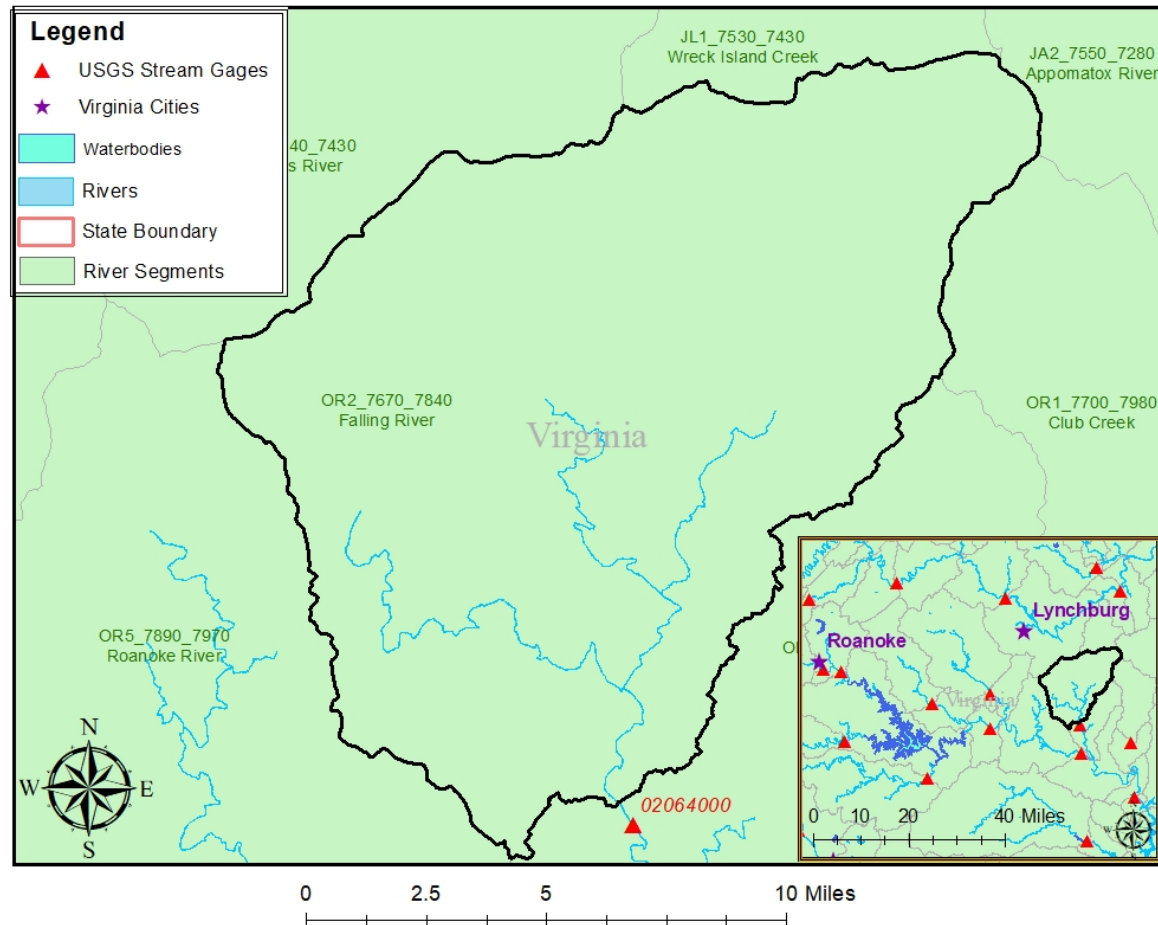


02064000 vs. OR2_7670_7840

Daniel Hildebrand, Hailey Alsbaugh, and Kelsey Reitz

July 11, 2018



This river segment follows part of the flow of the Falling River, a tributary of the Roanoke River. The gage is located in Campbell County, VA (Lat 37°07'36", Long 78°57'36") approximately 22 miles southeast of Lynchburg, VA. Drainage area is 165 sq. miles. This gage started taking data in 1929 and is still taking data. Prior to 1958 there was diurnal fluctuation caused by gristmill upstream at Spring Mills, but there should not be any recent alterations or problems with flow. The average daily discharge error between the model and gage data for the 20 year timespan was -1.18%, with 50.8% of its rolling three month time spans above 20% error.

Table 1: Monthly Low Flows

	USGS Gage	Model	Pct. Error
Jan. Low Flow	46	19.8	57
Feb. Low Flow	57	39.3	31.1
Mar. Low Flow	79	76.6	3.04
Apr. Low Flow	90	94.5	-5
May Low Flow	106	133	-25.5
Jun. Low Flow	101	131	-29.7
Jul. Low Flow	96	87.9	8.44
Aug. Low Flow	78	63.9	18.1
Sep. Low Flow	60.6	40.2	33.7
Oct. Low Flow	38	24.1	36.6
Nov. Low Flow	37	20.2	45.4
Dec. Low Flow	37	17.9	51.6

Table 2: Monthly Average Flows

	USGS Gage	Model	Pct. Error
Overall Mean Flow	169	171	-1.18
Jan. Mean Flow	211	221	-4.74
Feb. Mean Flow	233	273	-17.2
Mar. Mean Flow	276	331	-19.9
Apr. Mean Flow	215	227	-5.58
May Mean Flow	169	174	-2.96
Jun. Mean Flow	130	122	6.15
Jul. Mean Flow	95.9	73.7	23.1
Aug. Mean Flow	89.8	62.8	30.1
Sep. Mean Flow	188	162	13.8
Oct. Mean Flow	104	105	-0.96
Nov. Mean Flow	157	143	8.92
Dec. Mean Flow	167	164	1.8

Table 3: Monthly High Flows

	USGS Gage	Model	Pct. Error
Jan. High Flow	203	118	41.9
Feb. High Flow	553	426	23
Mar. High Flow	584	507	13.2
Apr. High Flow	630	615	2.38
May High Flow	657	632	3.81
Jun. High Flow	906	1360	-50.1
Jul. High Flow	460	591	-28.5
Aug. High Flow	332	205	38.3
Sep. High Flow	271	166	38.7
Oct. High Flow	322	135	58.1
Nov. High Flow	195	94.6	51.5
Dec. High Flow	133	93.6	29.6

Table 4: Period Low Flows

	USGS Gage	Model	Pct. Error
Min. 1 Day Min	1	1.86	-86
Med. 1 Day Min	31	13.2	57.4
Min. 3 Day Min	1.12	1.92	-71.4
Med. 3 Day Min	32.7	13.5	58.7
Min. 7 Day Min	1.41	2.07	-46.8
Med. 7 Day Min	33.4	14.6	56.3
Min. 30 Day Min	5.02	3.84	23.5
Med. 30 Day Min	43.2	20.1	53.5
Min. 90 Day Min	10.7	14.1	-31.8
Med. 90 Day Min	63.4	35.3	44.3
7Q10	9.41	4.34	53.9
Year of 90-Day Min. Flow	2002	1986	100
Drought Year Mean	42.7	44.6	-4.45
Mean Baseflow	87.1	88.2	-1.26

Table 5: Period High Flows

	USGS Gage	Model	Pct. Error
Max. 1 Day Max	20000	11200	44
Med. 1 Day Max	3140	3230	-2.87
Max. 3 Day Max	11400	6210	45.5
Med. 3 Day Max	1680	1600	4.76
Max. 7 Day Max	5550	3190	42.5
Med. 7 Day Max	887	922	-3.95
Max. 30 Day Max	1480	998	32.6
Med. 30 Day Max	494	511	-3.44
Max. 90 Day Max	584	719	-23.1
Med. 90 Day Max	292	334	-14.4

Table 6: Non-Exceedance Flows

	USGS Gage	Model	Pct. Error
1% Non-Exceedance	10.6	5.87	44.6
5% Non-Exceedance	27.3	14	48.7
50% Non-Exceedance	97.6	92.7	5.02
95% Non-Exceedance	457	512	-12
99% Non-Exceedance	1330	1560	-17.3
Sept. 10% Non-Exceedance	13.6	21	-54.4

Fig. 1: Hydrograph

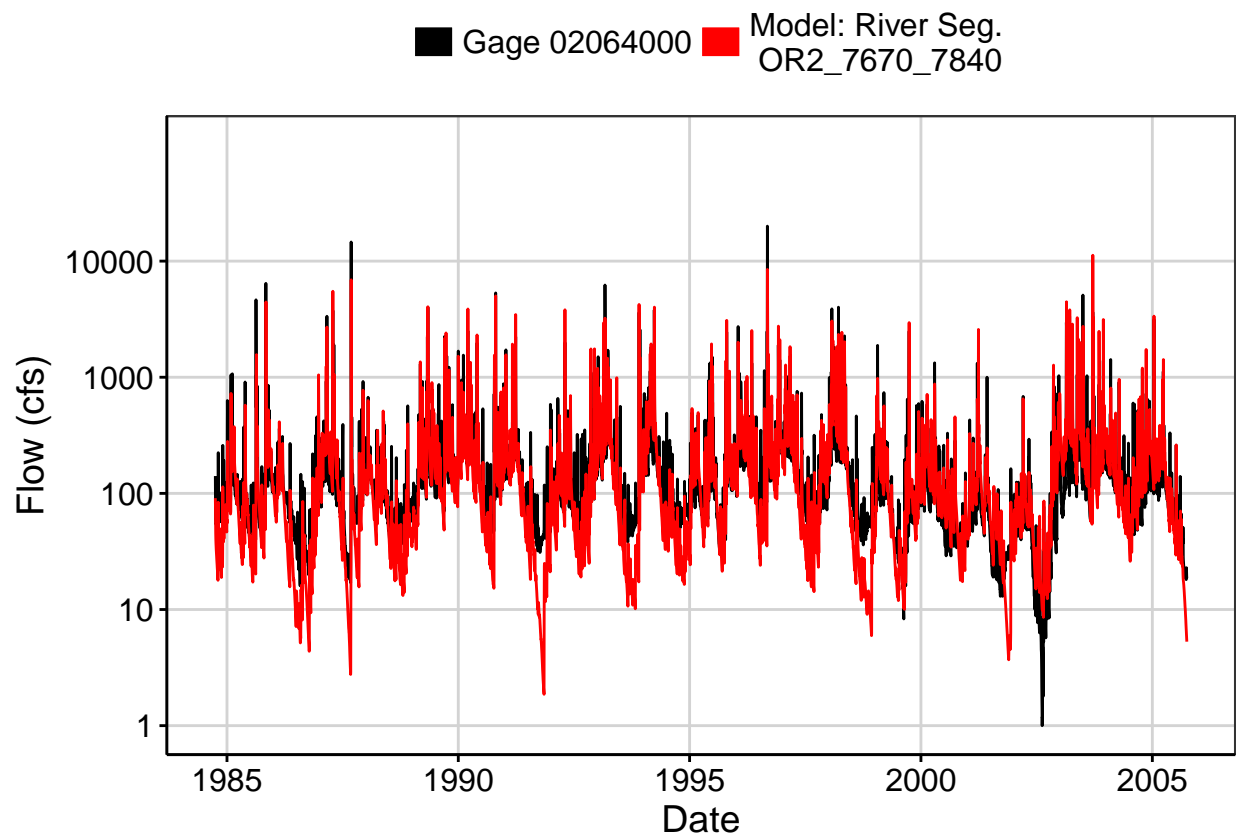


Fig. 2: Zoomed Hydrograph

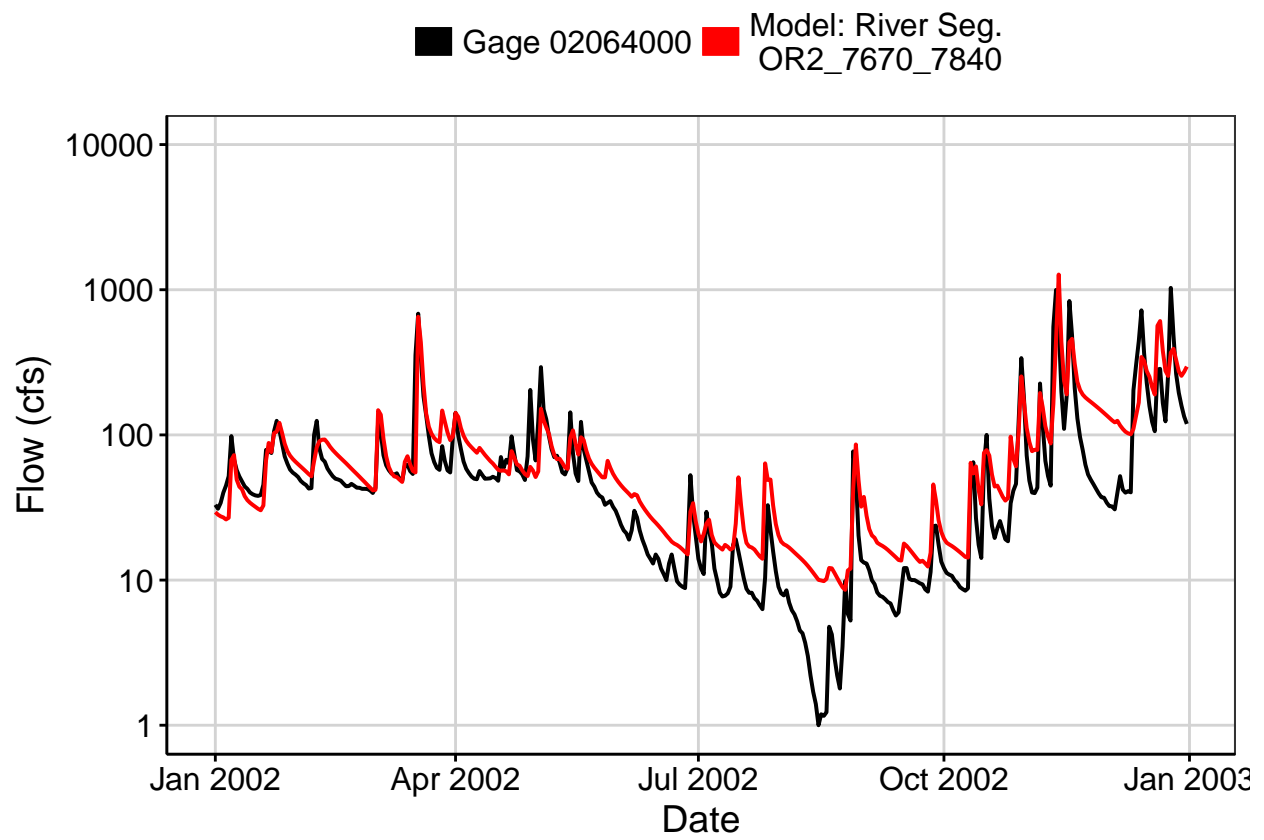


Fig. 3: Flow Exceedance

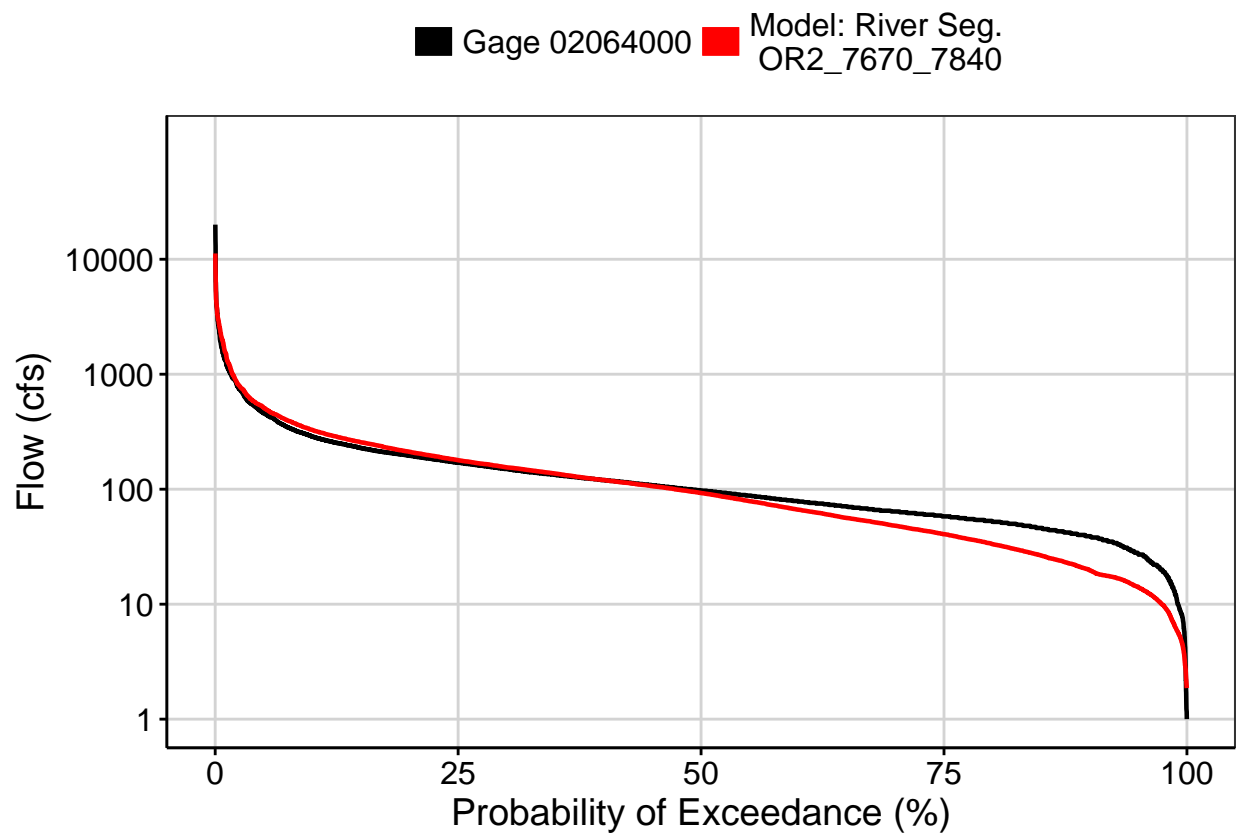


Fig. 4: Baseflow

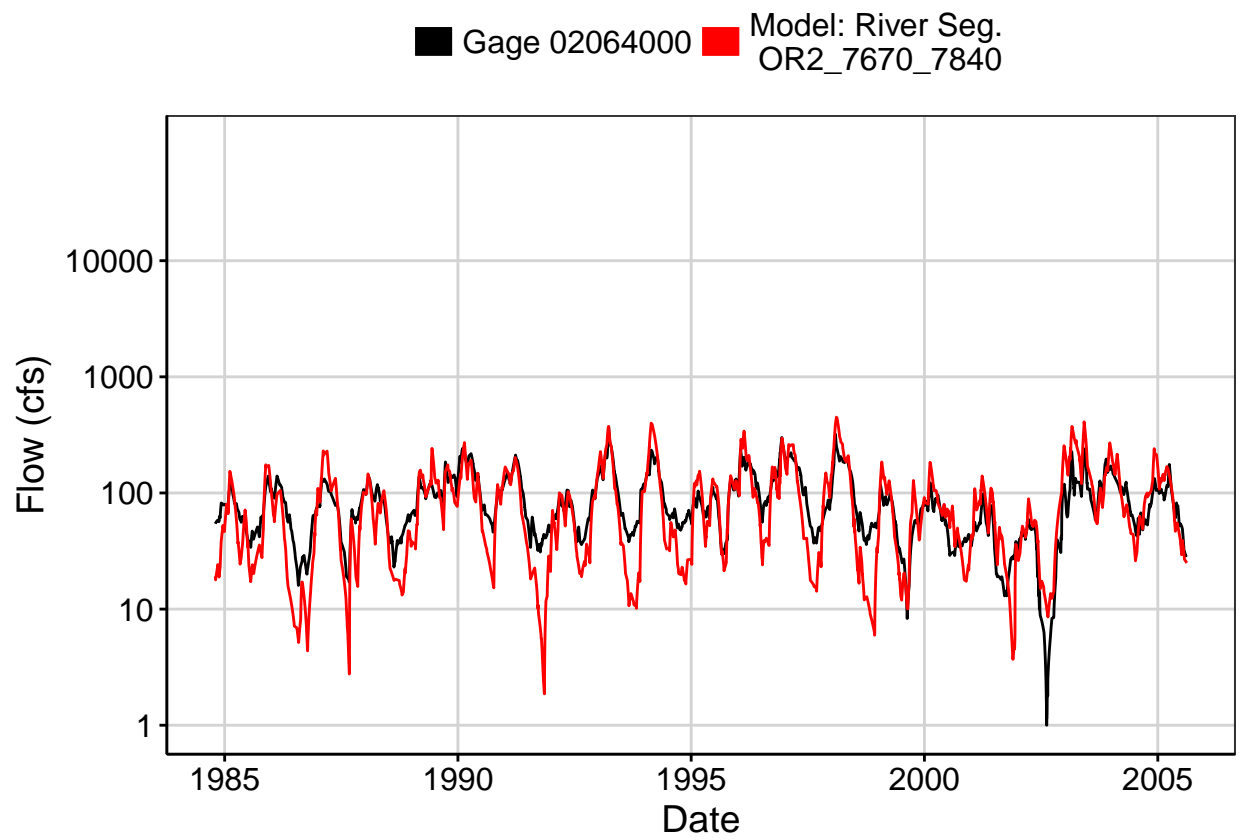


Fig. 5: Combined Baseflow

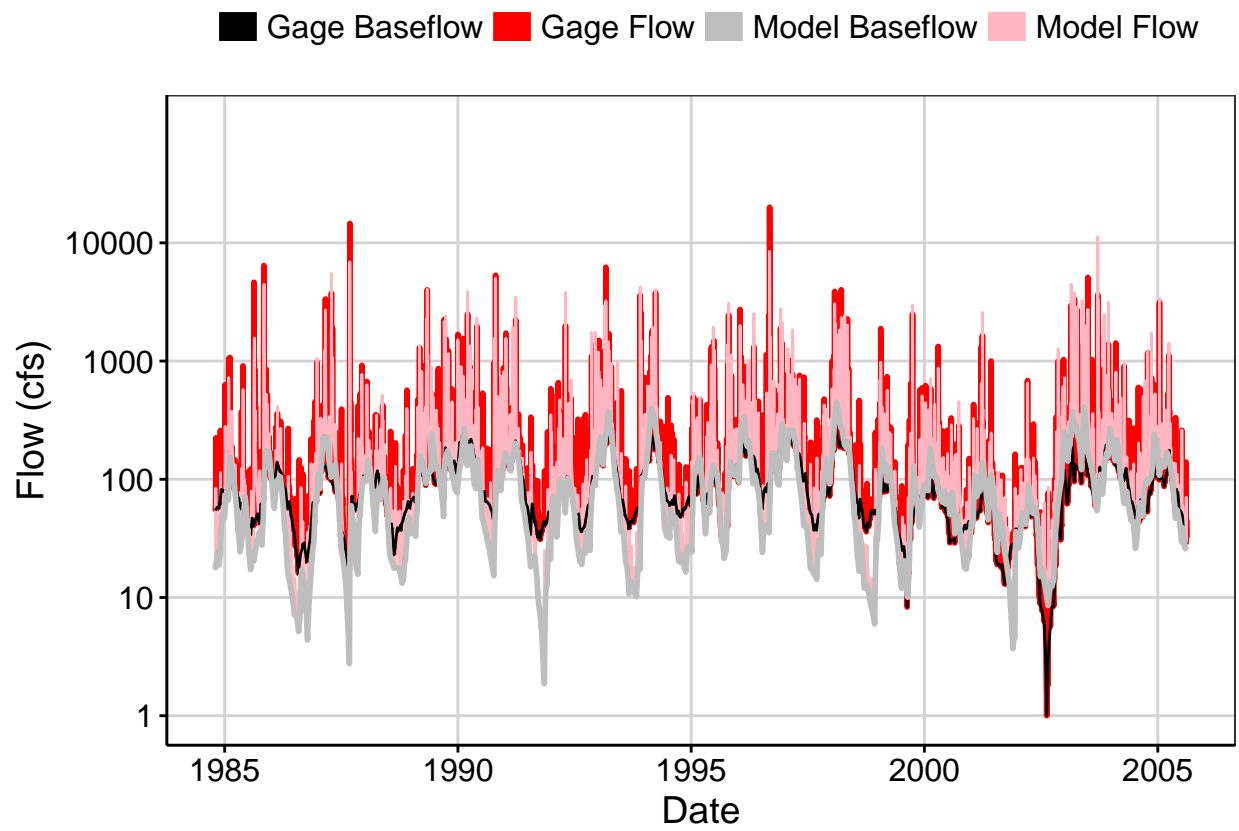


Fig. 6: Largest Error Segment

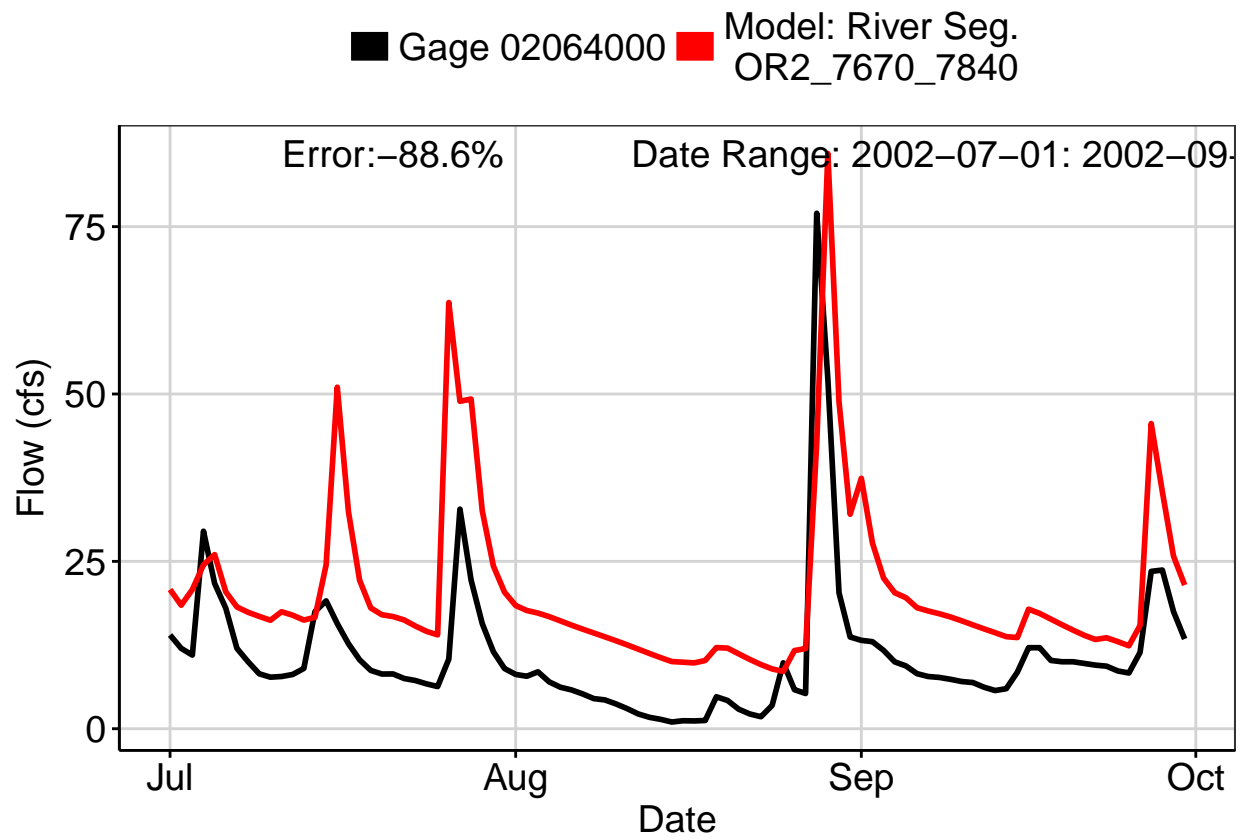


Fig. 7: Second Largest Error Segment

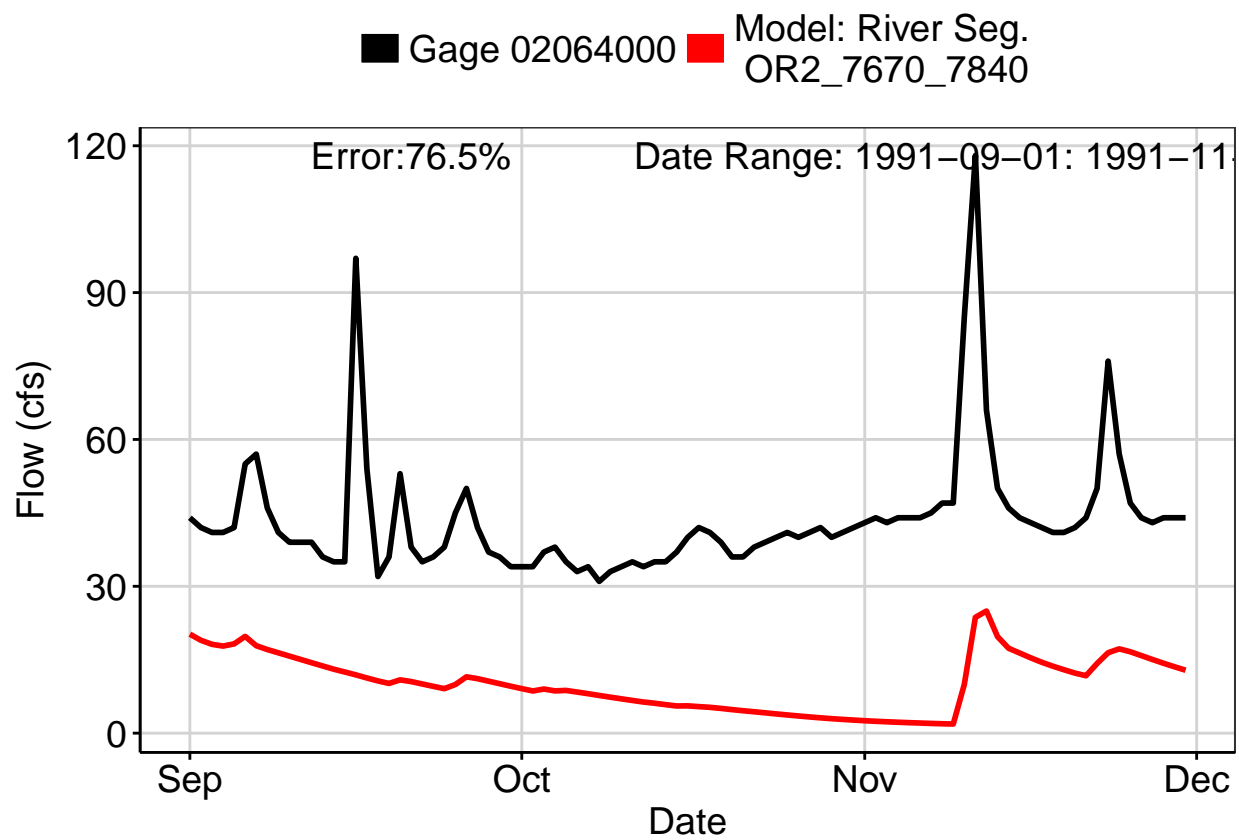


Fig. 8: Third Largest Error Segment

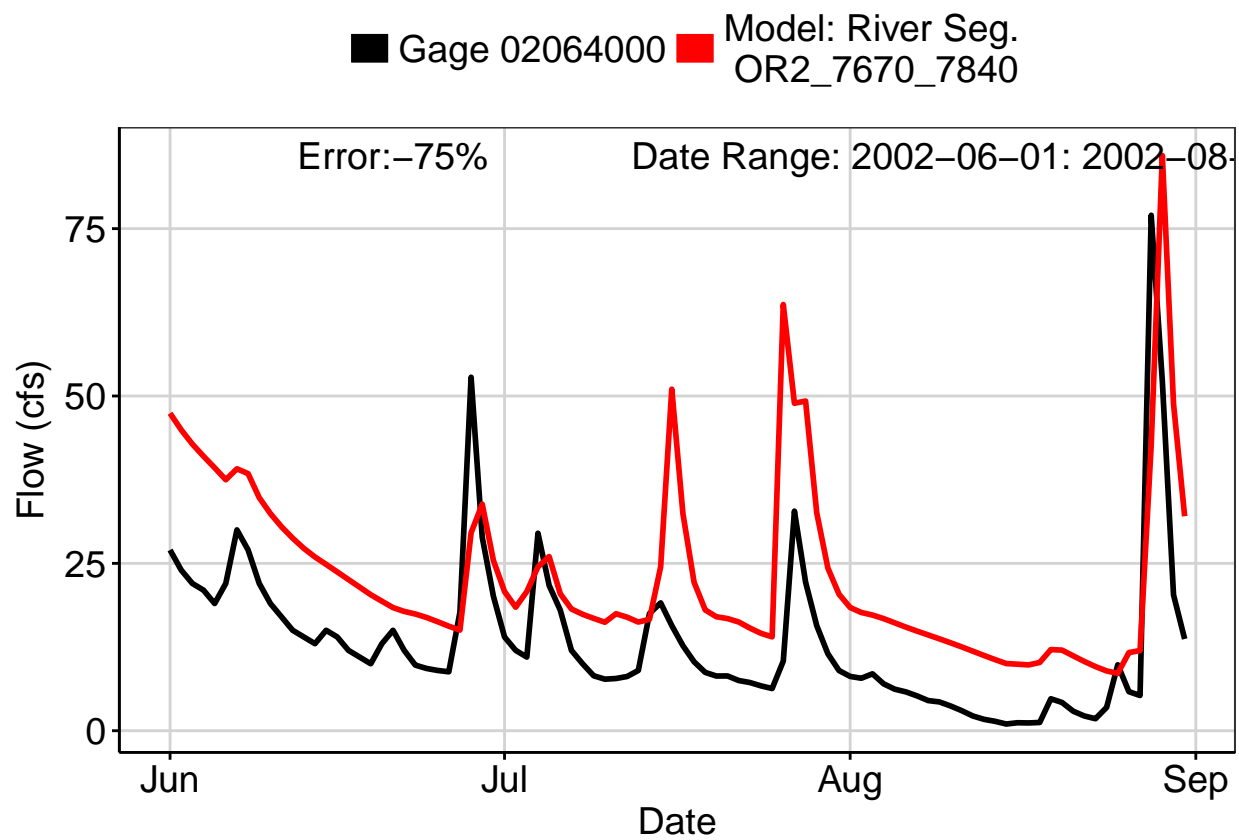


Fig. 9: Residuals Plot

