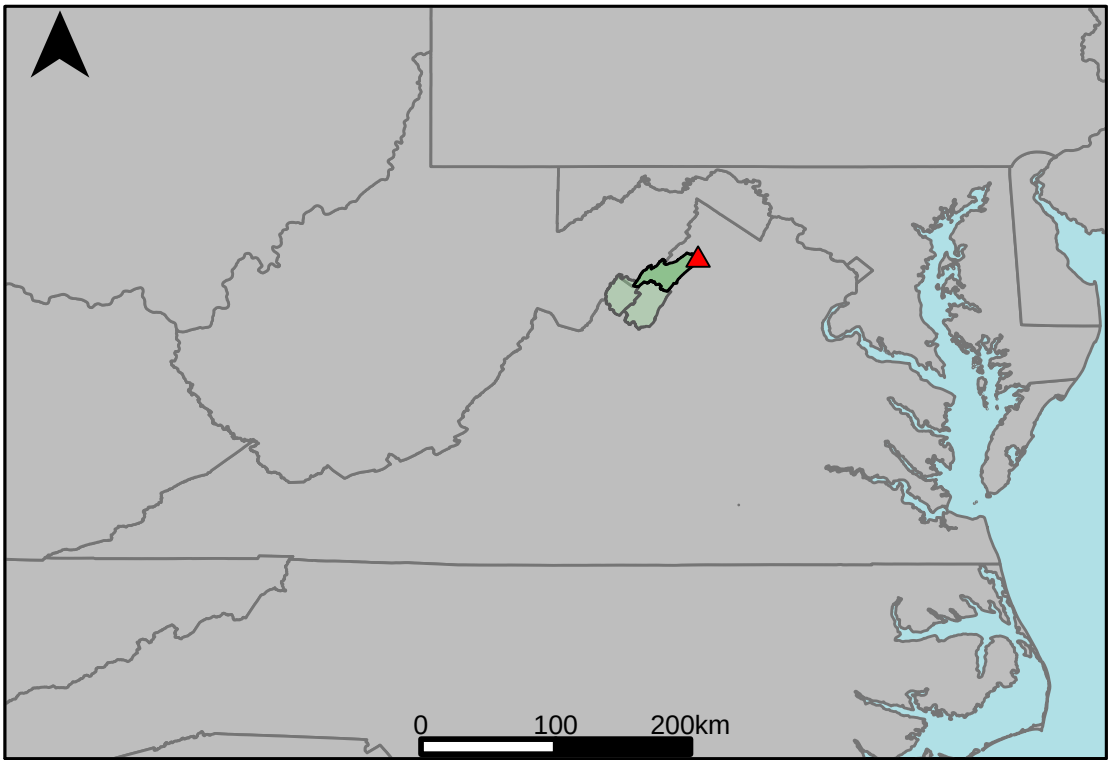
Appendix B.14: USGS Gage 01634000 vs. PS3_5100_5080 Shenandoah River



This river segment follows part of the flow of the North Fork of Shenandoah River, a tributary of the Potomac. The gage is located in Warren County (Lat. 38°58'36.4", Long. -78°20'10.0"), approximately 1.3 miles southeast of Strasburg, VA. Drainage area is 770 sq. miles. This gage started taking data in 1925 and is still taking data. There are large diurnal fluctuations at low and medium flows from unknown causes. Water-level elevations at the site were affected during the 1992-93 water years by construction of a new bridge about 50 ft downstream from the gage. The average daily discharge error between the model and gage data for the 20 year timespan was -9.67%, with 39.2% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	114	87.5	-23.2
Feb. Low Flow	163	145	-11
Mar. Low Flow	219	271	23.7
Apr. Low Flow	265	339	27.9
May Low Flow	295	470	59.3
Jun. Low Flow	389	534	37.3
Jul. Low Flow	384	406	5.73
Aug. Low Flow	291	302	3.78
Sep. Low Flow	184	217	17.9
Oct. Low Flow	134	116	-13.4
Nov. Low Flow	132	82.2	-37.7
Dec. Low Flow	110	62.8	-42.9

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	662	726	9.67
Jan. Mean Flow	841	819	-2.62
Feb. Mean Flow	845	1080	27.8
Mar. Mean Flow	1240	1450	16.9
Apr. Mean Flow	1030	1040	0.97
May Mean Flow	818	761	-6.97
Jun. Mean Flow	524	521	-0.57
Jul. Mean Flow	301	338	12.3
Aug. Mean Flow	320	340	6.25
Sep. Mean Flow	528	740	40.2
Oct. Mean Flow	340	377	10.9
Nov. Mean Flow	549	694	26.4
Dec. Mean Flow	626	589	-5.91

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	291	578	98.6
Feb. High Flow	1810	1270	-29.8
Mar. High Flow	1470	850	-42.2
Apr. High Flow	1630	1590	-2.45
May High Flow	1410	1380	-2.13
Jun. High Flow	3730	4120	10.5
Jul. High Flow	2610	2530	-3.07
Aug. High Flow	1900	1350	-28.9
Sep. High Flow	1090	868	-20.4
Oct. High Flow	578	653	13
Nov. High Flow	310	297	-4.19
Dec. High Flow	354	305	-13.8

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	35	6.54	-81.3
Med. 1 Day Min	100	44.8	-55.2
Min. 3 Day Min	40.7	6.65	-83.7
Med. 3 Day Min	104	46.6	-55.2
Min. 7 Day Min	44.9	7	-84.4
Med. 7 Day Min	108	51.6	-52.2
Min. 30 Day Min	55.1	13.9	-74.8
Med. 30 Day Min	122	75.7	-38
Min. 90 Day Min	72.9	32.2	-55.8
Med. 90 Day Min	171	148	-13.5
7Q10	59.7	11.5	-80.7
Year of 90-Day Min. Flow	1999	1999	0
Drought Year Mean	242	273	12.8
Mean Baseflow	334	395	18.3

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	60700	52500	-13.5
Med. 1 Day Max	8310	8600	3.49
Max. 3 Day Max	25500	31100	22
Med. 3 Day Max	4860	6220	28
Max. 7 Day Max	12700	15400	21.3
Med. 7 Day Max	3320	3570	7.53
Max. 30 Day Max	4010	4890	21.9
Med. 30 Day Max	1790	1850	3.35
Max. 90 Day Max	2700	3140	16.3
Med. 90 Day Max	970	1010	4.12

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	61.7	17.8	-71.2
5% Non-Exceedance	93	48.2	-48.2
50% Non-Exceedance	341	413	21.1
95% Non-Exceedance	2190	2310	5.48
99% Non-Exceedance	4880	5670	16.2
Sept. 10% Non-Exceedance	89.8	38.5	-57.1

Fig. 1: Hydrograph

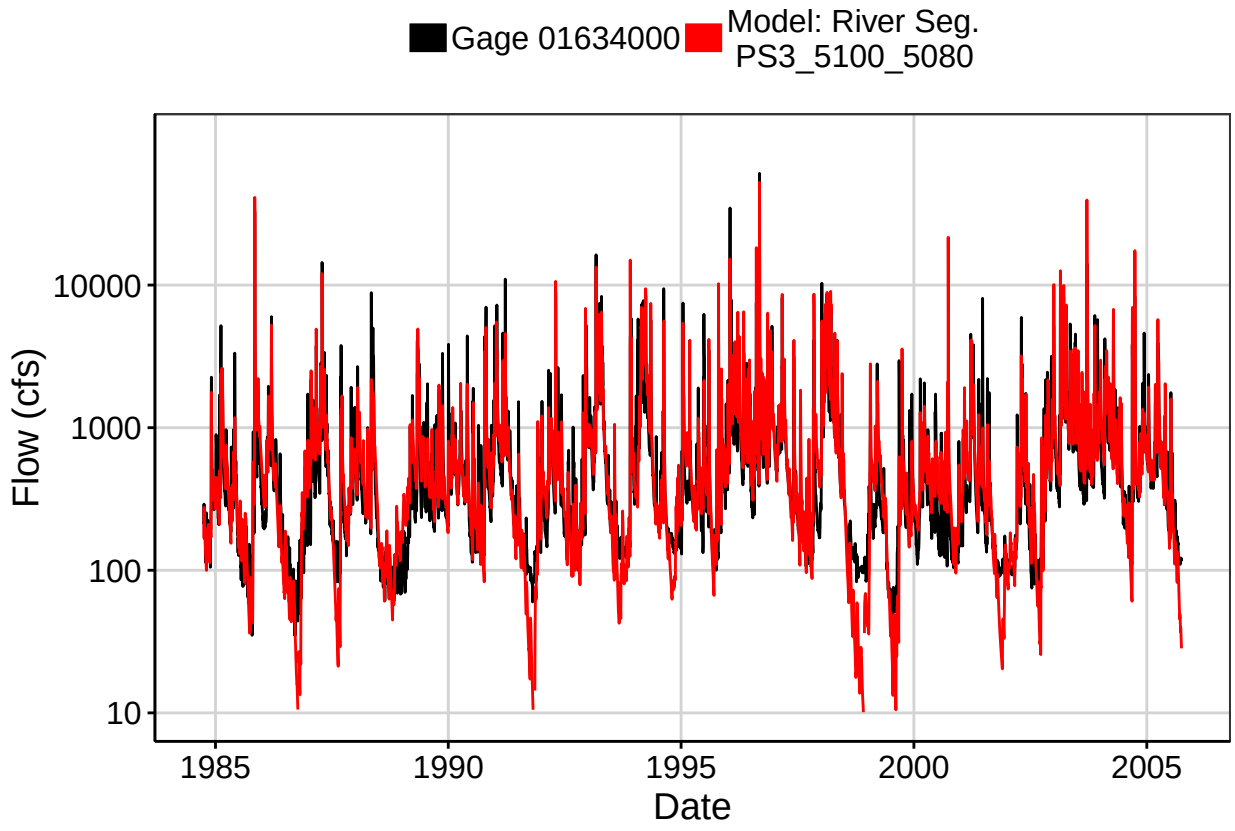


Fig. 2: Zoomed Hydrograph

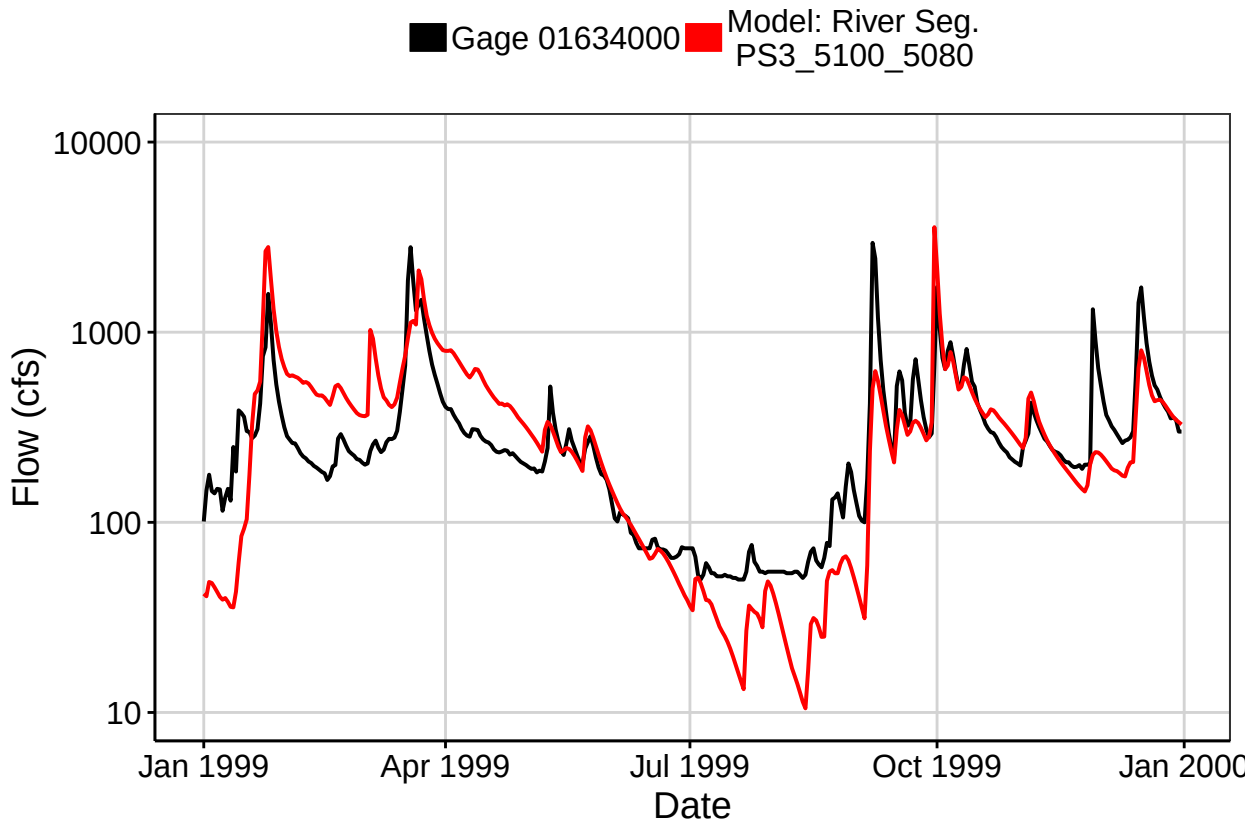


Fig. 3: Flow Exceedance

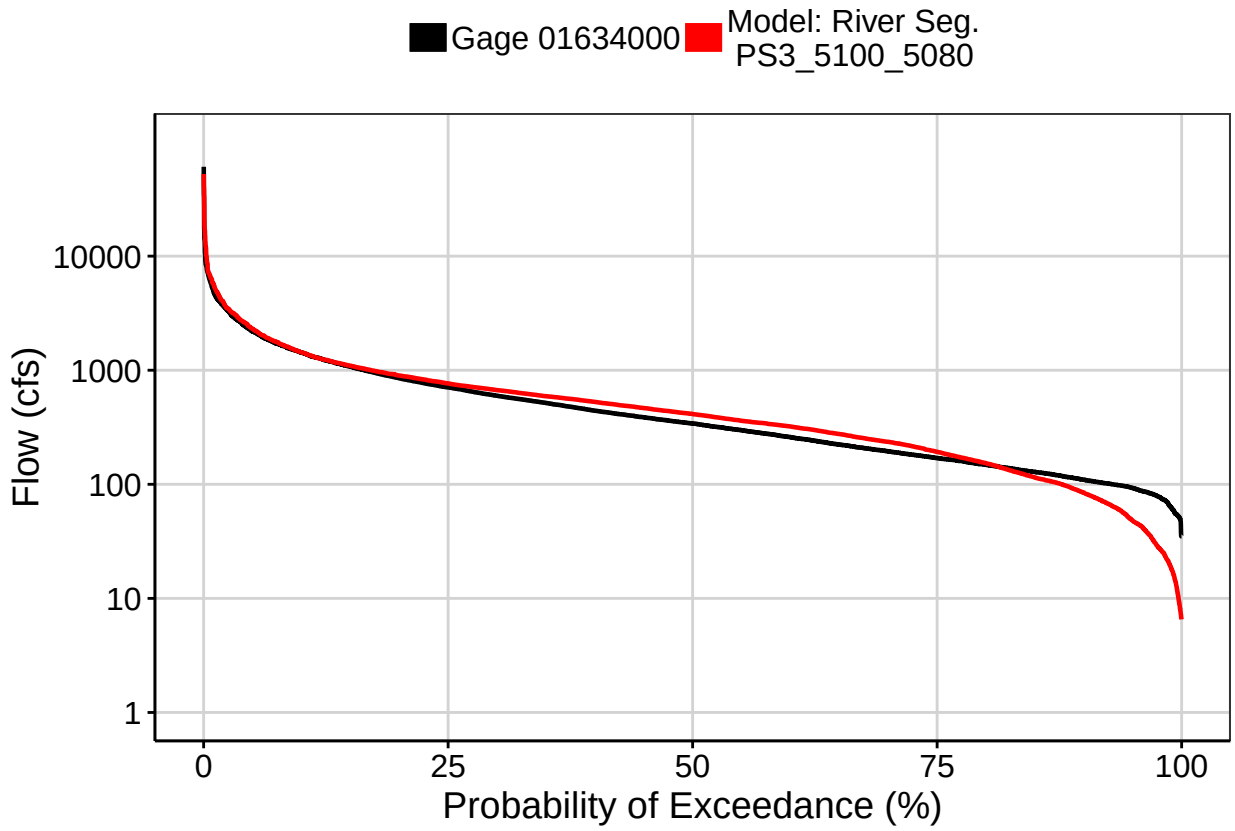


Fig. 4: Baseflow

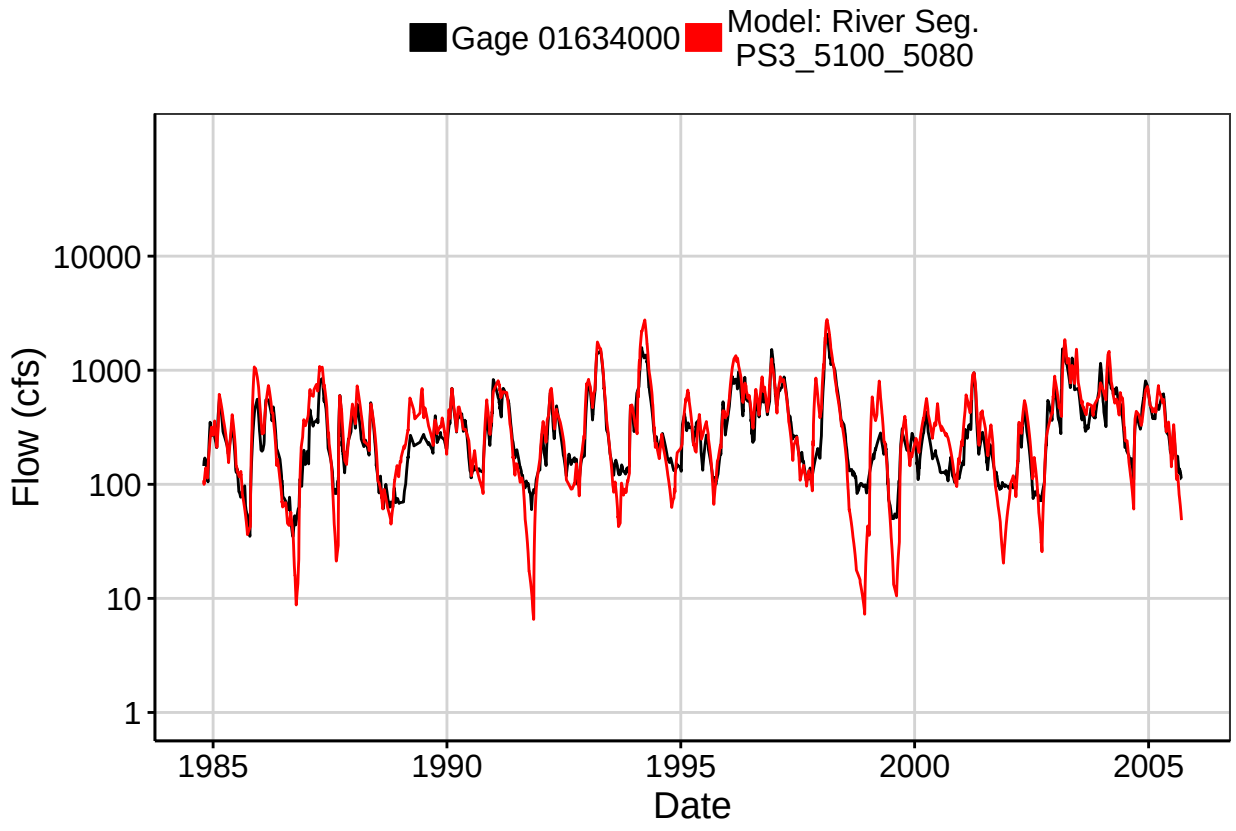


Fig. 5: Combined Baseflow

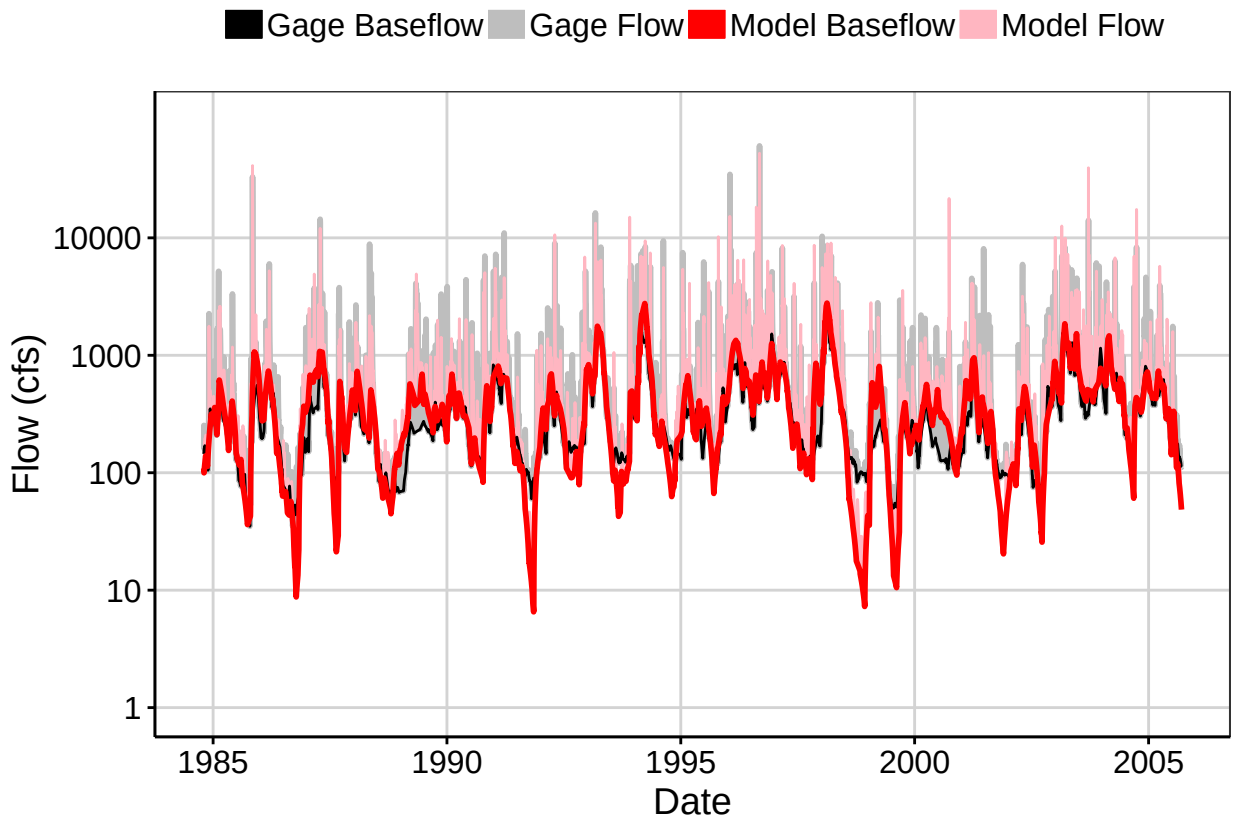


Fig. 6: Largest Error Segment

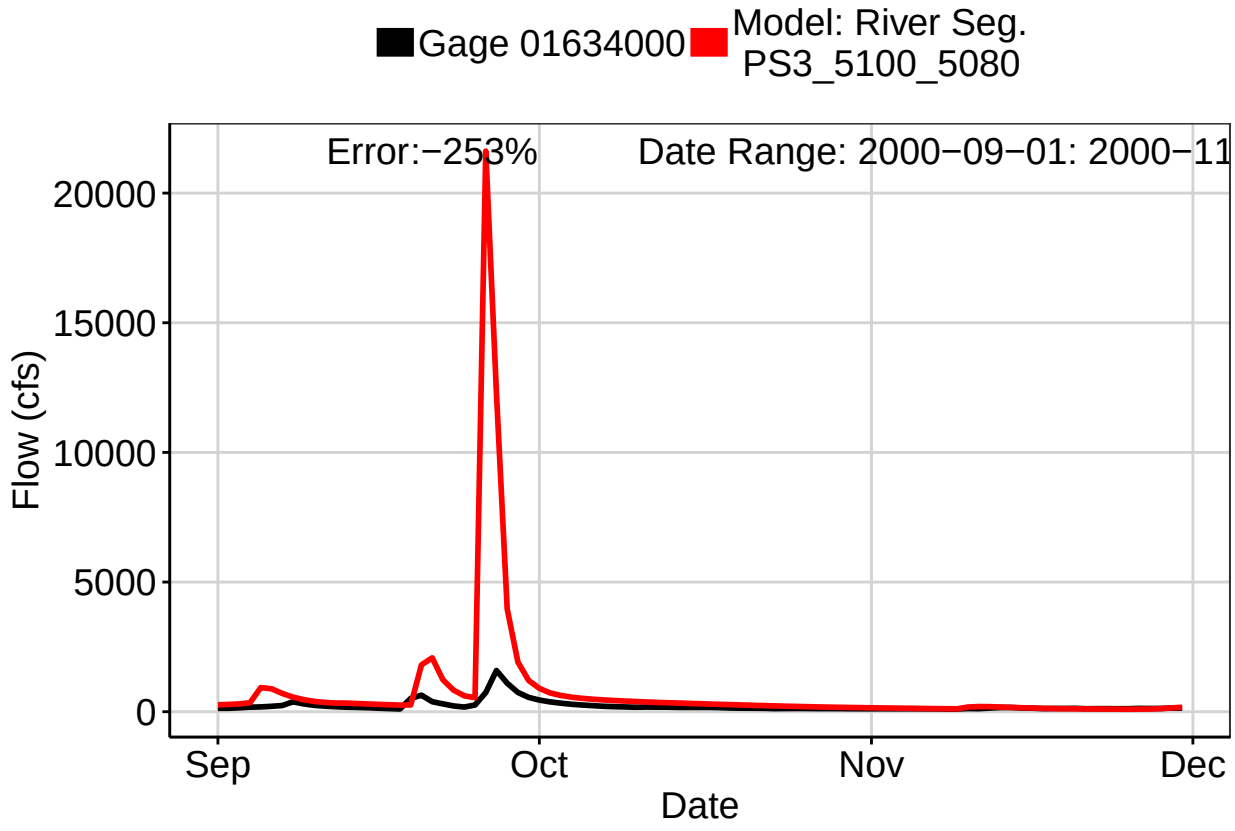


Fig. 7: Second Largest Error Segment

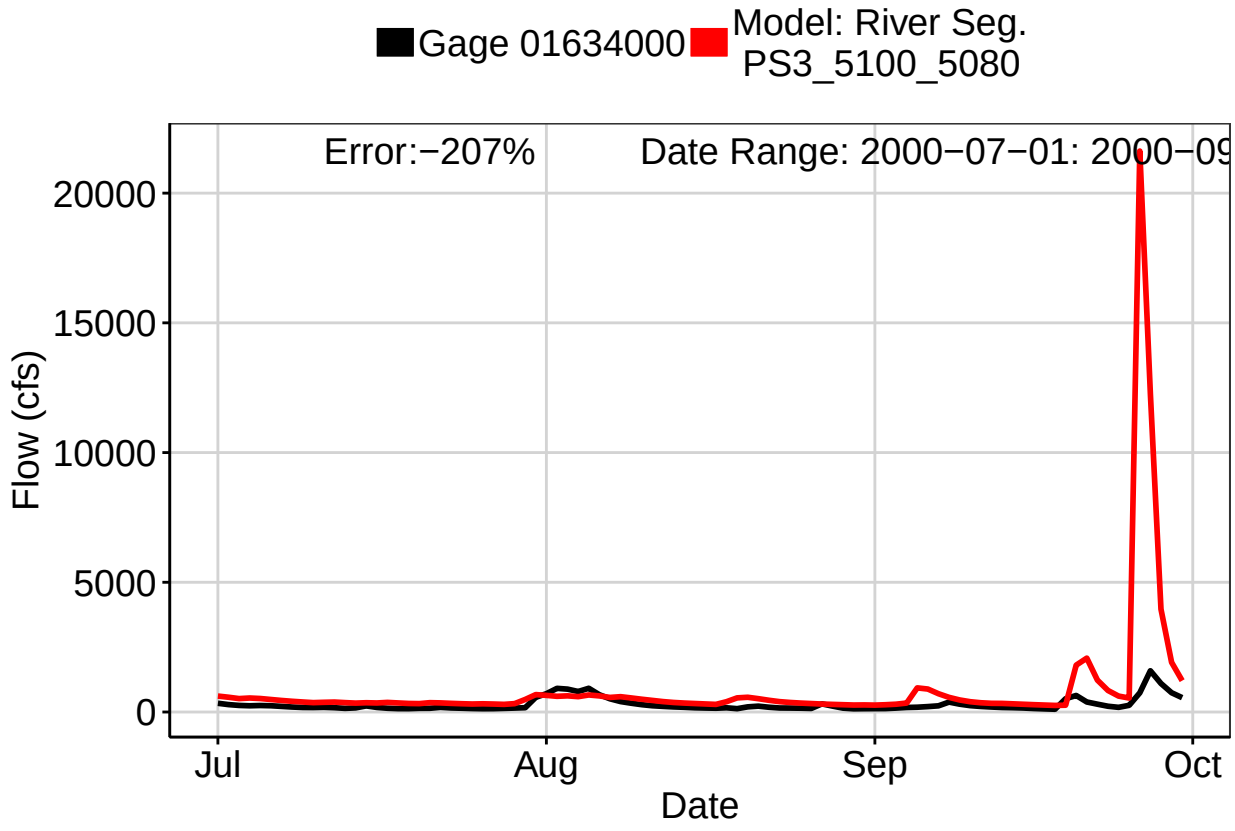


Fig. 8: Third Largest Error Segment

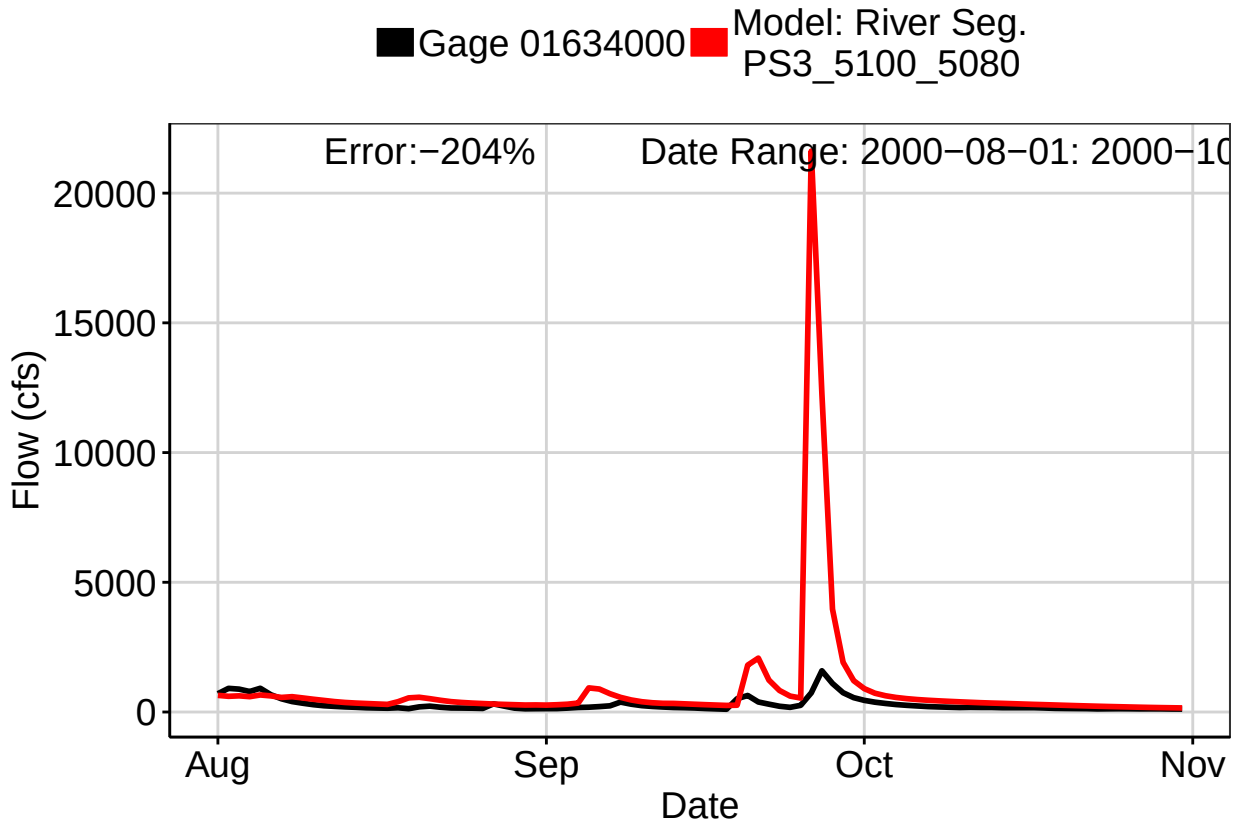


Fig. 9: Residuals Plot