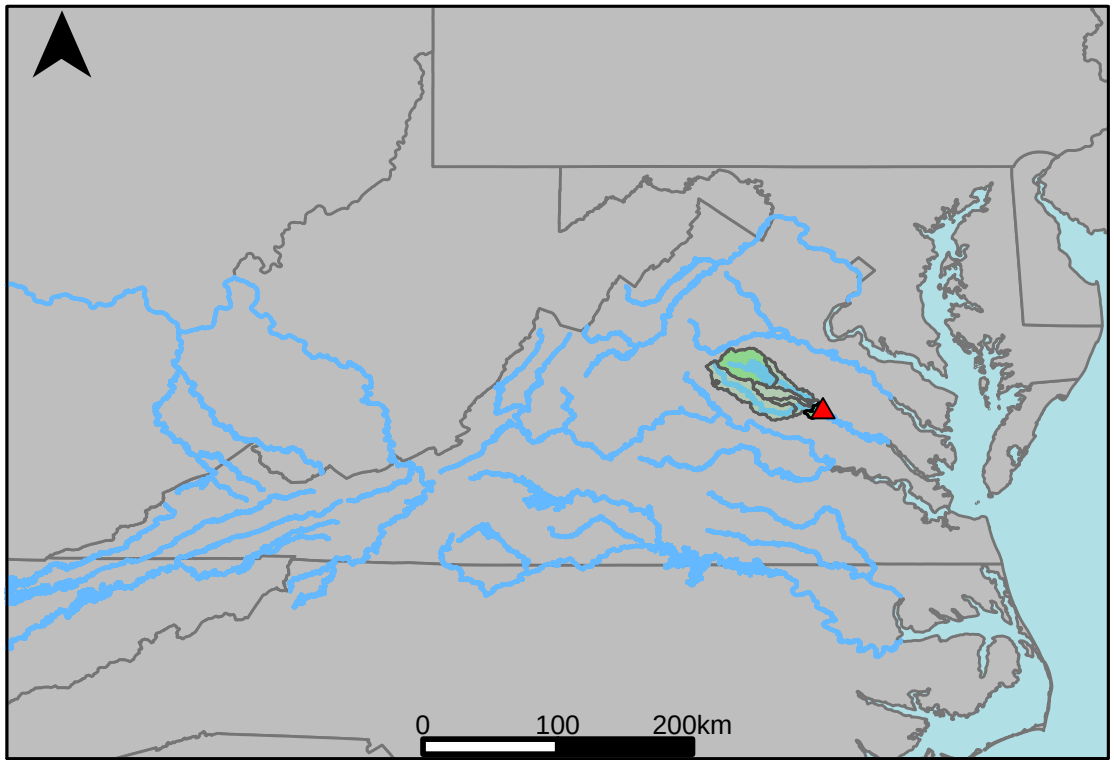
Appendix ##: River Segment: YP4_6720_6750 : CFBASE30Y20180615 vs. Scenario 2: CBASE1808L55CY55R45P50R45P50Y



This river segment follows part of the flow of the Pamunkey River near Hanover, VA. The gage is located in Hanover County, VA (Lat 37 46'03", Long 77 19'57") approximately 2.0 miles east of Hanover, VA. Drainage area is 1,078 sq. miles. This gage started taking data in 1941 and is still taking data currently. Some regulations have been applied since January 1972 by Lake Anna, capacity, 373,000 acre-ft, and occasional diurnal fluctuation occurs at low flow caused by a mill upstream from station. The average daily discharge change between scenario 1 and scenario 2 for the 20 year timespan was 11.8243%, with 25% of its rolling three month time spans above 20% difference.

Table 1: Monthly Low Flows

	Scenario 1	Scenario 2	Pct. Difference
Jan. Low Flow	134	142	5.97
Feb. Low Flow	178	190	6.74
Mar. Low Flow	330	348	5.45
Apr. Low Flow	534	570	6.74
May Low Flow	666	726	9.01
Jun. Low Flow	586	628	7.17
Jul. Low Flow	482	470	-2.49
Aug. Low Flow	362	411	13.54
Sep. Low Flow	220	218	-0.91
Oct. Low Flow	118	121	2.54
Nov. Low Flow	121	130	7.44
Dec. Low Flow	109	120	10.09

Table 2: Monthly Average Flows

	Scenario 1	Scenario 2	Pct. Difference
Overall Mean Flow	888	993	11.82
Jan. Mean Flow	1440	1620	12.5
Feb. Mean Flow	1610	1800	11.8
Mar. Mean Flow	1920	2040	6.25
Apr. Mean Flow	1240	1300	4.84
May Mean Flow	889	940	5.74
Jun. Mean Flow	454	475	4.63
Jul. Mean Flow	305	345	13.11
Aug. Mean Flow	275	331	20.36
Sep. Mean Flow	345	433	25.51
Oct. Mean Flow	478	588	23.01
Nov. Mean Flow	754	898	19.1
Dec. Mean Flow	993	1200	20.85

Table 3: Monthly High Flows

	Scenario 1	Scenario 2	Pct. Difference
Jan. High Flow	496	742	49.6
Feb. High Flow	1600	2280	42.5
Mar. High Flow	2330	3210	37.77
Apr. High Flow	3820	4480	17.28
May High Flow	2630	3290	25.1
Jun. High Flow	4080	4420	8.33
Jul. High Flow	2440	2600	6.56
Aug. High Flow	1300	1460	12.31
Sep. High Flow	661	728	10.14
Oct. High Flow	498	624	25.3
Nov. High Flow	471	596	26.54
Dec. High Flow	388	605	55.93

Table 4: Period Low Flows

	Scenario 1	Scenario 2	Pct. Difference
Min. 1 Day Min	51.6	52.6	1.94
Med. 1 Day Min	85.6	94	9.81
Min. 3 Day Min	52	52.9	1.73
Med. 3 Day Min	89.3	98	9.74
Min. 7 Day Min	53.4	55	3
Med. 7 Day Min	97.1	108	11.23
Min. 30 Day Min	60.1	66.1	9.98
Med. 30 Day Min	117	137	17.09
Min. 90 Day Min	99.6	116	16.47
Med. 90 Day Min	220	258	17.27
7Q10	56.2	58.5	4.09
Year of 90-Day Min. Flow	1999	1999	0
Drought Year Mean	431.49	538.74	24.86
Mean Baseflow	452	466	3.1

Table 5: Period High Flows

	Scenario 1	Scenario 2	Pct. Difference
Max. 1 Day Max	19500	22600	15.9
Med. 1 Day Max	8920	9380	5.16
Max. 3 Day Max	16300	20300	24.54
Med. 3 Day Max	7730	8240	6.6
Max. 7 Day Max	11600	13600	17.24
Med. 7 Day Max	5560	6130	10.25
Max. 30 Day Max	7010	8120	15.83
Med. 30 Day Max	2690	2840	5.58
Max. 90 Day Max	4740	5290	11.6
Med. 90 Day Max	1600	1700	6.25

Table 6: Non-Exceedance Flows

	Scenario 1	Scenario 2	Pct. Difference
1% Non-Exceedance	60.2	64.5	7.14
5% Non-Exceedance	93.2	103	10.52
50% Non-Exceedance	502	548	9.16
95% Non-Exceedance	2950	3340	13.22
99% Non-Exceedance	7310	8300	13.54
Sept. 10% Non-Exceedance	74.7	84.9	13.65

Fig. 1: Hydrograph

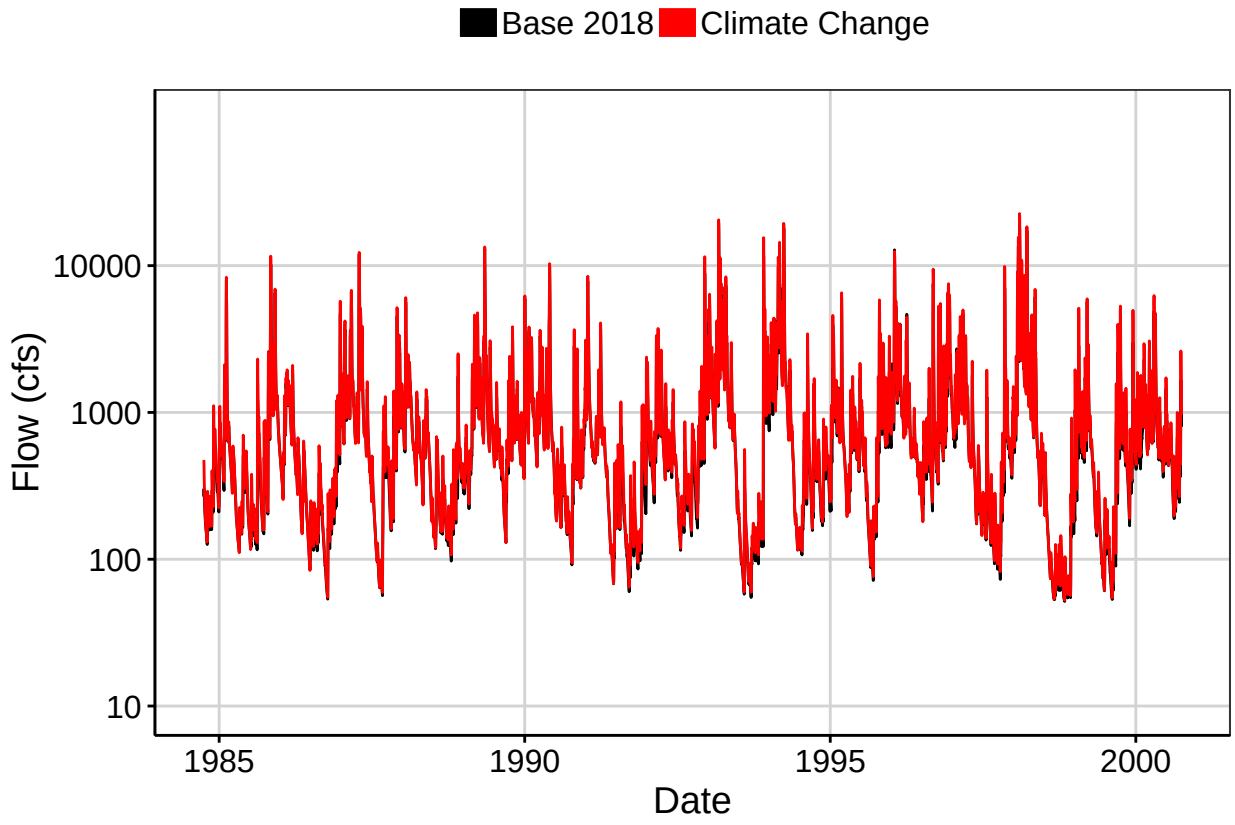


Fig. 2: Zoomed Hydrograph

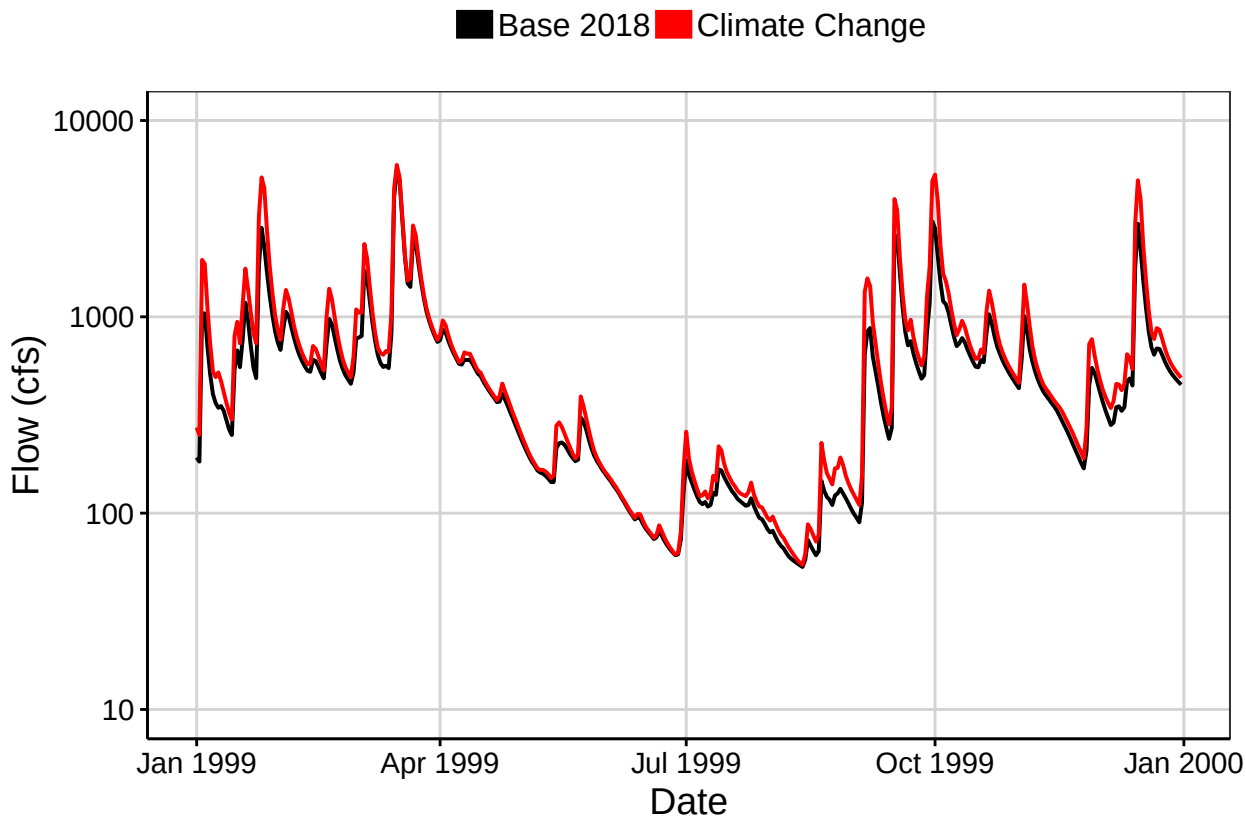


Fig. 3: Flow Exceedance

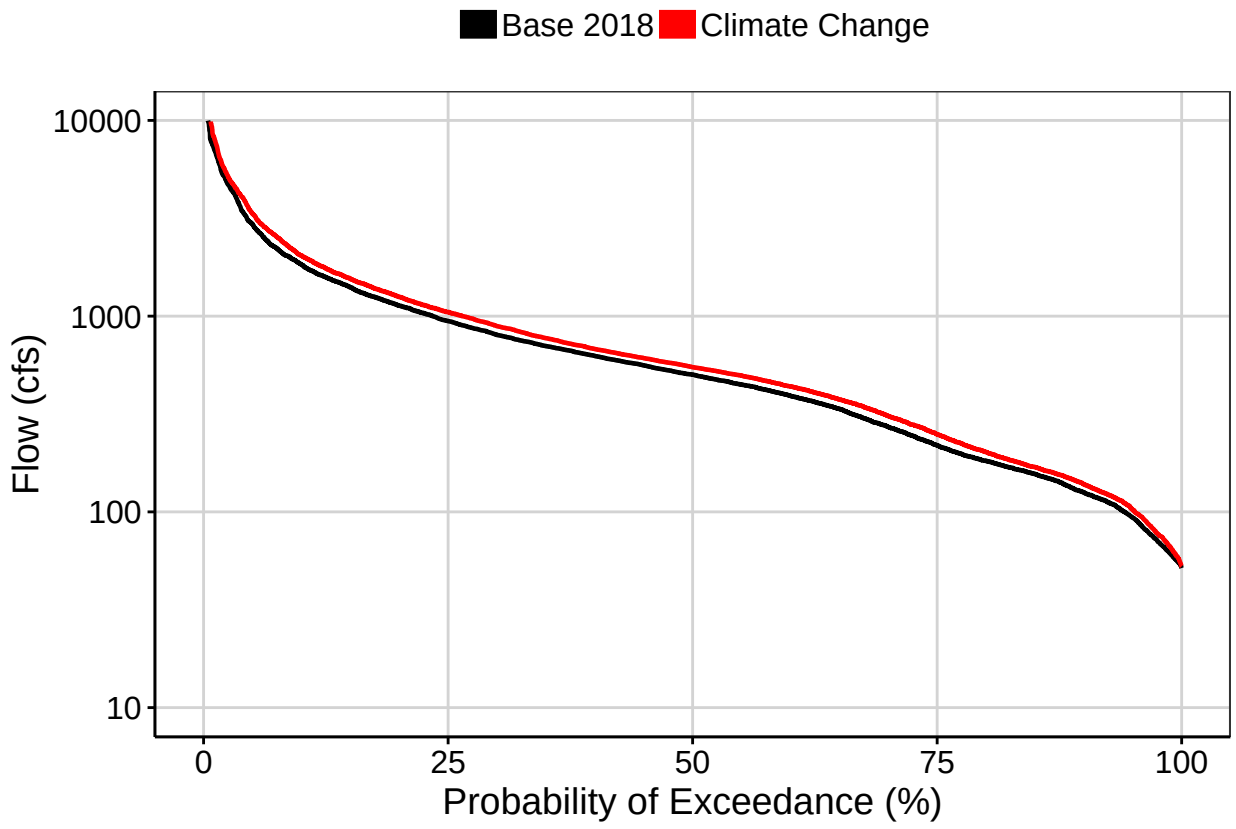


Fig. 4: Baseflow

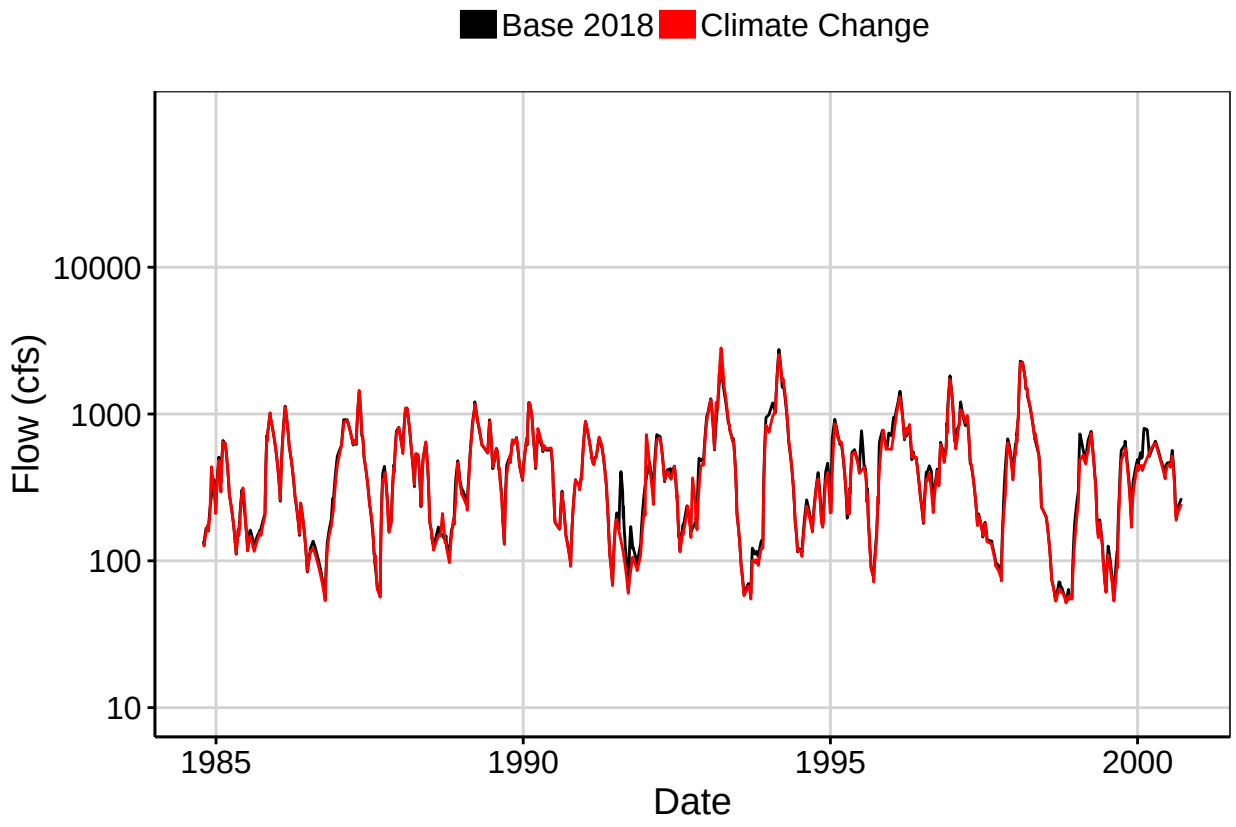


Fig. 5: Combined Baseflow

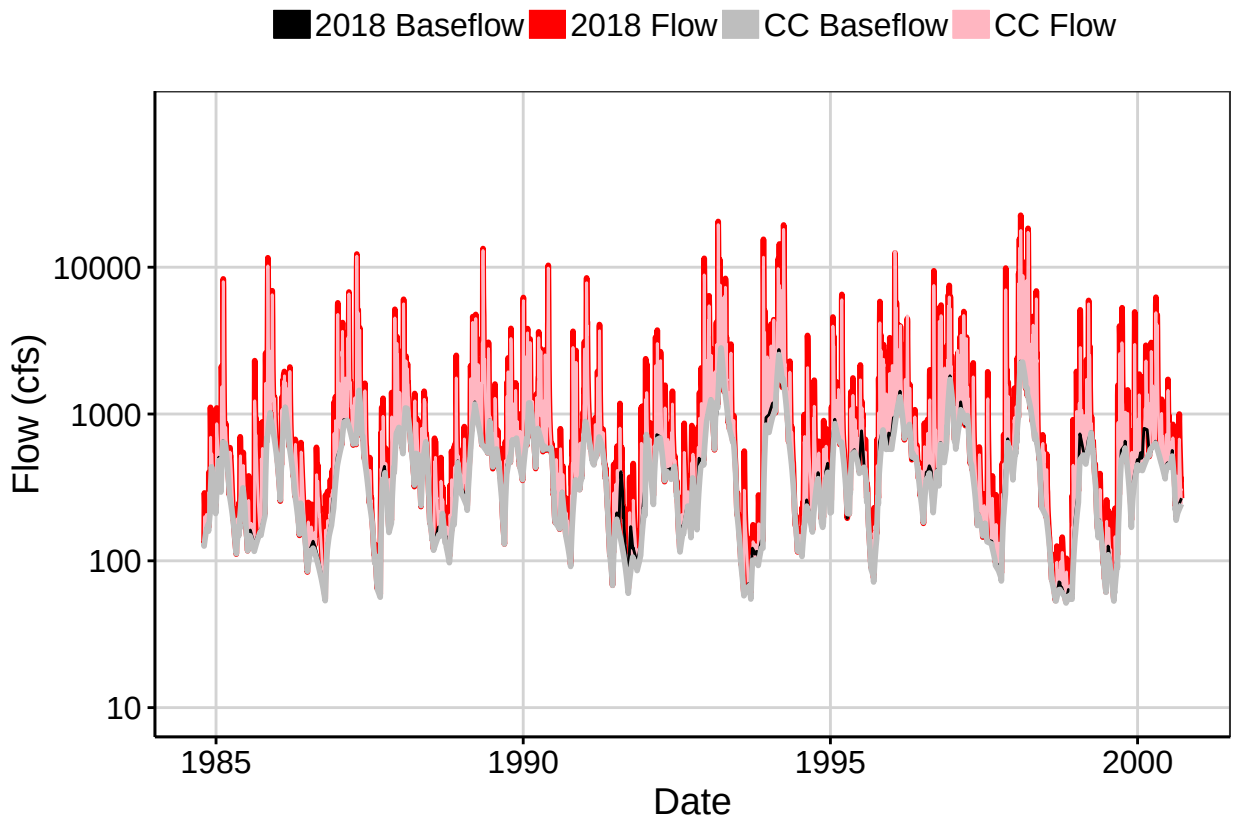


Fig. 6: Largest Difference Segment

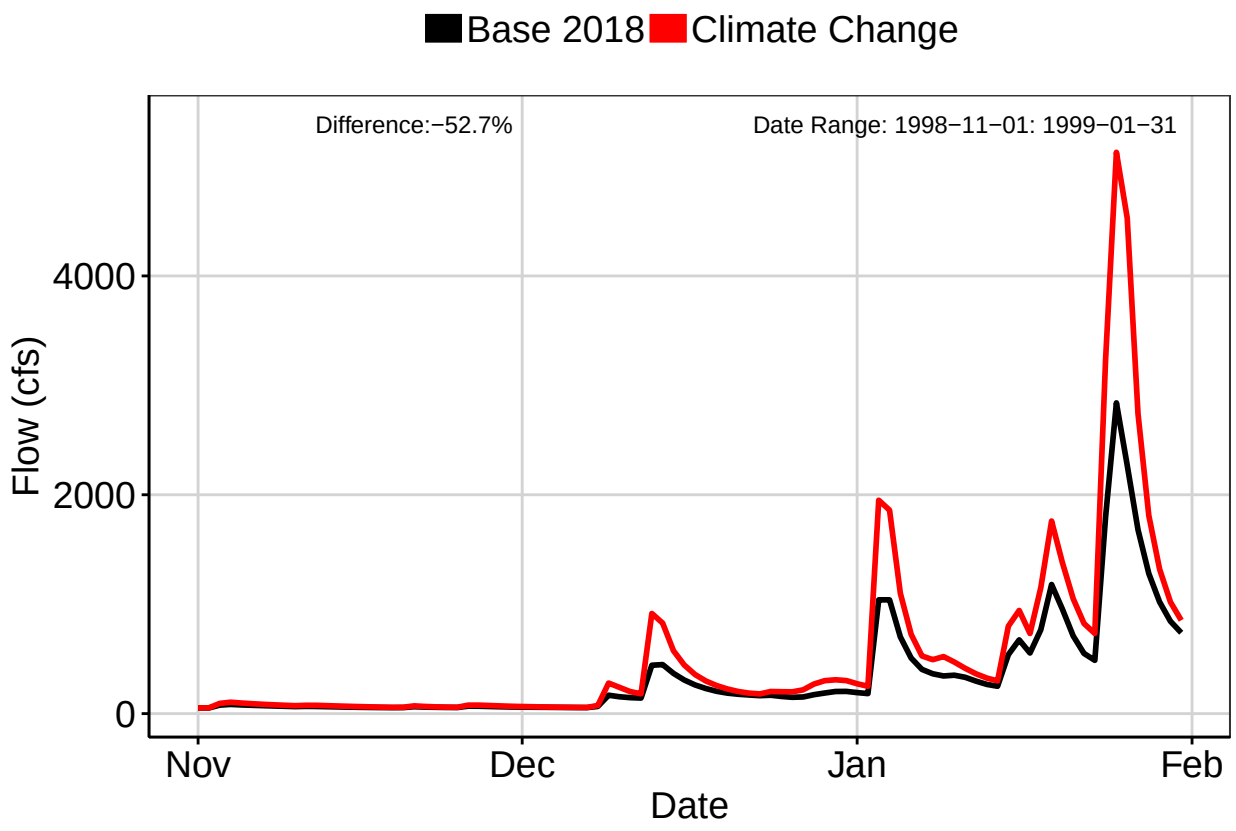


Fig. 7: Second Largest Difference Segment

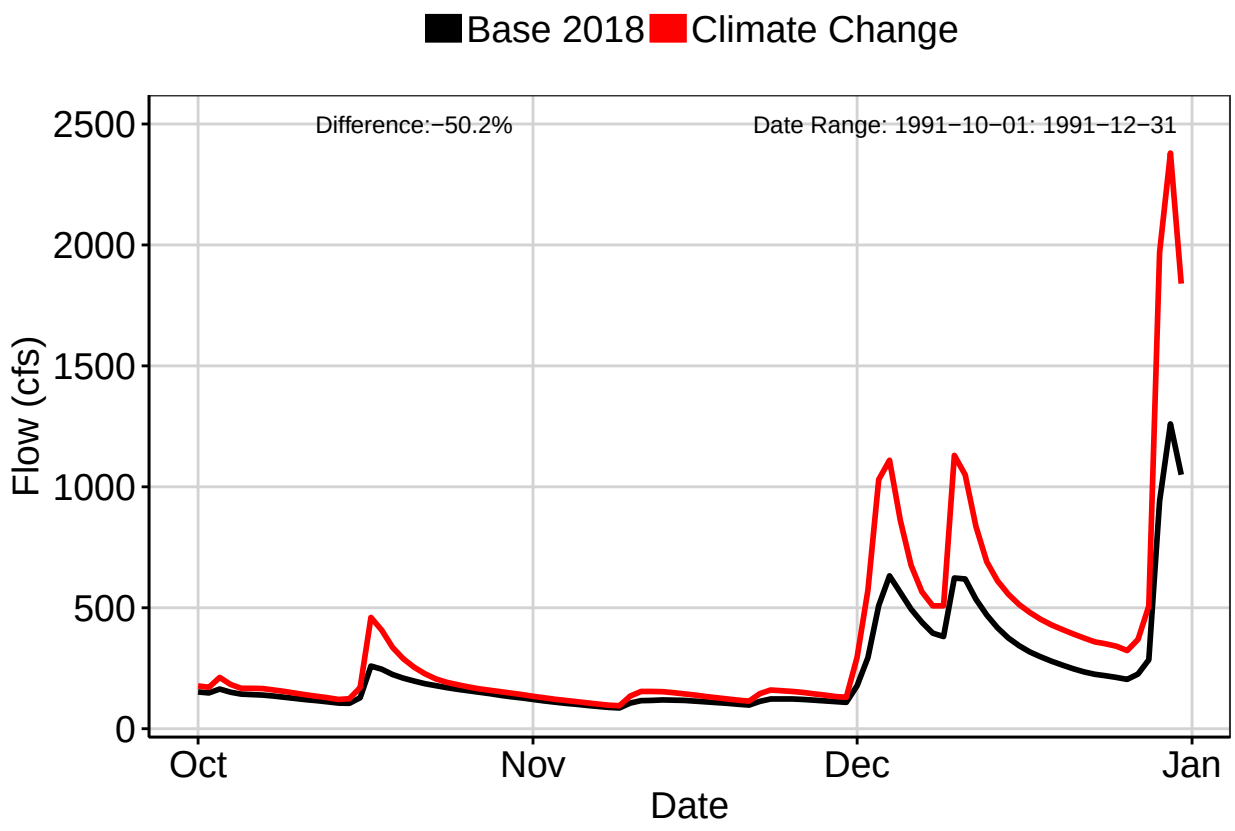


Fig. 8: Third Largest Difference Segment

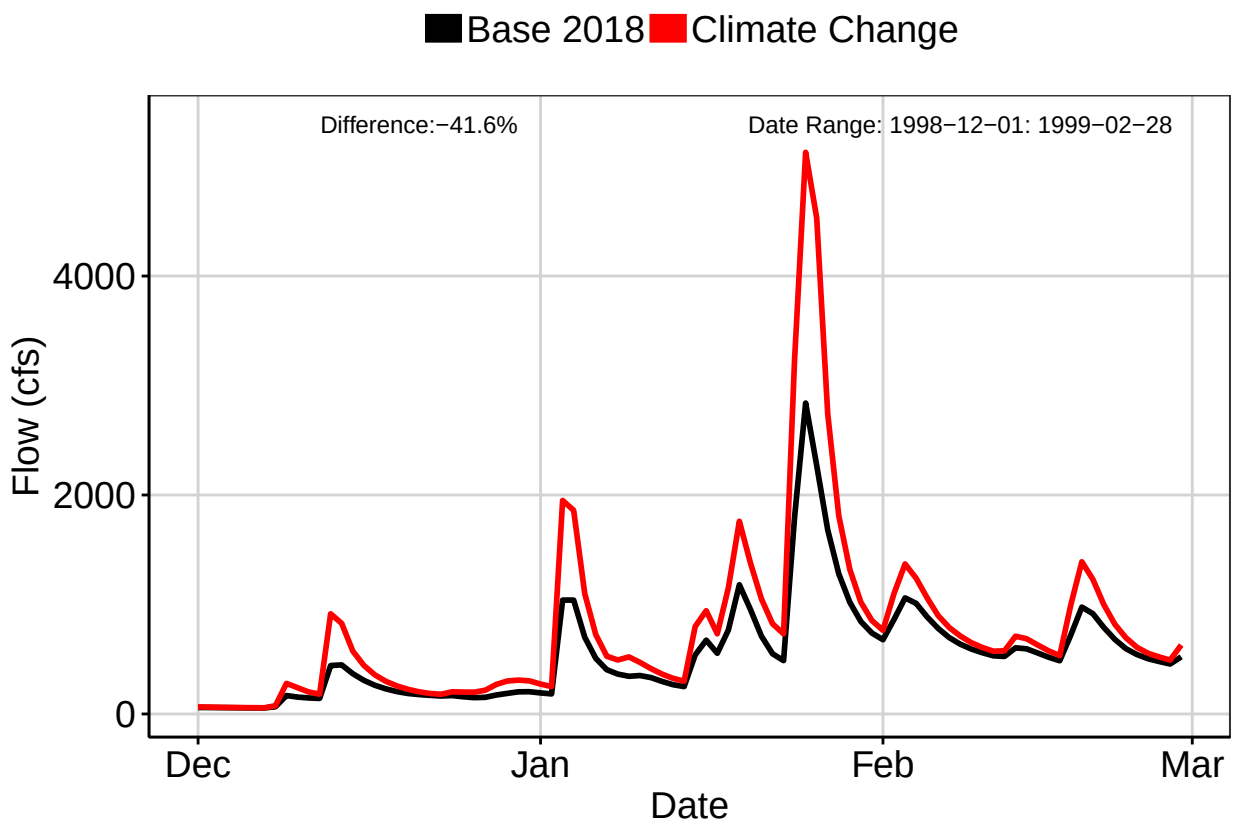


Fig. 9A: Residuals Plot

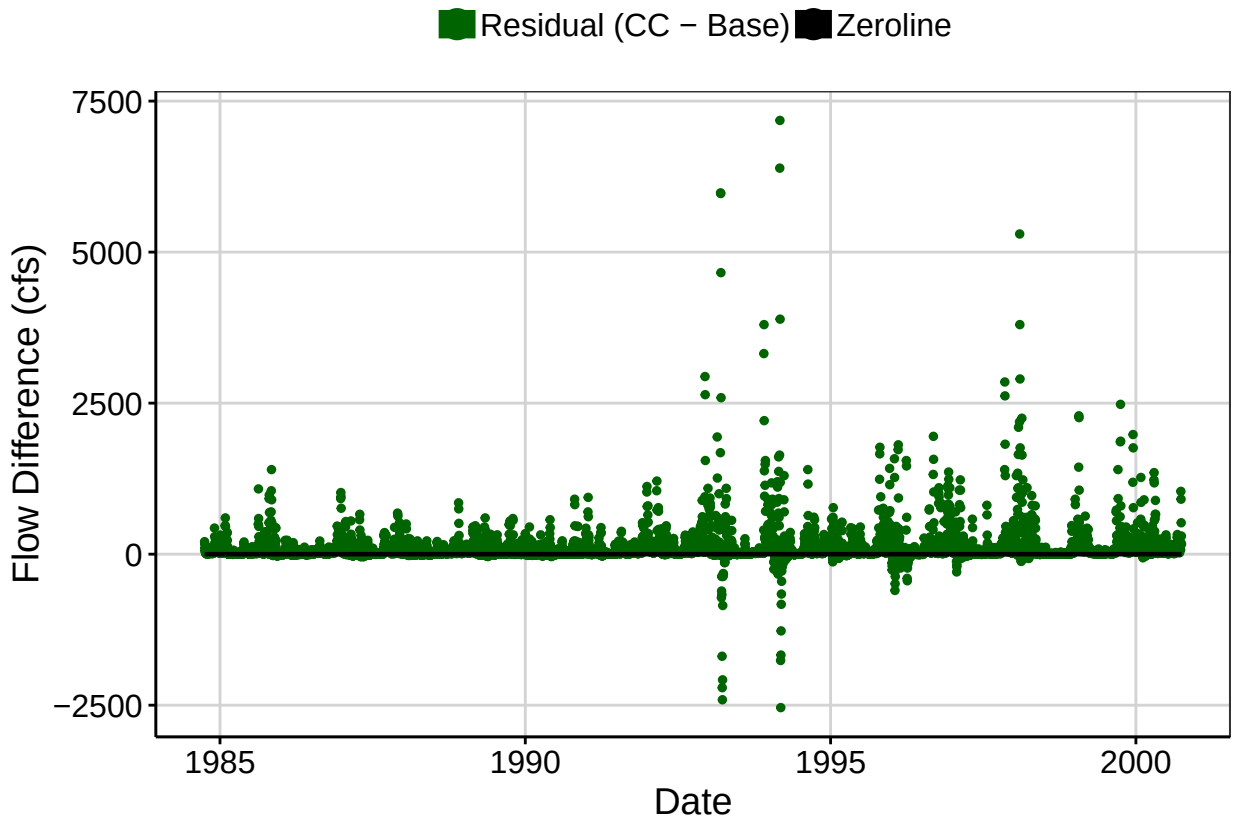


Fig. 9B: Area Weighted Residuals Plot