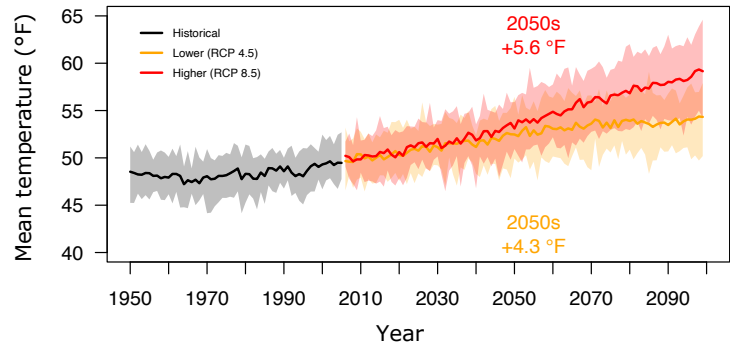


Future Climate Projections for Umatilla County

Climate change is expected to increase the occurrence, magnitude, or frequency of most climate-related natural hazards, such as heat waves, drought, wildfire and poor air quality, heavy rains, and flooding.

The Oregon Climate Change Research Institute projected future changes in climate metrics related to county-level natural hazards on the basis of 10–20 downscaled global climate model simulations. Metrics were calculated for the 2050s (2040–2069 average) relative to the 1971–2000 average under two scenarios of global greenhouse gas emissions.

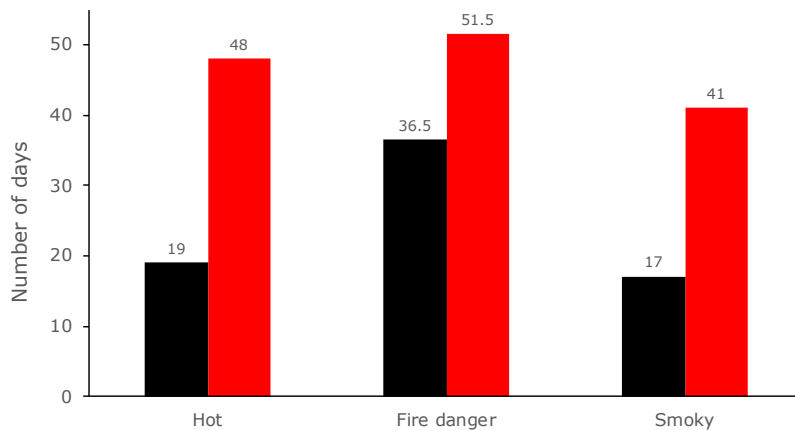
The higher scenario (RCP 8.5) assumes continued increases in emissions and results in a 5.6°F increase in average annual temperature in Umatilla County by the 2050s. The lower scenario (RCP 4.5) assumes moderate reductions in emissions and results in a 4.3°F increase. This summary describes projected changes in some metrics relevant to natural hazards in the county by the 2050s under RCP 8.5.



Projected average annual temperature in Umatilla County.

For additional information, see the full report, *Future Climate Projections for Umatilla County, October 2020*, at blogs.oregonstate.edu/occri/projects/dlcd/.

Heat Wildfire Poor Air Quality

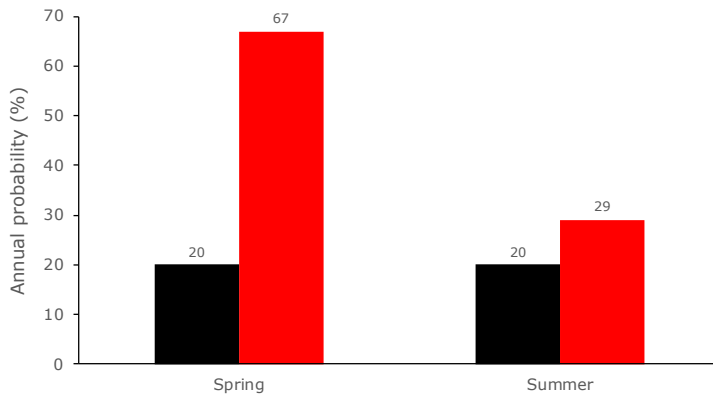


Observed historical (1971–2000, black bars) and projected future (2040–2069, red bars) number of days per year on which maximum temperature exceeds 90°F, fire danger is very high, and are part of a smoke wave.

- More hot days. By the 2050s, Umatilla County is projected to have 29 more days above 90°F, and the temperature on the hottest day of the year will be 9°F greater.
- The number of days with weather that coincides with very high fire danger will increase by 40%.
- The number of days that are part of a smoke wave, defined as two or more consecutive days on which fine particulate matter from wildfires results in unhealthy air, will increase by 141%.

Drought

- Increased probability of drought. By the 2050s, the annual probability of snow drought and summer drought of the magnitude expected with a 20% probability during 1971–2000 will increase to 67% and 29%, respectively.



Observed historical (1971–2000, black bars) and projected future (2040–2069, red bars) probability of a spring (1 April) snow drought or summer (June through August) drought.

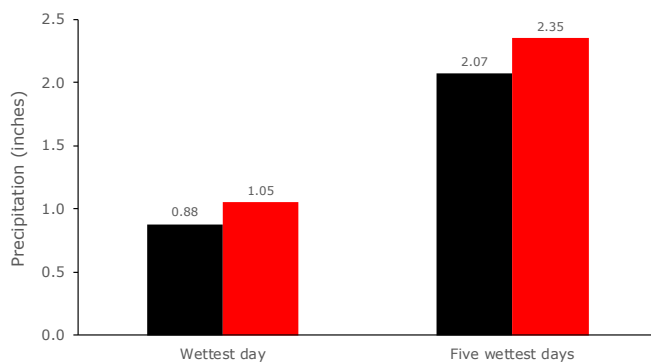


Heavy Rains

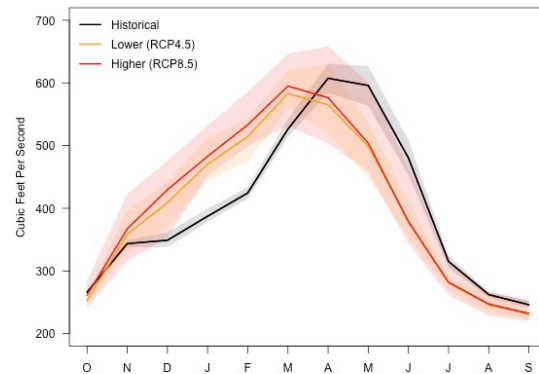


Flooding

- More-extreme precipitation. By the 2050s, the amount of precipitation on the wettest day of the year will increase by an average of 19% relative to 1971–2000, and the amount of precipitation on the five wettest days of the year will increase by 14%.
- The risk of winter flooding will increase as the proportion of precipitation falling as rain rather than snow increases, thereby increasing winter streamflows.



Observed historical (black bars) and projected future (red bars) precipitation on the wettest day of the year and cumulative precipitation on the five wettest days of the year.



Monthly streamflow, across the water year (1 October – 30 September), of the Umatilla River at Pendleton from 1971–2000 and projected streamflow from 2040–2069 under two scenarios of greenhouse gas emissions.