1 Climate Report for Teton Watershed

2 Historical Climate Trends for Teton Watershed

Climate has changed over the last 50 years in Teton Watershed. In this analysis, we use GridMet meteorology to look at trends in climate in Teton Watershed since 1979. We do this analysis for reference et and precipitation in the section below.

2.1 Historical Trends in Reference ET in Teton Watershed

Between 1979 and 2020, there has been no statistically significant change in reference et in Teton at an annual timescale. When looking at monthly data, there has also been no significant trend in reference et across the same time period. Below, annual trends in reference et are plotted for the GridMet period of record.

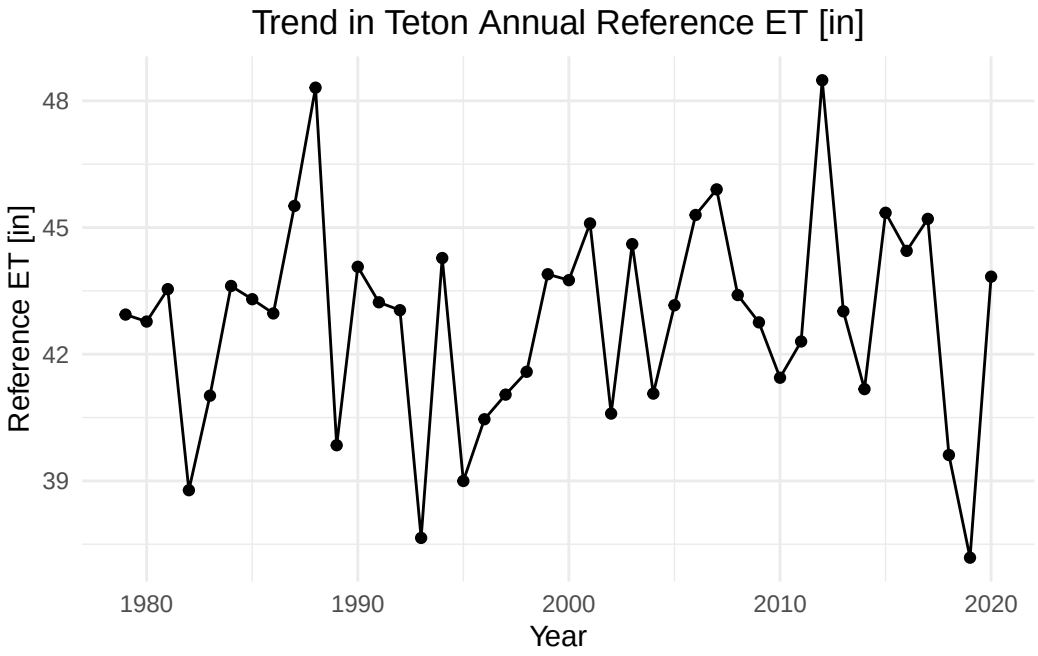

Figure 1: Historical Annual Reference Et Trends Across Teton Watershed

2.2 Historical Trends in Precipitation in Teton Watershed

Between 1979 and 2020, there has been no statistically significant change in precipitation in Teton at an annual timescale. When looking at monthly data, there have been significant changes in precipitation in April (0.21 inches per decade) and October (0.14 inches per decade). Below, annual trends in precipitation are plotted for the GridMet period of record.

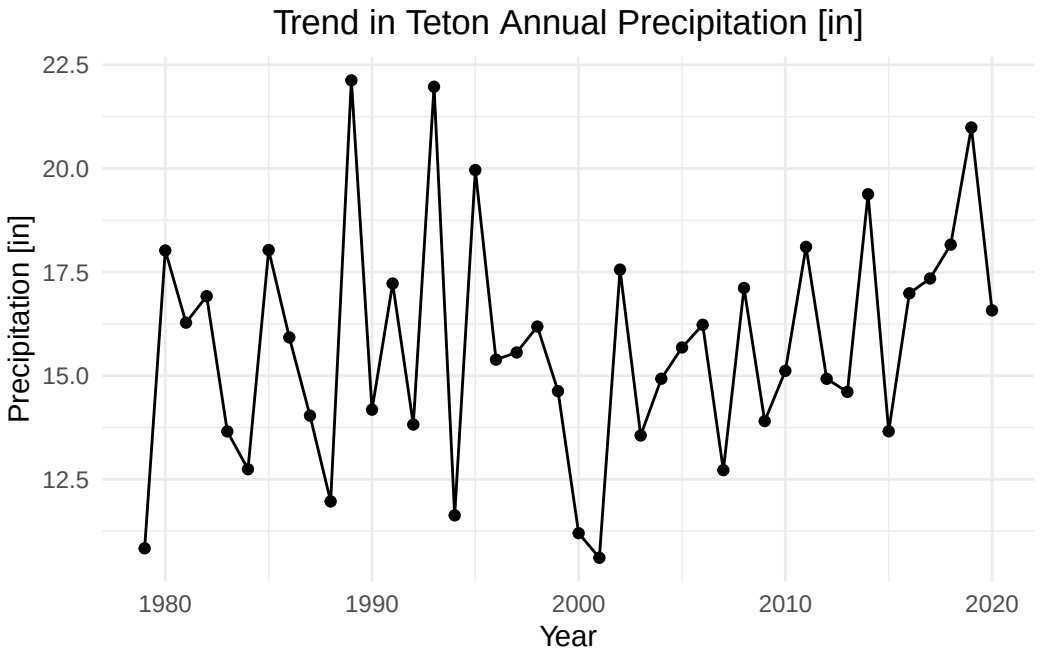

Figure 2: Historical Annual Precipitation Trends Across Teton Watershed

3 Future Climate Projection for Teton Watershed

3.1 Projected Annual Changes in Max. Temperature in Teton Watershed

Between 1950 and 2099, it is projected that under the middle of the road emissions scenario, max. temperature will increase at a rate of 0.3 degF per decade and under the high emissions emissions scenario, max. temperature will increase at a rate of 0.3 degF per decade. Below, a timeseries plot shows projected changes in max. temperature under these different emission scenarios.

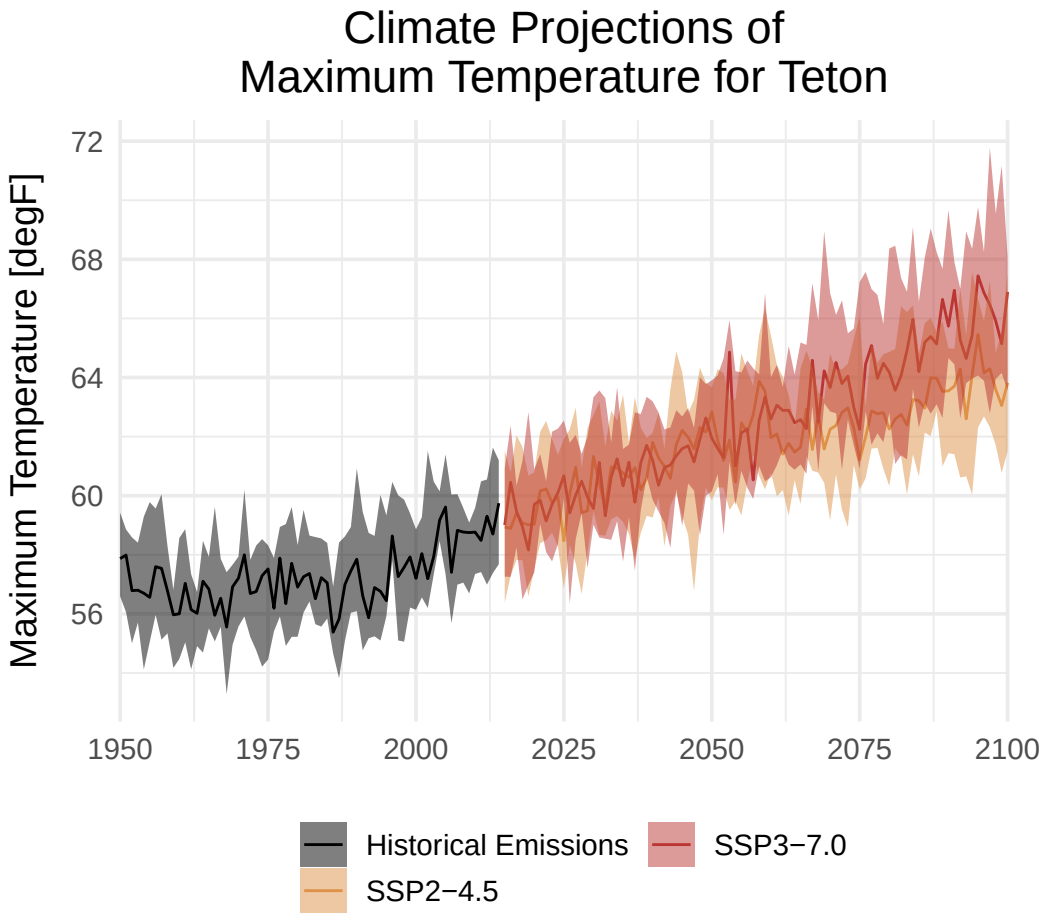

Figure 3: Projected Timeseries Of Annual Max. Temperature In Teton Watershed

Table 1: Projected Monthly Max. Temperature Changes In Teton Watershed

Month	SSP2-4.5	SSP3-7.0
Mid Century (2040-2069)		
Jan	2.67	3.10
Feb	2.92	3.18
Mar	2.84	2.89
Apr	2.87	2.51
May	2.48	2.34
Jun	3.02	3.20
Jul	3.92	4.34
Aug	4.20	5.67
Sep	4.11	4.92
Oct	3.75	4.22
Nov	4.28	4.01
Dec	2.52	3.10
End-of-Century (2070-2099)		
Jan	4.36	6.80
Feb	5.60	5.92
Mar	5.19	6.86
Apr	2.92	5.99
May	3.86	5.42
Jun	3.85	7.60
Jul	6.48	11.70
Aug	6.48	13.11
Sep	6.46	10.88
Oct	5.56	7.65
Nov	5.13	7.65
Dec	4.07	6.20

3.2 Projected Monthly Changes in Max. Temperature in Teton Watershed

In addition to changing at annual time scales, max. temperature is also projected to change at the monthly scale. By mid century (2040-2069), Nov is projected to see the largest increase in max. temperature (4.28 degF) under the ssp2-4.5 scenario relative to the 1991 - 2020 baseline and Aug is projected to see the largest increase in max. temperature (5.67 degF) under the ssp3-7.0 scenario relative to the 1991 - 2020 baseline. By end-of-century (2070-2099), Aug is projected to see the largest increase in max. temperature (6.48 degF) under the ssp2-4.5 scenario relative to the 1991 - 2020 baseline and Aug is projected to see the largest increase in max. temperature (13.11 degF) under the ssp3-7.0 scenario relative to the 1991 - 2020 baseline.. Below, a table and graph showing changes in max. temperature for the SSP2-4.5 and SSP3-7.0 scenarios is provided to give a monthly breakdown of projected changes.

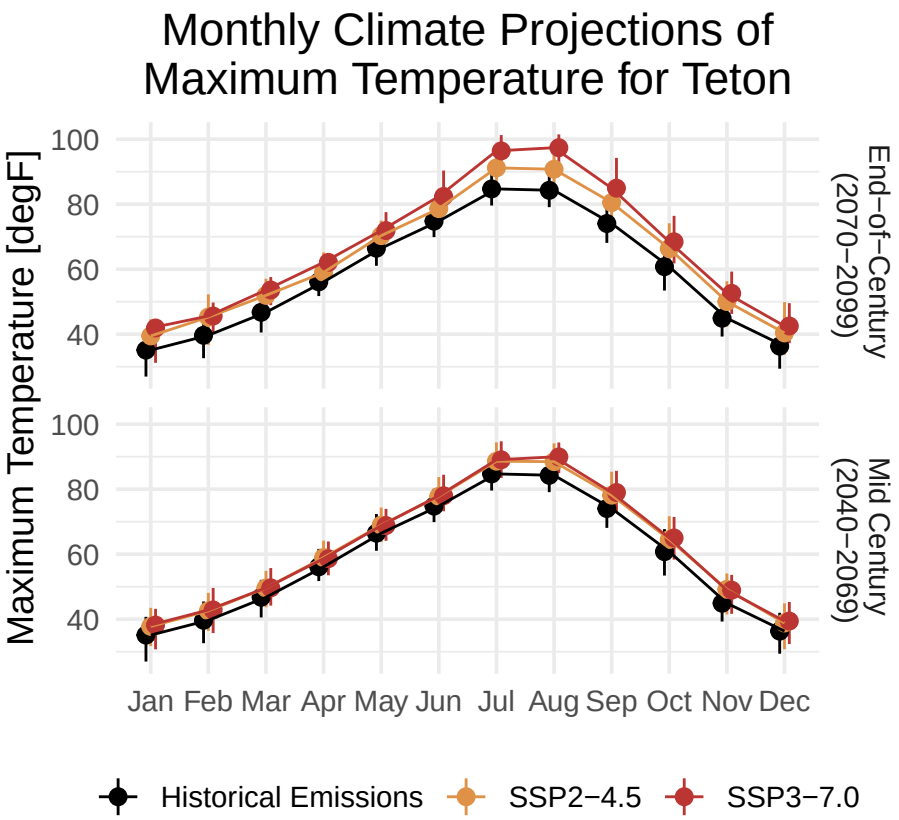

Figure 4: Projected Monthly Max. Temperature Changes In Teton Watershed

3.3 Projected Annual Changes in Min. Temperature in Teton Watershed

Between 1950 and 2099, it is projected that under the middle of the road emissions scenario, min. temperature will increase at a rate of 0.37 degF per decade and under the high emissions emissions scenario, min. temperature will increase at a rate of 0.37 degF per decade. Below, a timeseries plot shows projected changes in min. temperature under these different emission scenarios.

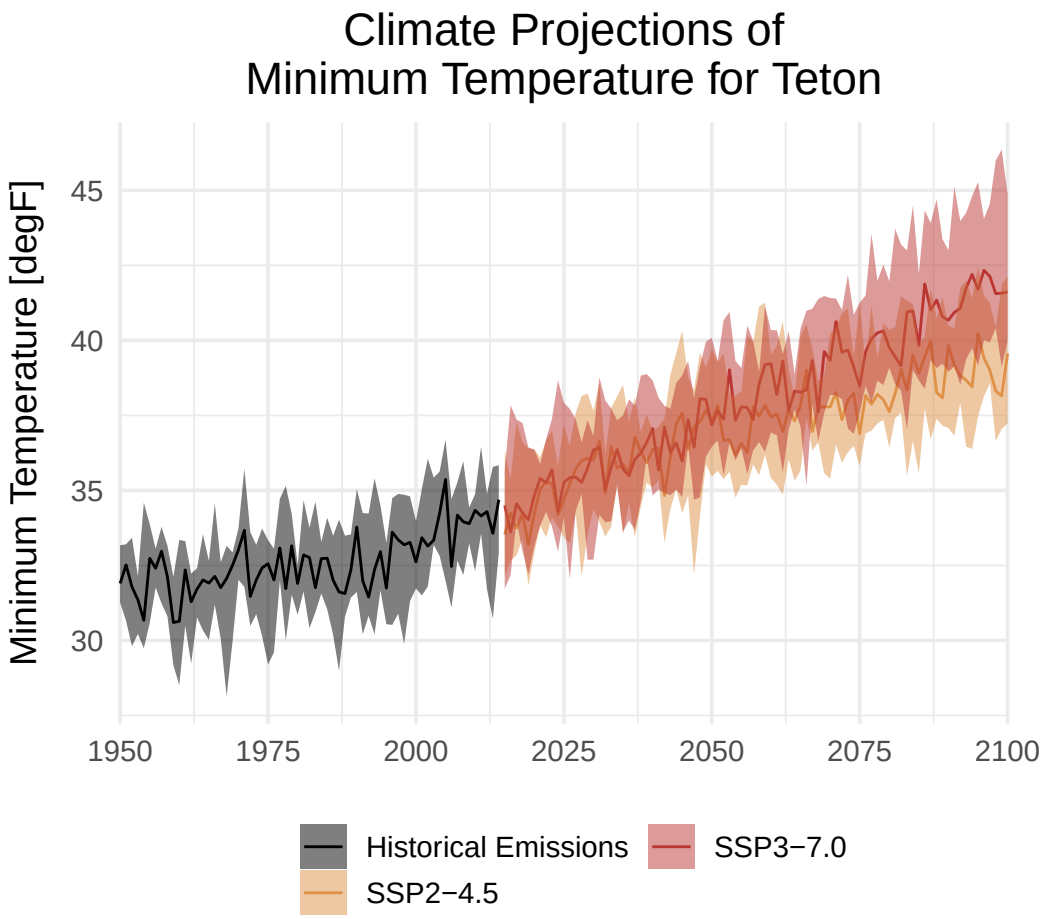

Figure 5: Projected Timeseries Of Annual Min. Temperature In Teton Watershed

Table 2: Projected Monthly Min. Temperature Changes In Teton Watershed

Month	SSP2-4.5	SSP3-7.0
Mid Century (2040-2069)		
Jan	4.75	5.18
Feb	4.39	4.67
Mar	2.25	3.02
Apr	1.80	2.71
May	2.82	2.94
Jun	2.88	3.20
Jul	3.87	4.30
Aug	4.29	5.44
Sep	3.53	4.41
Oct	2.61	3.09
Nov	3.73	3.99
Dec	4.21	5.75
End-of-Century (2070-2099)		
Jan	8.07	8.73
Feb	5.49	8.59
Mar	3.43	5.92
Apr	2.33	4.91
May	4.38	6.57
Jun	3.80	8.17
Jul	5.38	11.12
Aug	7.51	12.60
Sep	7.05	10.07
Oct	3.41	7.66
Nov	5.39	7.54
Dec	7.47	9.45

3.4 Projected Monthly Changes in Min. Temperature in Teton Watershed

In addition to changing at annual time scales, min. temperature is also projected to change at the monthly scale. By mid century (2040-2069), Jan is projected to see the largest increase in min. temperature (4.75 degF) under the ssp2-4.5 scenario relative to the 1991 - 2020 baseline and Dec is projected to see the largest increase in min. temperature (5.75 degF) under the ssp3-7.0 scenario relative to the 1991 - 2020 baseline. By end-of-century (2070-2099), Jan is projected to see the largest increase in min. temperature (8.07 degF) under the ssp2-4.5 scenario relative to the 1991 - 2020 baseline and Aug is projected to see the largest increase in min. temperature (12.6 degF) under the ssp3-7.0 scenario relative to the 1991 - 2020 baseline.. Below, a table and graph showing changes in min. temperature for the SSP2-4.5 and SSP3-7.0 scenarios is provided to give a monthly breakdown of projected changes.

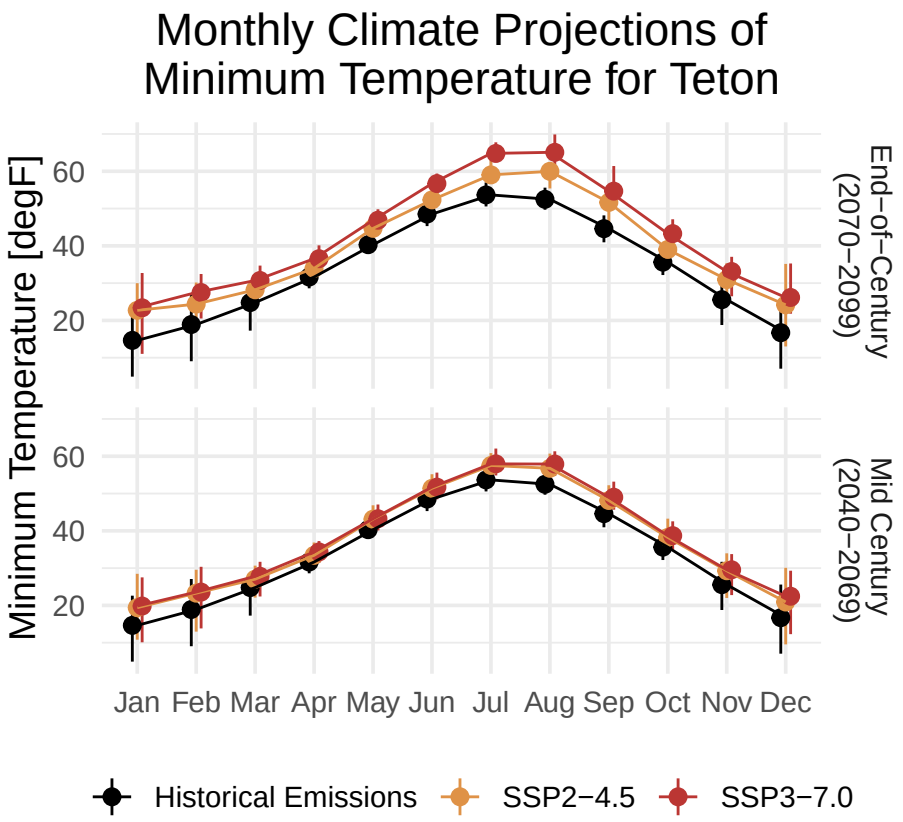

Figure 6: Projected Monthly Min. Temperature Changes In Teton Watershed