

1 Climate Report for Missoula County

2 Historical Climate Trends for Missoula County

Climate has changed over the last 50 years in Missoula County. In this analysis, we use [GridMet](#) meteorology to look at trends in climate in Missoula County since 1979. We do this analysis for precipitation and max. relative humidity in the section below.

2.1 Historical Trends in Precipitation in Missoula County

Between 1979 and 2020, there has been no statistically significant change in precipitation in Missoula County at an annual timescale. When looking at monthly data, there have been significant changes in precipitation in July (-0.27 inches per decade) and October (0.44 inches per decade). Below, annual trends in precipitation are plotted for the GridMet period of record.

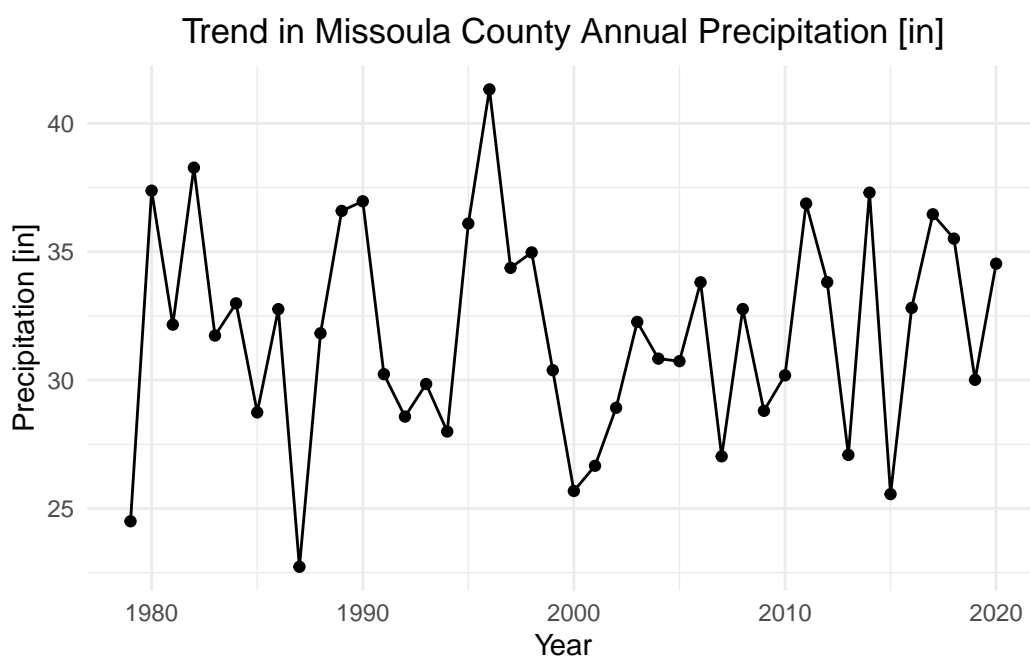


Figure 1: Historical Annual Precipitation Trends Across Missoula County

2.2 Historical Trends in Max. Relative Humidiy in Missoula County

Between 1979 and 2020, there has been a statistically significant change in max. relative humidiy of -2.14 percent per decade at an annual timescale. When looking at monthly data, there have been significant changes in max. relative humidiy in January (-2.02 percent per decade), February (-1.37 percent per decade), March (-1.85 percent per decade), April (-1.18 percent per decade), May (-1.68 percent per decade), June (-1.85 percent per decade), July (-4.24 percent per decade), August (-4.12 percent per decade), September (-3.11 percent per decade), November (-1.82 percent per decade), and December (-1.65 percent per decade). Below, annual trends in max. relative humidiy are plotted for the GridMet period of record.

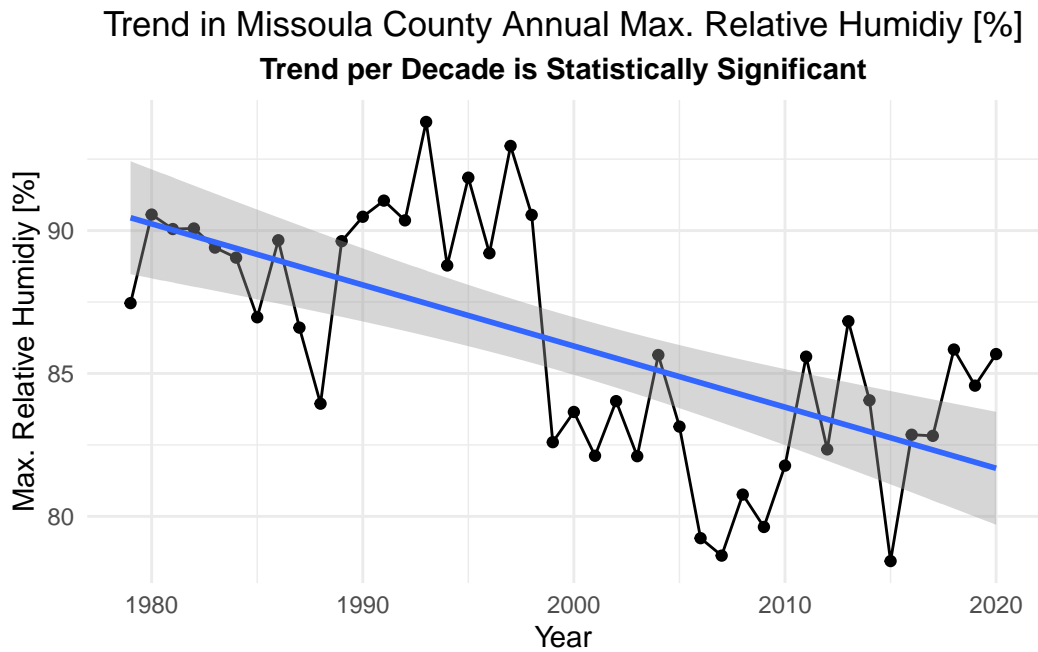


Figure 2: Historical Annual Max. Relative Humidiy Trends Across Missoula County

3 Future Climate Projection for Missoula County

3.1 Projected Annual Changes in Max. Temperature in Missoula County

Between 1950 and 2099, it is projected that under the middle of the road emissions scenario, max. temperature will increase at a rate of 0.38 degF per decade and under the high emissions emissions scenario, max. temperature will increase at a rate of 0.38 degF per decade. Below, a timeseries plot shows projected changes in max. temperature under these different emission scenarios.

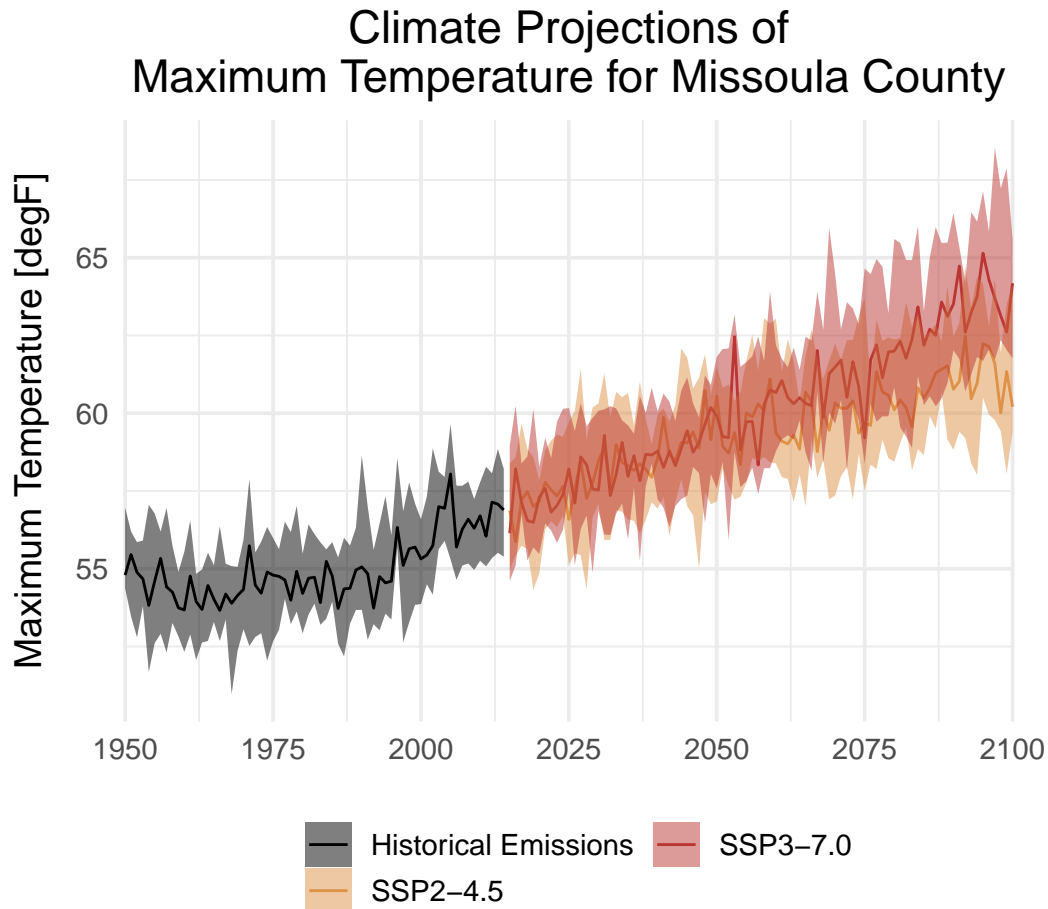


Figure 3: Projected Timeseries Of Annual Max. Temperature In Missoula County

Table 1: Projected Monthly Max. Temperature Changes In Missoula County

Month	SSP2-4.5	SSP3-7.0
Mid Century (2040-2069)		
Jan	2.72	2.64
Feb	2.27	3.23
Mar	2.64	2.81
Apr	2.94	3.16
May	2.40	2.79
Jun	2.57	2.47
Jul	3.82	4.07
Aug	4.14	5.31
Sep	4.05	5.03
Oct	3.65	3.78
Nov	3.92	3.49
Dec	2.28	2.56
End-of-Century (2070-2099)		
Jan	3.76	4.85
Feb	5.74	6.06
Mar	4.07	5.23
Apr	3.09	6.13
May	4.25	7.58
Jun	3.15	6.99
Jul	4.58	10.74
Aug	4.69	11.62
Sep	7.10	9.95
Oct	4.60	7.03
Nov	4.95	8.13
Dec	4.46	5.09

3.2 Projected Monthly Changes in Max. Temperature in Missoula County

In addition to changing at annual time scales, max. temperature is also projected to change at the monthly scale. By mid century (2040-2069), Aug is projected to see the largest increase in max. temperature (4.14 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 (5.31 degF) under the ssp3-7.0 scenario relative to the 1991 - 2020 baseline. By end-of-century (2070-2099), Sep is projected to see the largest increase in max. temperature (7.1 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 (11.62 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.

Monthly Climate Projections of Maximum Temperature for Missoula County

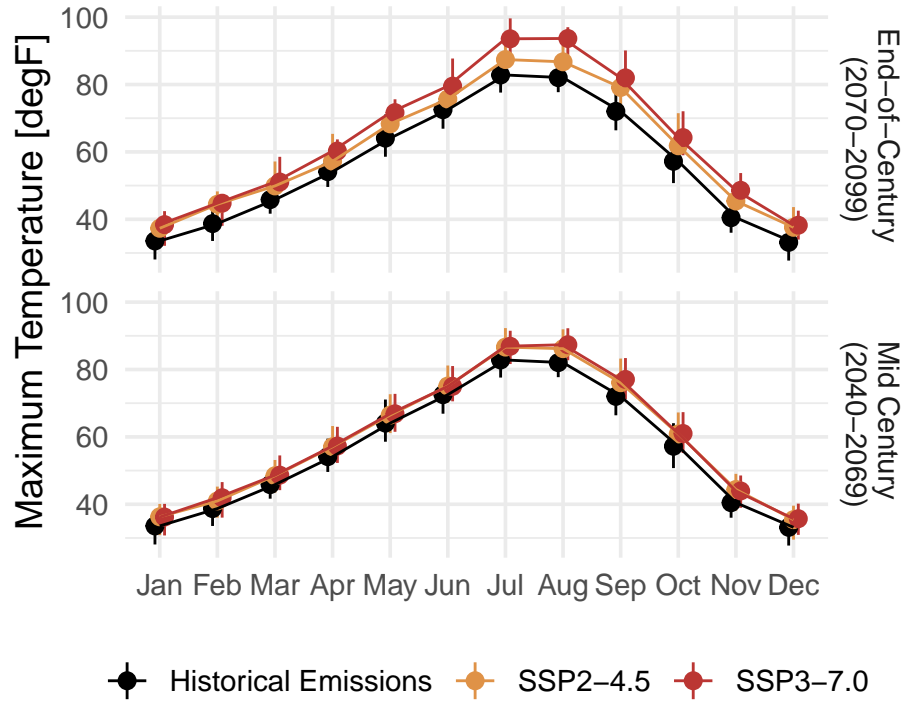


Figure 4: Projected Monthly Max. Temperature Changes In Missoula County

3.3 Projected Annual Changes in Min. Temperature in Missoula County

Between 1950 and 2099, it is projected that under the middle of the road emissions scenario, min. temperature will increase at a rate of 0.35 degF per decade and under the high emissions emissions scenario, min. temperature will increase at a rate of 0.35 degF per decade. Below, a timeseries plot shows projected changes in min. temperature under these different emission scenarios.

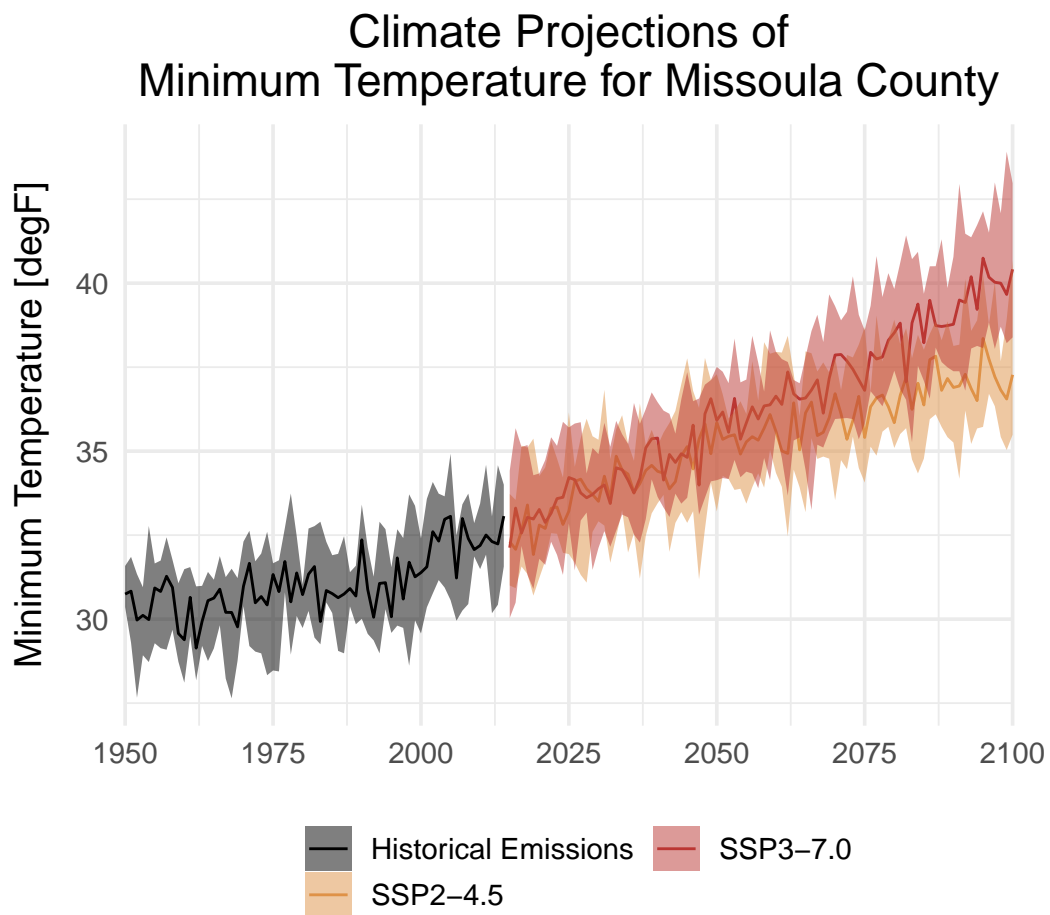


Figure 5: Projected Timeseries Of Annual Min. Temperature In Missoula County

Table 2: Projected Monthly Min. Temperature Changes In Missoula County

Month	SSP2-4.5	SSP3-7.0
Mid Century (2040-2069)		
Jan	3.77	3.57
Feb	3.15	3.49
Mar	2.55	3.10
Apr	2.20	2.87
May	2.79	3.10
Jun	2.50	2.73
Jul	3.62	4.11
Aug	3.90	4.98
Sep	3.83	4.43
Oct	2.97	3.24
Nov	3.90	4.08
Dec	2.86	4.00
End-of-Century (2070-2099)		
Jan	6.03	7.31
Feb	5.09	9.54
Mar	3.83	7.90
Apr	3.72	5.19
May	3.66	6.97
Jun	3.17	8.30
Jul	5.86	11.68
Aug	6.60	13.30
Sep	7.45	9.86
Oct	4.00	7.12
Nov	6.52	7.70
Dec	8.31	7.27

3.4 Projected Monthly Changes in Min. Temperature in Missoula County

In addition to changing at annual time scales, min. temperature is also projected to change at the monthly scale. By mid century (2040-2069), Nov is projected to see the largest increase in min. temperature (3.9 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 (4.98 degF) under the ssp3-7.0 scenario relative to the 1991 - 2020 baseline. By end-of-century (2070-2099), Dec is projected to see the largest increase in min. temperature (8.31 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 (13.3 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.

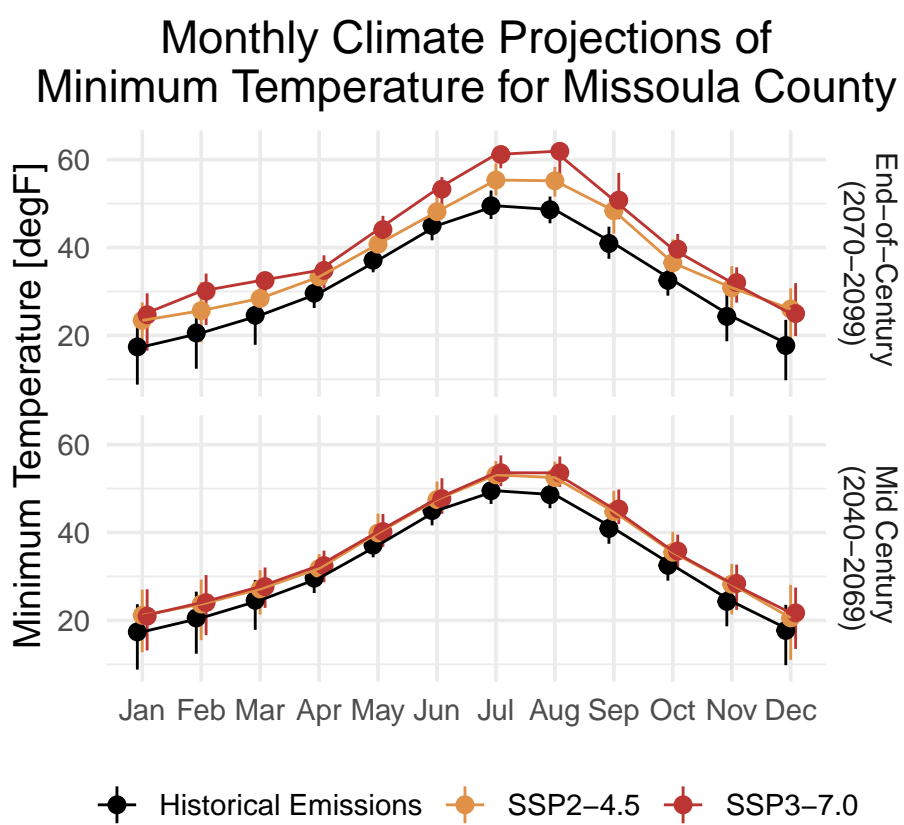


Figure 6: Projected Monthly Min. Temperature Changes In Missoula County