.5
7Q10	28.4	31.5	10.9
Year of 90-Day Min. Flow	2002	1999	100
Drought Year Mean	129	122	-5.43
Mean Baseflow	337	394	16.9

**Table 5: Period High Flows**

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	40800	38200	-6.37
Med. 1 Day Max	11200	9690	-13.5
Max. 3 Day Max	21400	21000	-1.87
Med. 3 Day Max	7380	6880	-6.78
Max. 7 Day Max	11100	11700	5.41
Med. 7 Day Max	4390	4030	-8.2
Max. 30 Day Max	4120	4220	2.43
Med. 30 Day Max	1900	1820	-4.21
Max. 90 Day Max	2750	2890	5.09
Med. 90 Day Max	1240	1240	0

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	32	36	12.5
5% Non-Exceedance	63	51.5	-18.3
50% Non-Exceedance	416	442	6.25
95% Non-Exceedance	2090	2260	8.13
99% Non-Exceedance	5710	5630	-1.4
Sept. 10% Non-Exceedance	54	47.4	-12.2

Fig. 1: Hydrograph

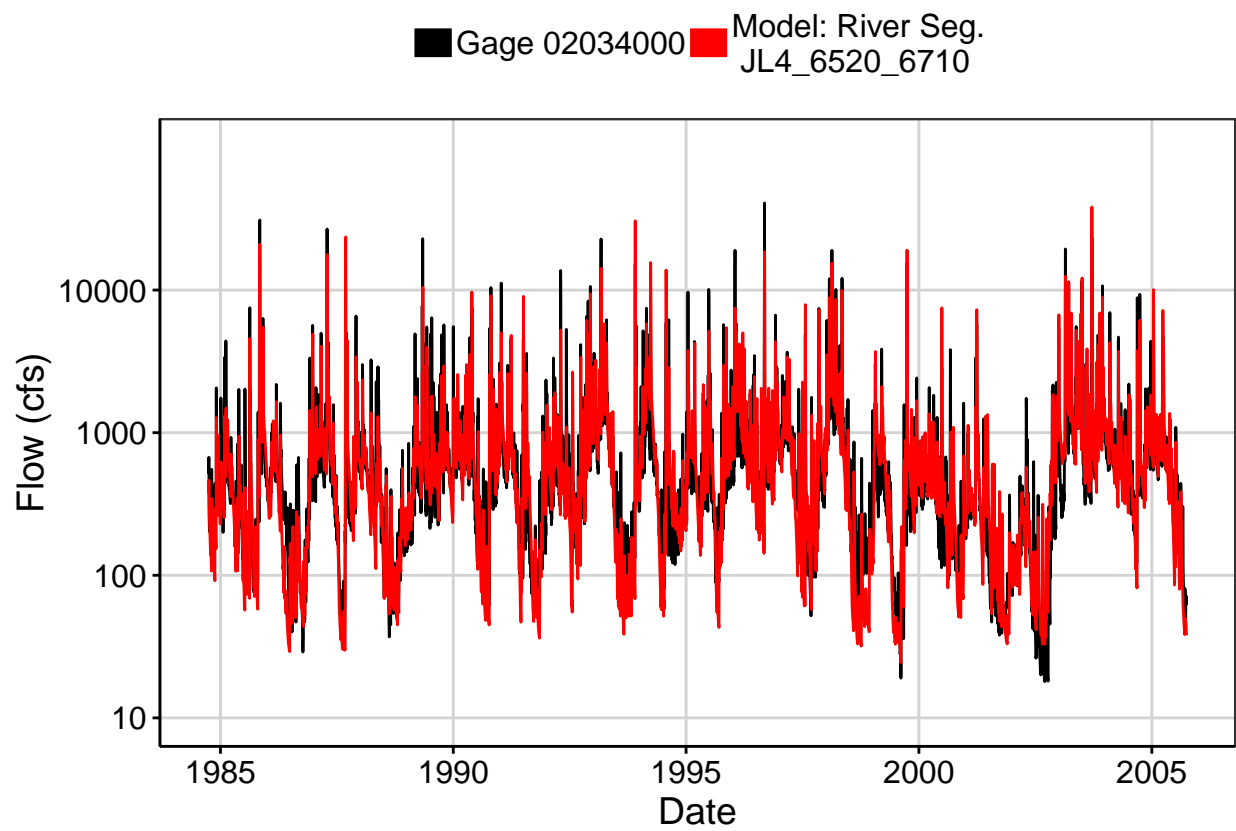


Fig. 2: Zoomed Hydrograph

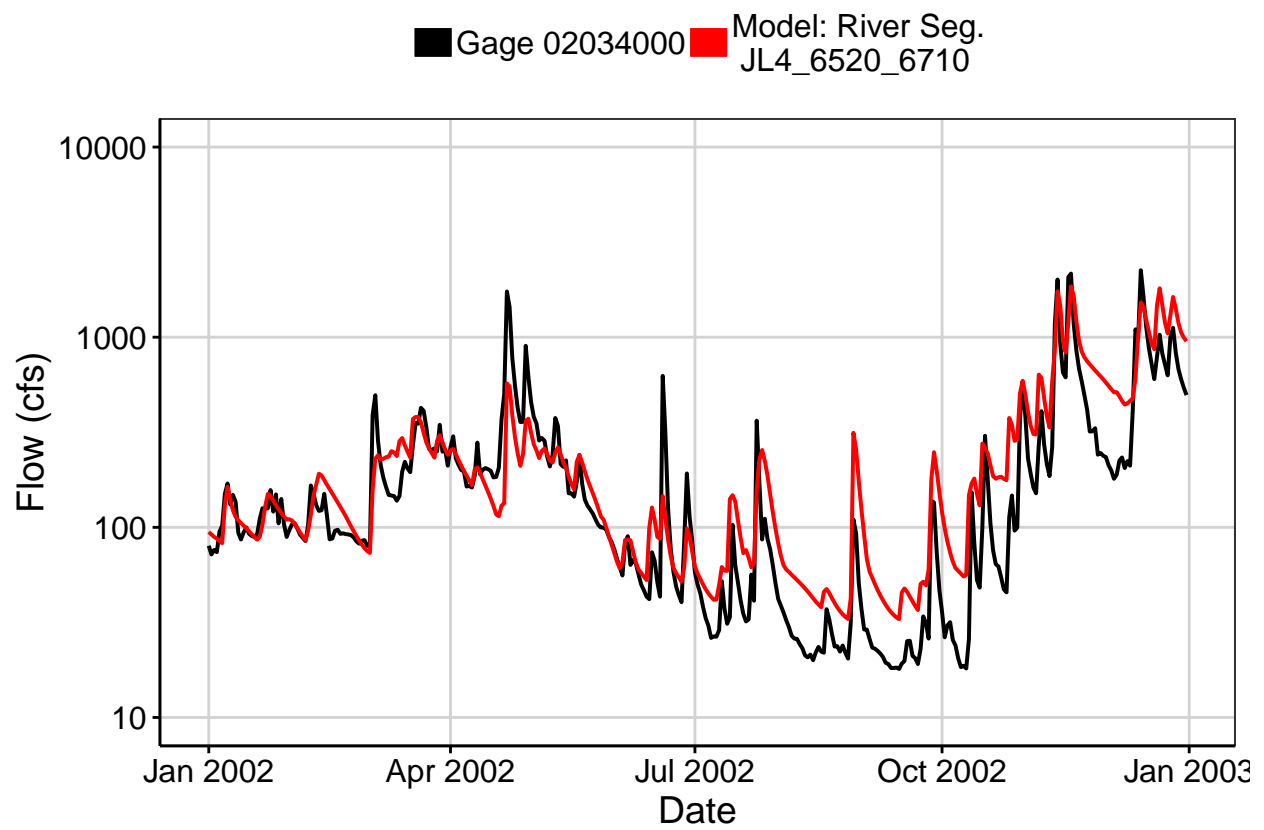


Fig. 3: Flow Exceedance

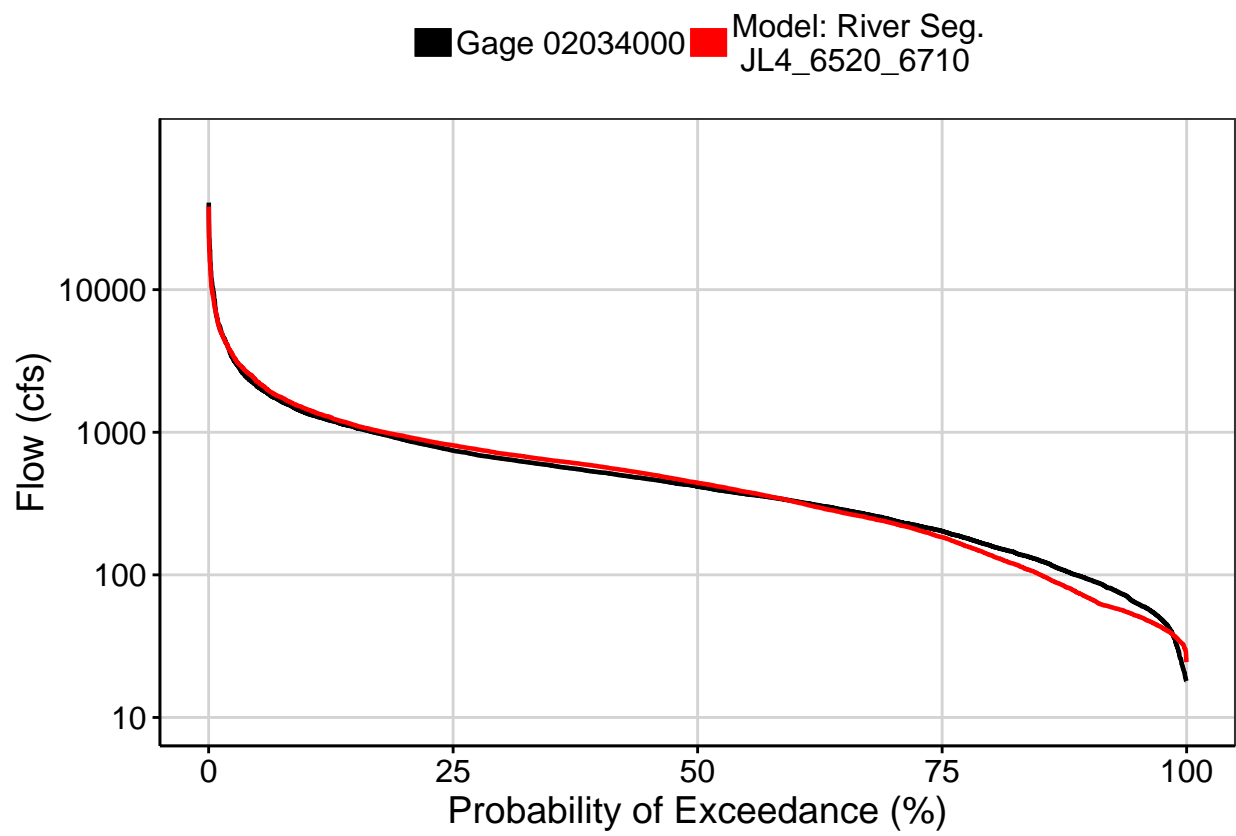


Fig. 4: Baseflow

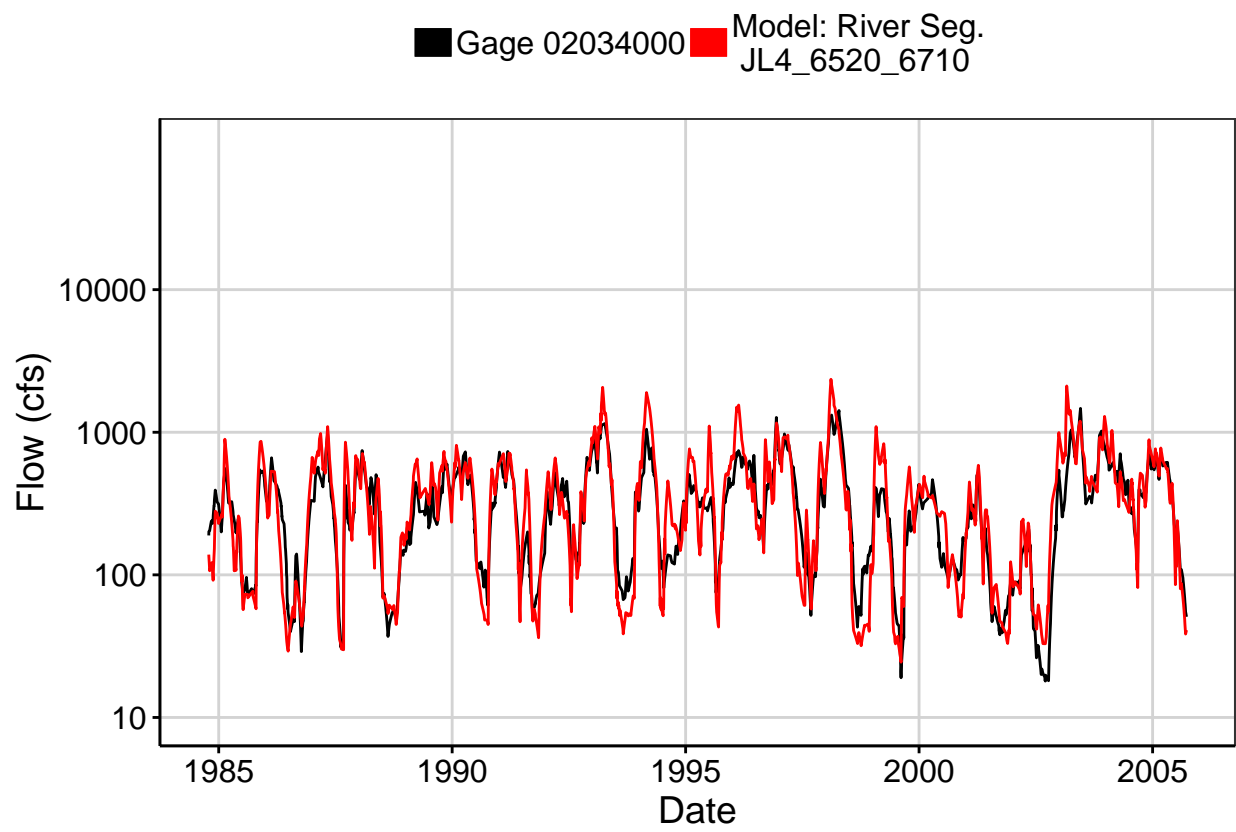


Fig. 5: Combined Baseflow

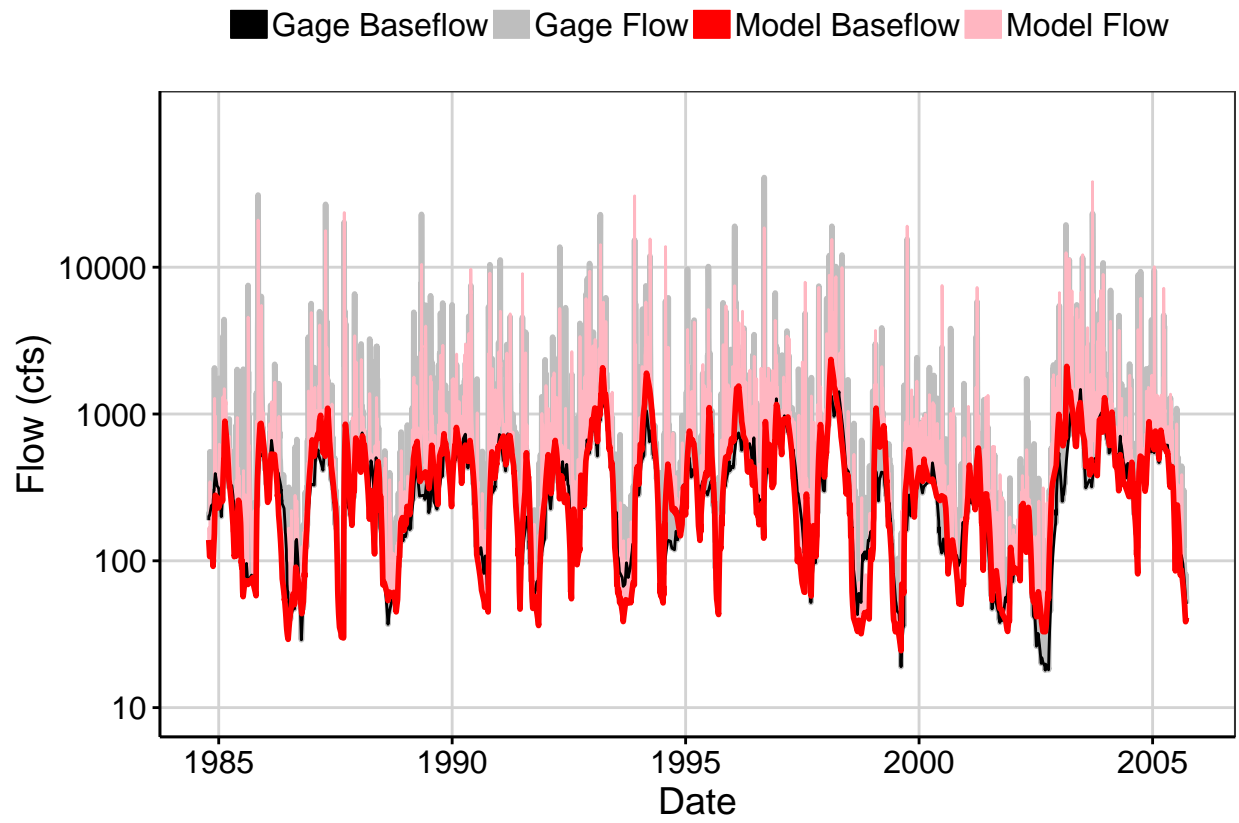




Fig. 6: Largest Error Segment

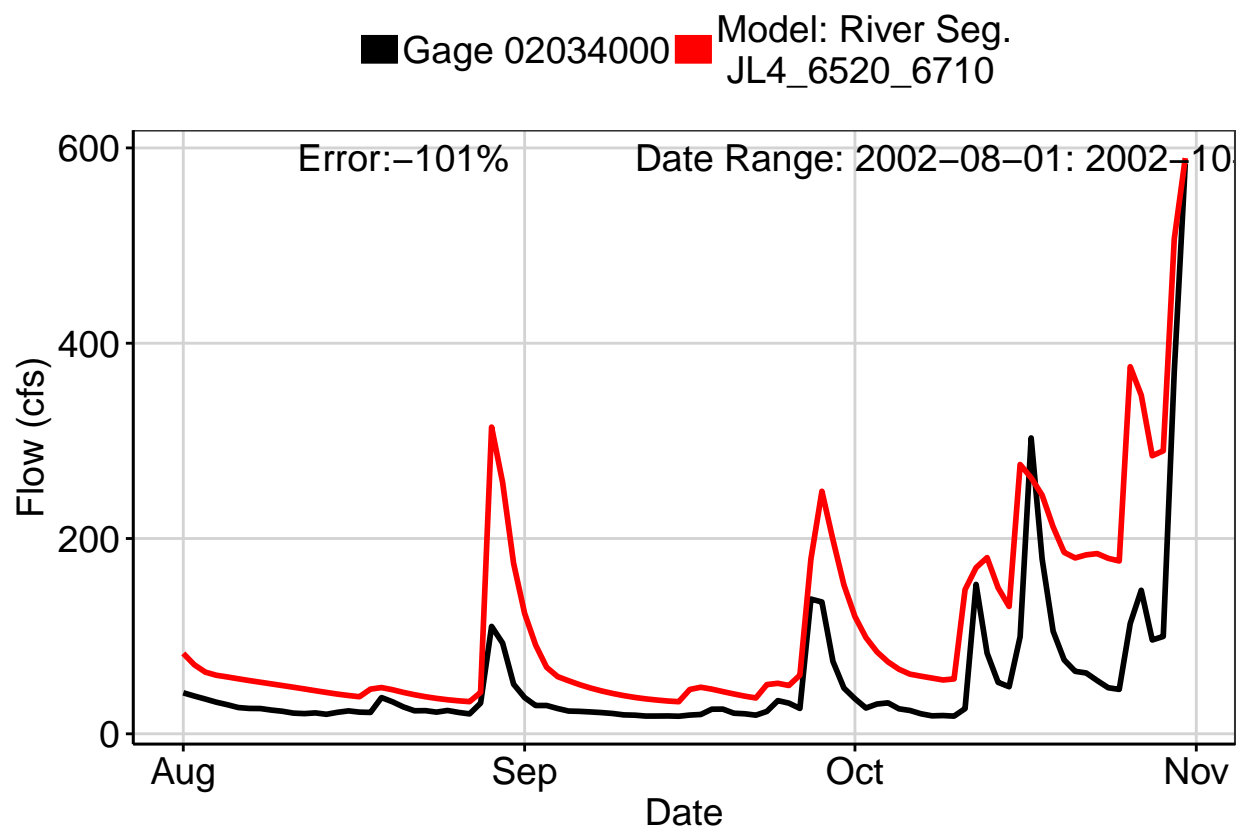


Fig. 7: Second Largest Error Segment

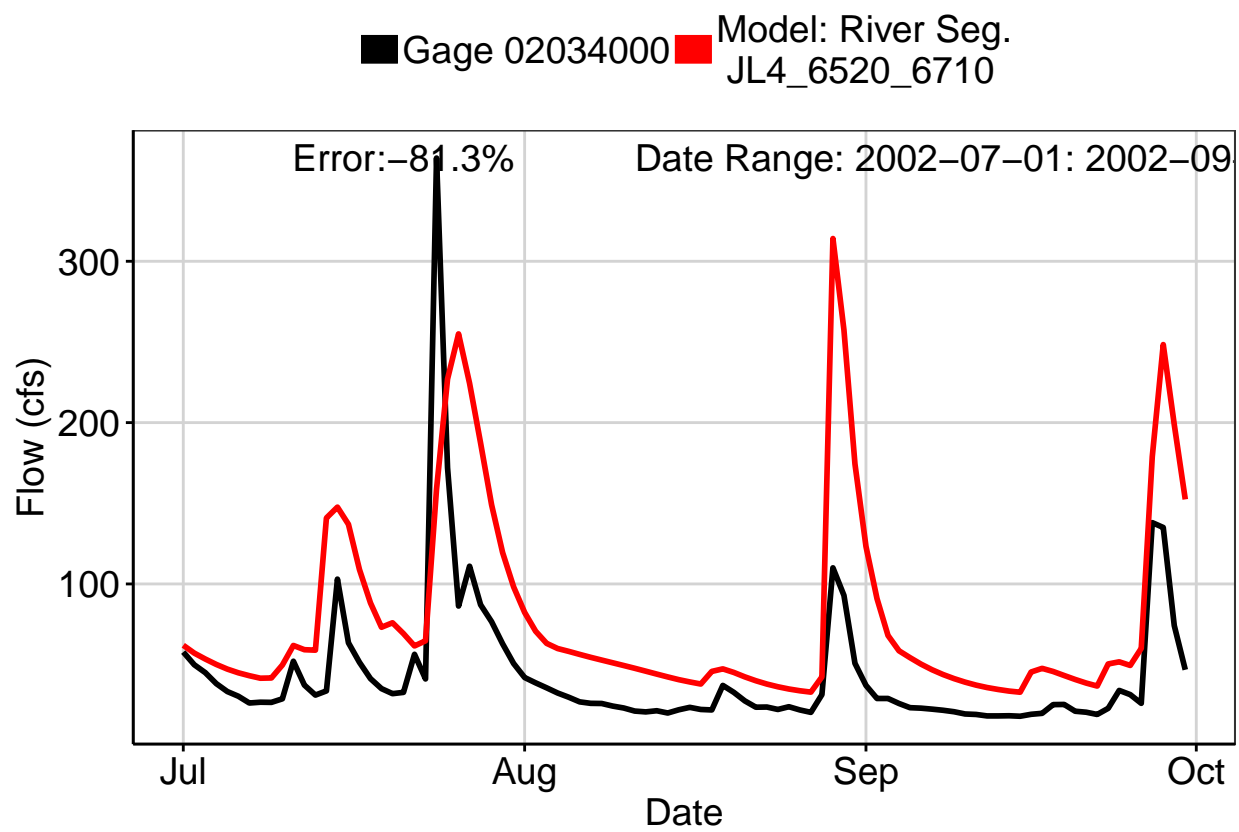


Fig. 8: Third Largest Error Segment

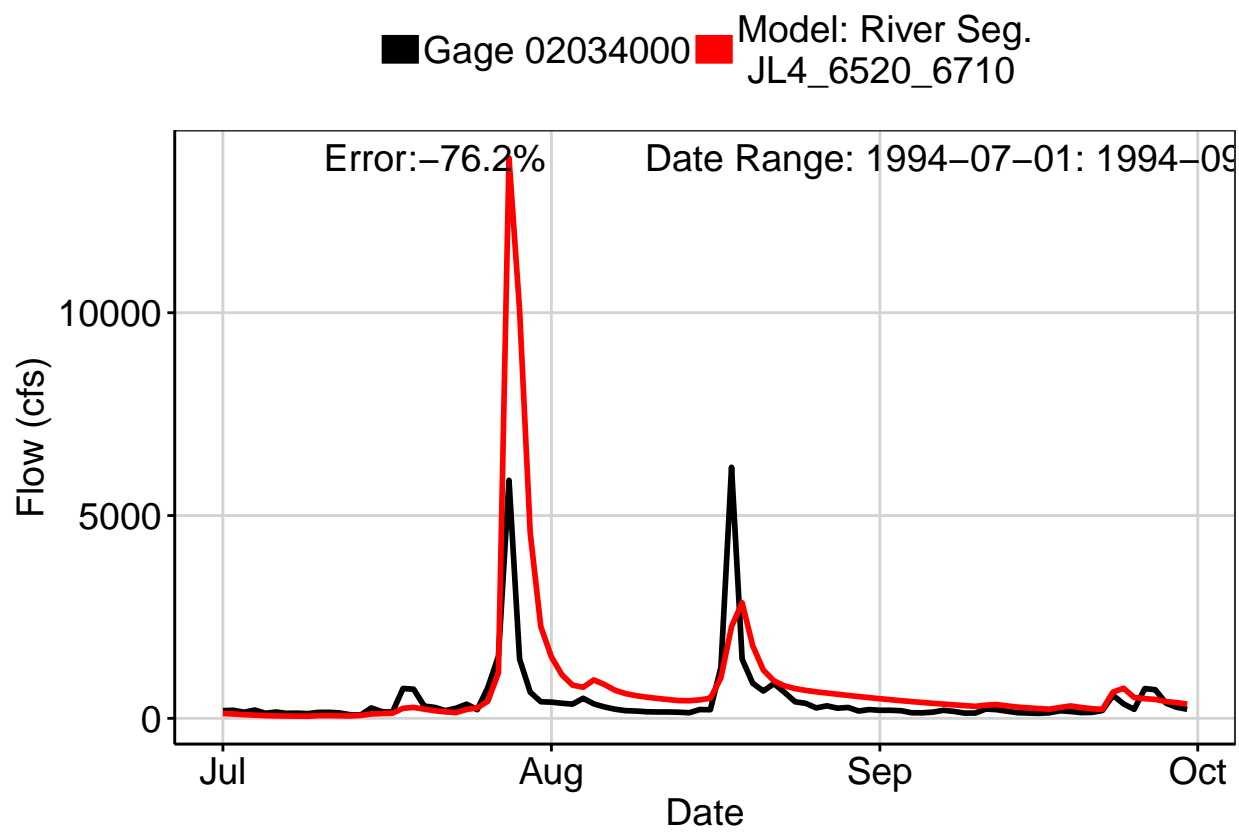


Fig. 9: Residuals Plot

