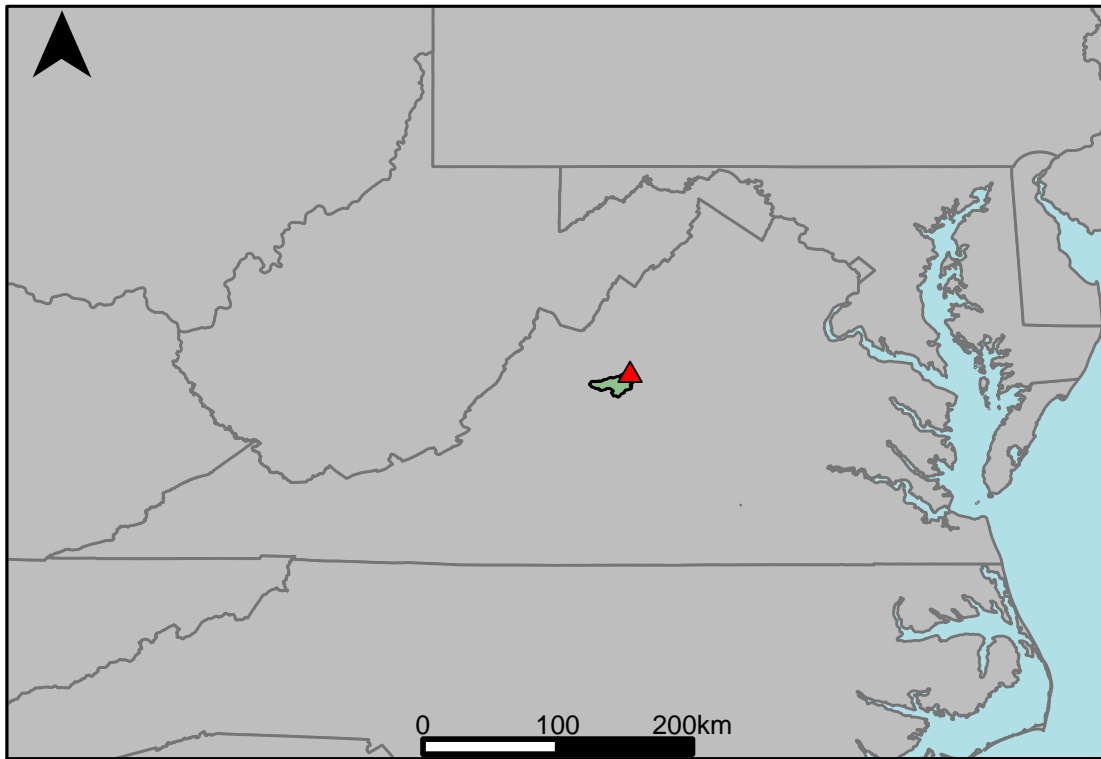


Appendix B.5: USGS Gage 01626000 vs. PS2_6730_6660 Shenandoah River



This river segment follows part of the flow of the South River, a tributary of the Potomac. The gage is located in Augusta County (Lat. $38^{\circ}03'27.5''$, Long. $-78^{\circ}54'29.1''$), approximately 0.8 mile southwest of Waynesboro, VA. Drainage area is 127 sq. miles. This gage started taking data in 1952 and is still taking data. At a point 13.8 mi upstream, there is a diversion from Coles Run Reservoir. There is discharge from a wastewater treatment plant upstream, originating from well fields. 41 mi upstream there is slight regulation by flood-detention reservoirs (sixteen of which were built by Soil Conservation Service between 1954 and 1961). The average daily discharge error between the model and gage data for the 20 year timespan was 2.45%, with 54.6% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	35	23.8	-32
Feb. Low Flow	42	45.4	8.1
Mar. Low Flow	65	77.5	19.2
Apr. Low Flow	72	92.3	28.2
May Low Flow	92	99.9	8.59
Jun. Low Flow	104	116	11.5
Jul. Low Flow	107	94.1	-12.1
Aug. Low Flow	75	79.4	5.87
Sep. Low Flow	50	58.1	16.2
Oct. Low Flow	45	35.6	-20.9
Nov. Low Flow	37	29	-21.6
Dec. Low Flow	35	22.9	-34.6

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	163	159	-2.45
Jan. Mean Flow	208	188	-9.62
Feb. Mean Flow	216	228	5.56
Mar. Mean Flow	265	260	-1.89
Apr. Mean Flow	252	208	-17.5
May Mean Flow	174	167	-4.02
Jun. Mean Flow	125	133	6.4
Jul. Mean Flow	85.4	99.2	16.2
Aug. Mean Flow	70.2	78.1	11.3
Sep. Mean Flow	148	151	2.03
Oct. Mean Flow	93.6	104	11.1
Nov. Mean Flow	182	156	-14.3
Dec. Mean Flow	149	145	-2.68

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	83.6	174	108
Feb. High Flow	373	393	5.36
Mar. High Flow	313	239	-23.6
Apr. High Flow	382	580	51.8
May High Flow	238	235	-1.26
Jun. High Flow	583	734	25.9
Jul. High Flow	509	518	1.77
Aug. High Flow	294	281	-4.42
Sep. High Flow	206	321	55.8
Oct. High Flow	132	274	108
Nov. High Flow	69.9	155	122
Dec. High Flow	62	122	96.8

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	15.7	4.32	-72.5
Med. 1 Day Min	31	16.9	-45.5
Min. 3 Day Min	16.1	4.64	-71.2
Med. 3 Day Min	32	18.4	-42.5
Min. 7 Day Min	16.5	5.27	-68.1
Med. 7 Day Min	32.9	21.2	-35.6
Min. 30 Day Min	17.4	7.94	-54.4
Med. 30 Day Min	34.3	29.5	-14
Min. 90 Day Min	19.1	16.9	-11.5
Med. 90 Day Min	53.6	61.6	14.9
7Q10	22.6	8.15	-63.9
Year of 90-Day Min. Flow	2002	1999	100
Drought Year Mean	37.1	49.5	33.4
Mean Baseflow	87.3	89.1	2.06

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	9070	8710	-3.97
Med. 1 Day Max	1500	2130	42
Max. 3 Day Max	6890	4400	-36.1
Med. 3 Day Max	1370	1180	-13.9
Max. 7 Day Max	3910	2330	-40.4
Med. 7 Day Max	881	932	5.79
Max. 30 Day Max	1310	784	-40.2
Med. 30 Day Max	433	458	5.77
Max. 90 Day Max	811	580	-28.5
Med. 90 Day Max	277	259	-6.5

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	19.1	9.04	-52.7
5% Non-Exceedance	29	18.2	-37.2
50% Non-Exceedance	91	104	14.3
95% Non-Exceedance	496	449	-9.48
99% Non-Exceedance	1290	1130	-12.4
Sept. 10% Non-Exceedance	29	17	-41.4

Fig. 1: Hydrograph

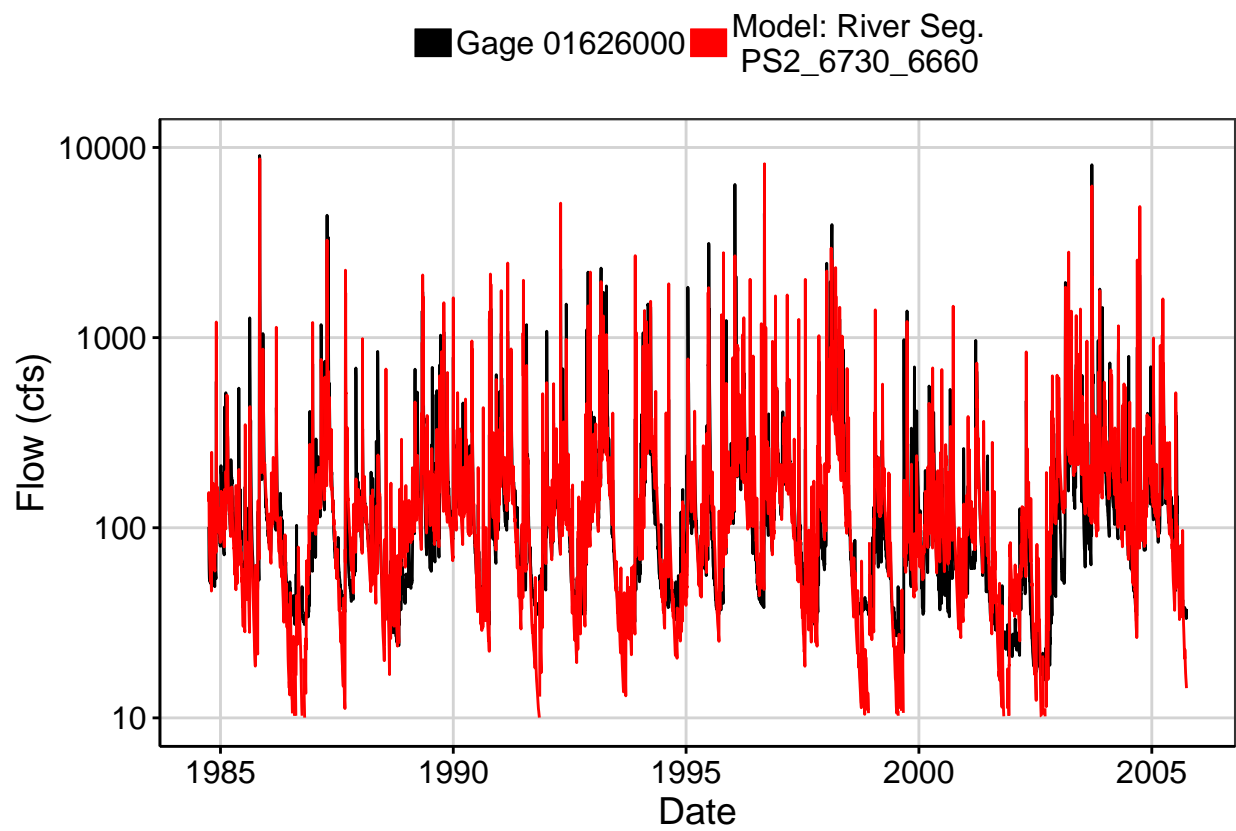


Fig. 2: Zoomed Hydrograph

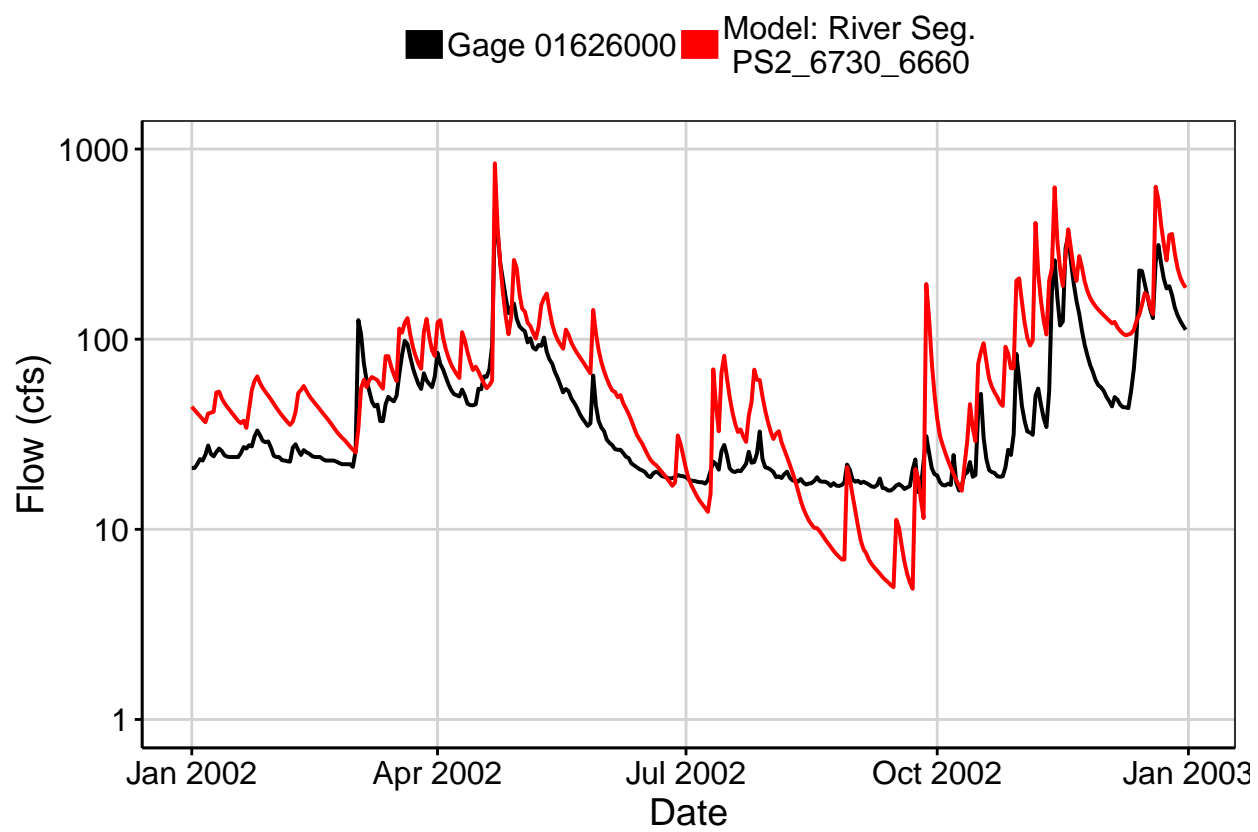


Fig. 3: Flow Exceedance

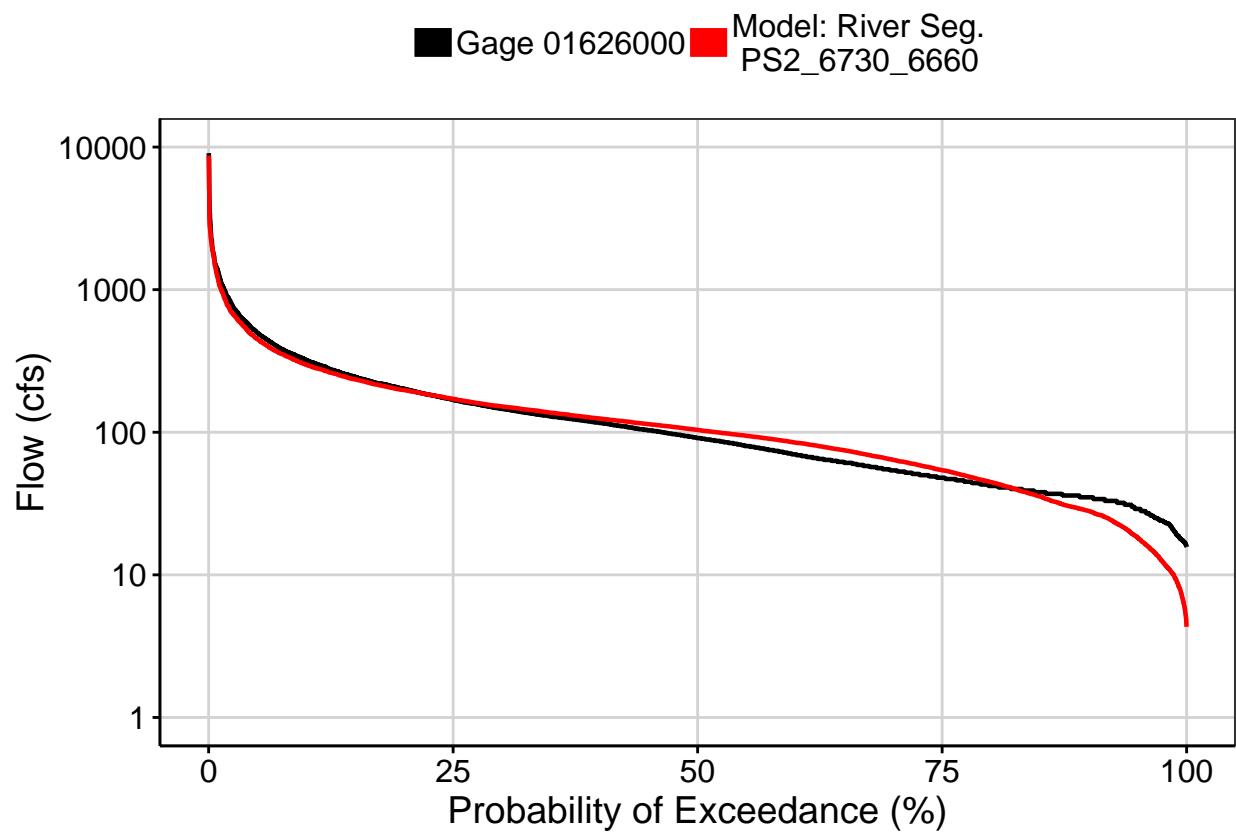


Fig. 4: Baseflow

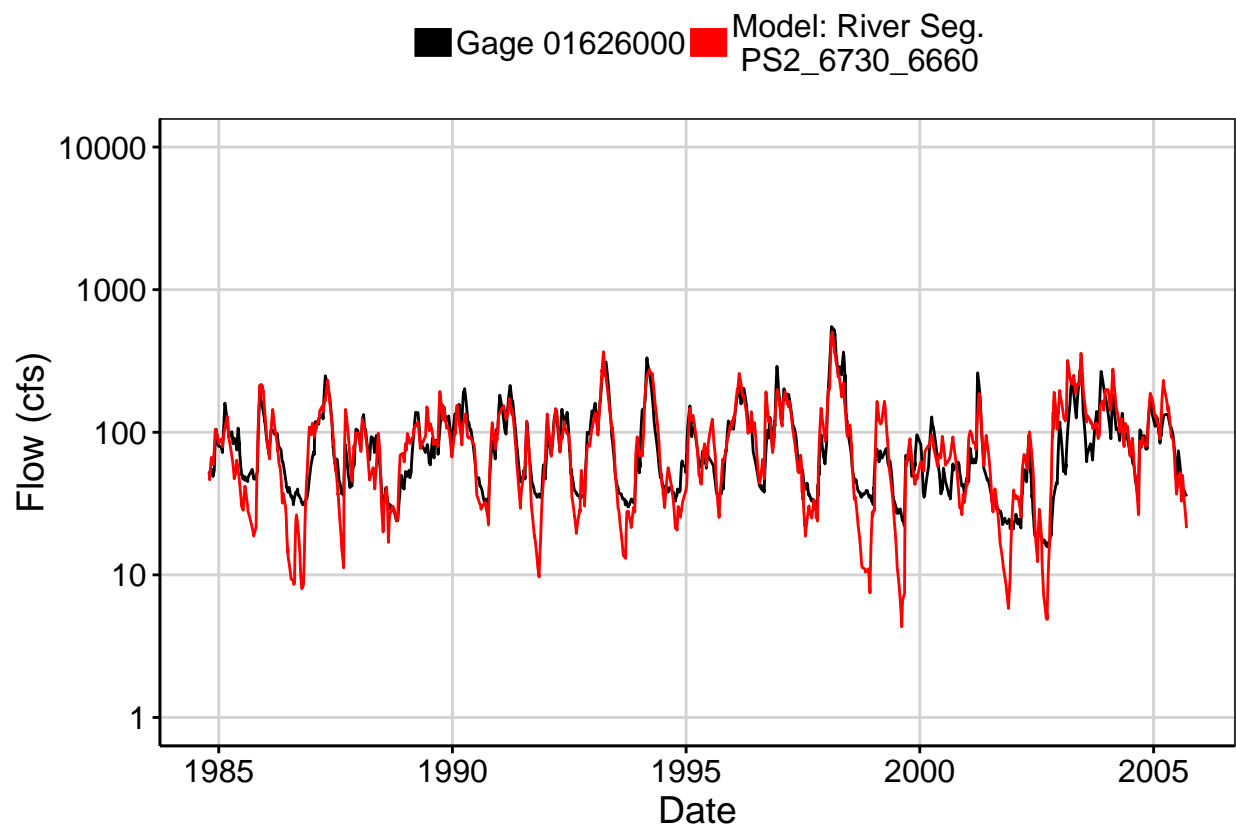


Fig. 5: Combined Baseflow

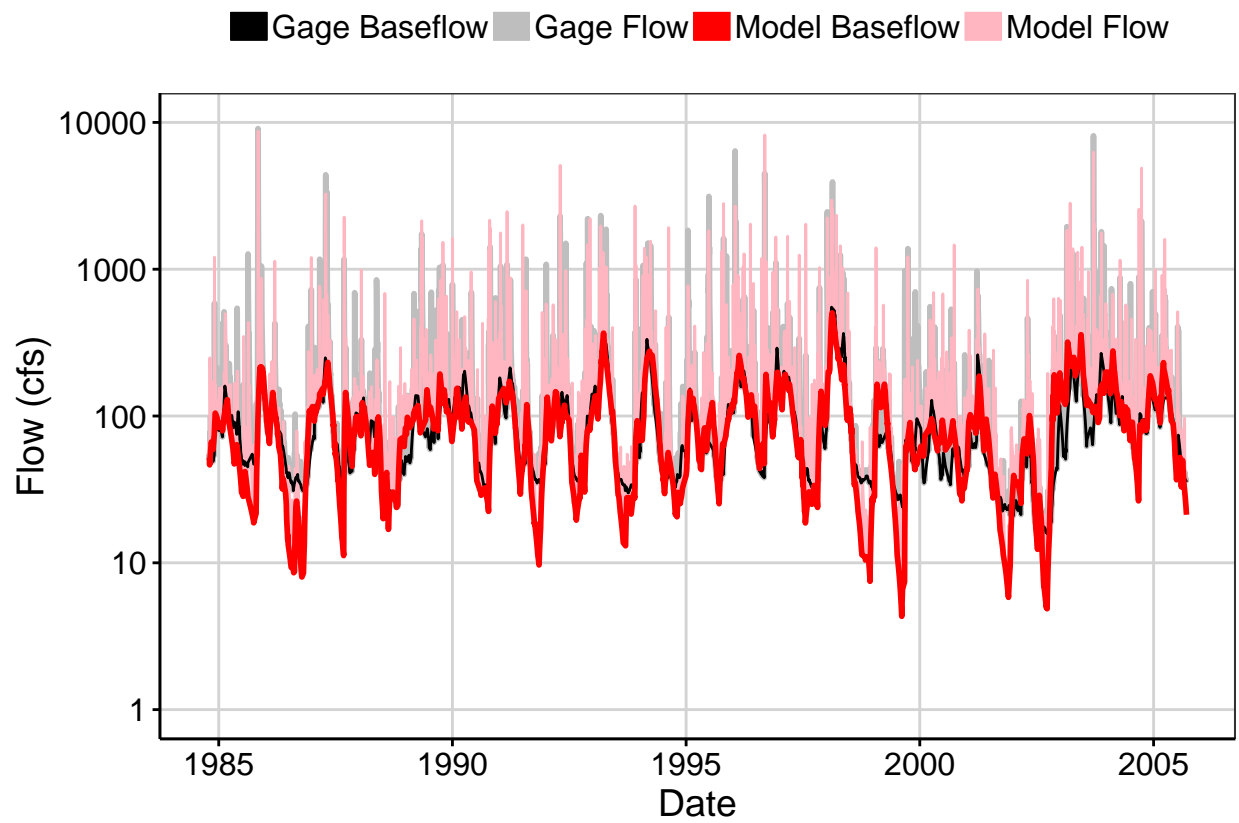


Fig. 6: Largest Error Segment

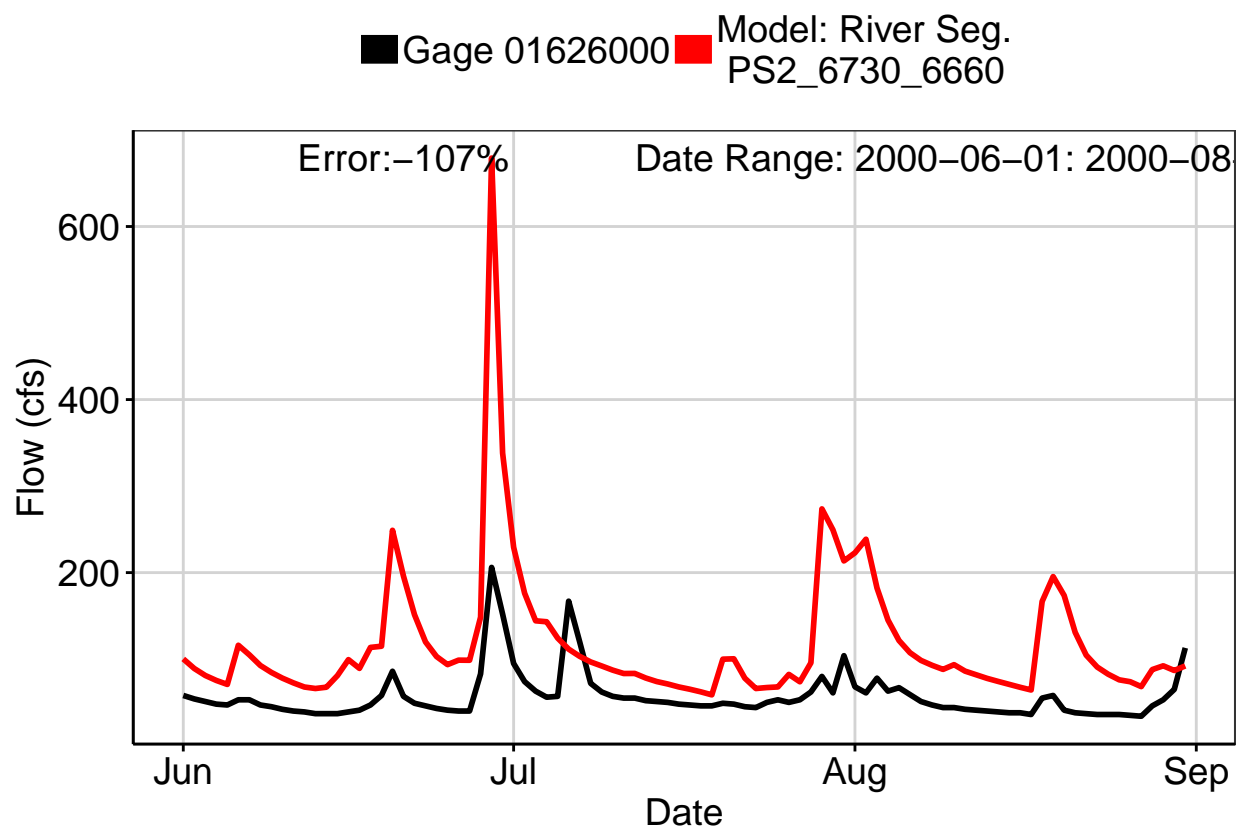


Fig. 7: Second Largest Error Segment

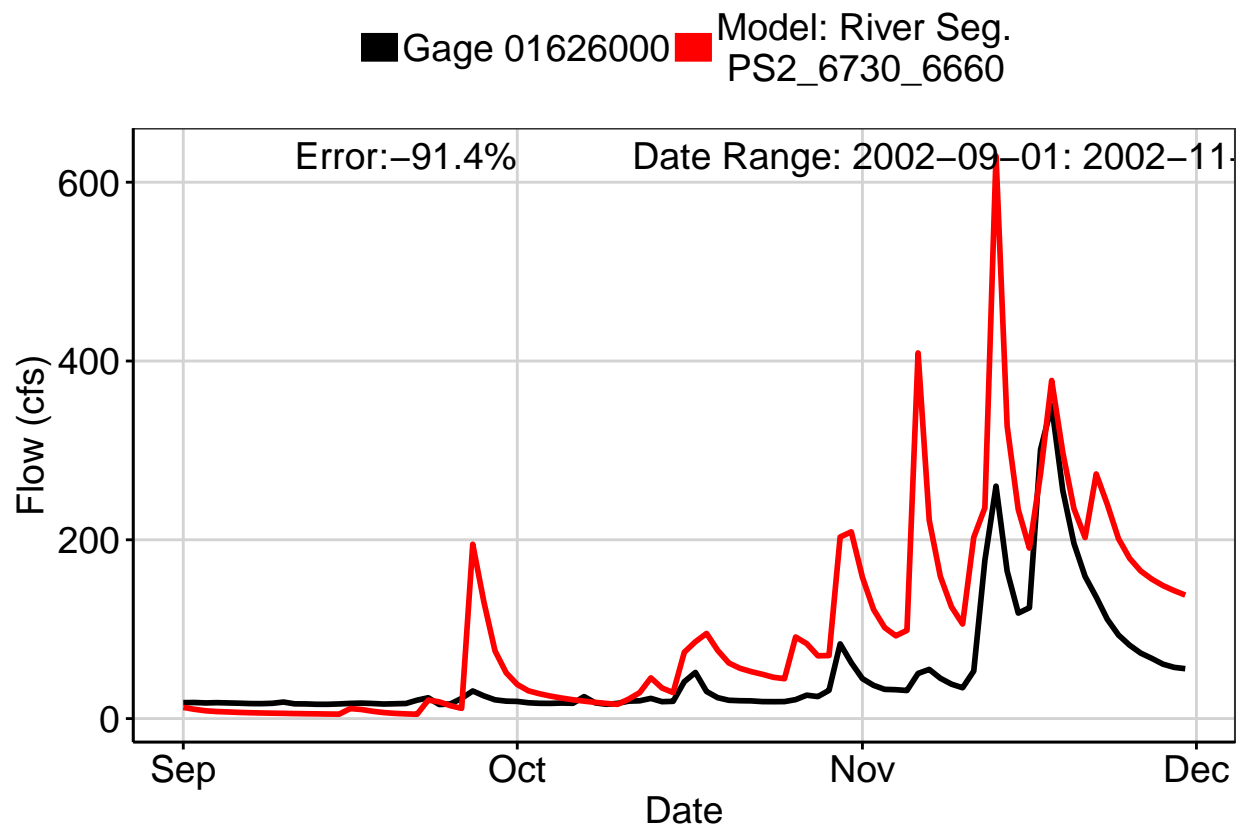


Fig. 8: Third Largest Error Segment

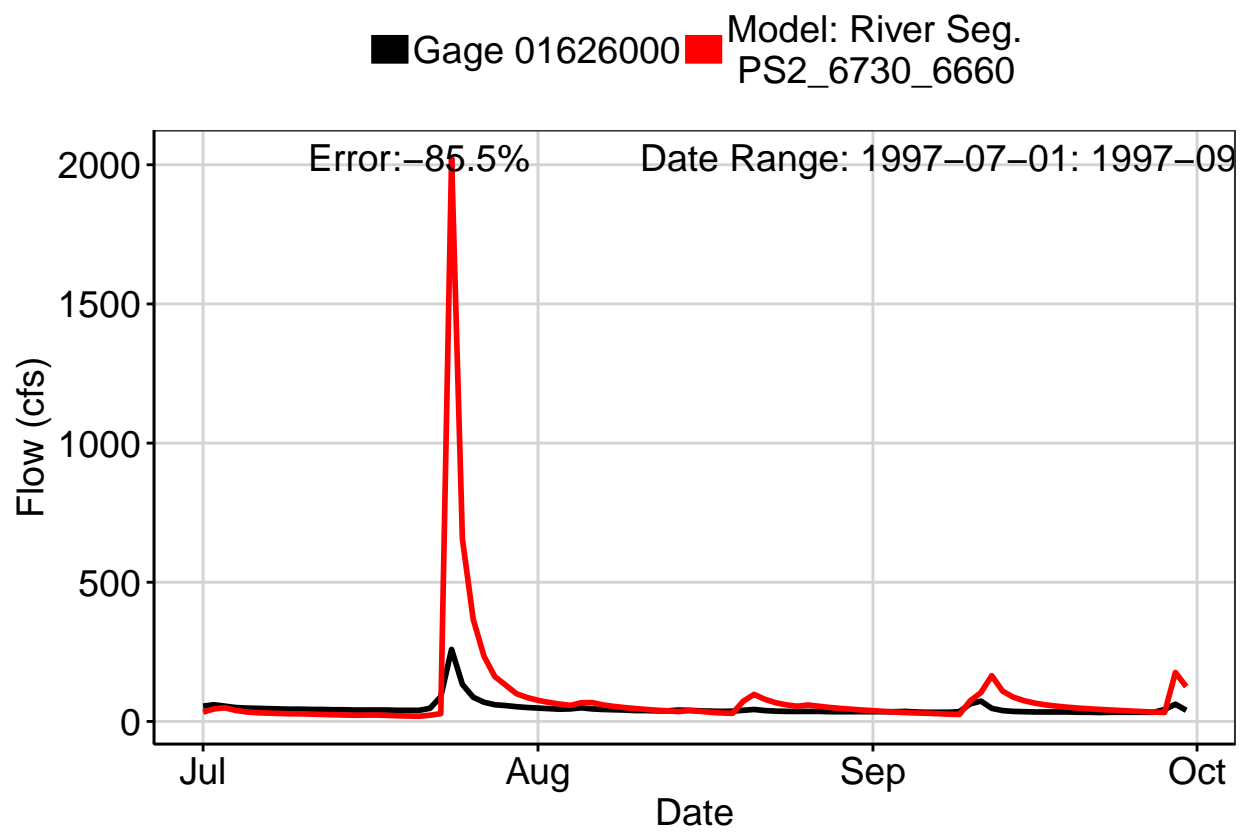


Fig. 9: Residuals Plot

