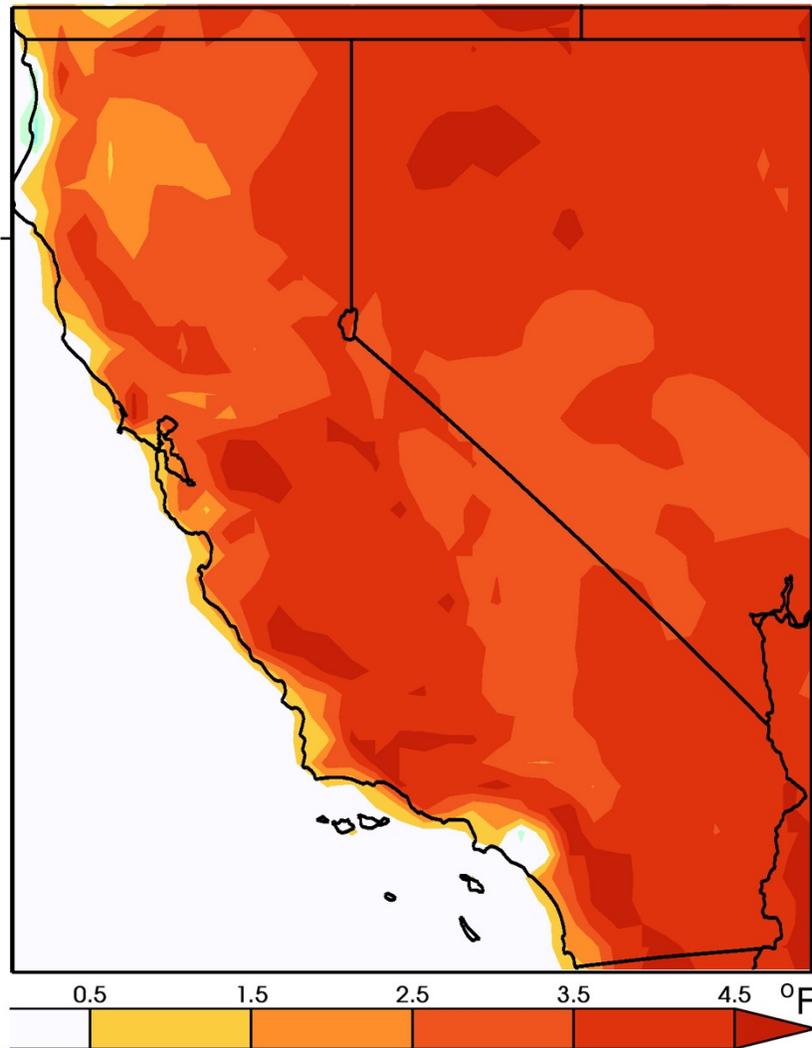


The human influence on extreme heat waves is clear (Min et al. 2013; Zwiers et al. 2011).

The unusually hot temperatures in California in August 2020 are a case in point. Below is an attribution statement about how climate change has currently affected the California 2020 heat wave as well as some projections of how much climate change will further increase the severity of California heat waves.

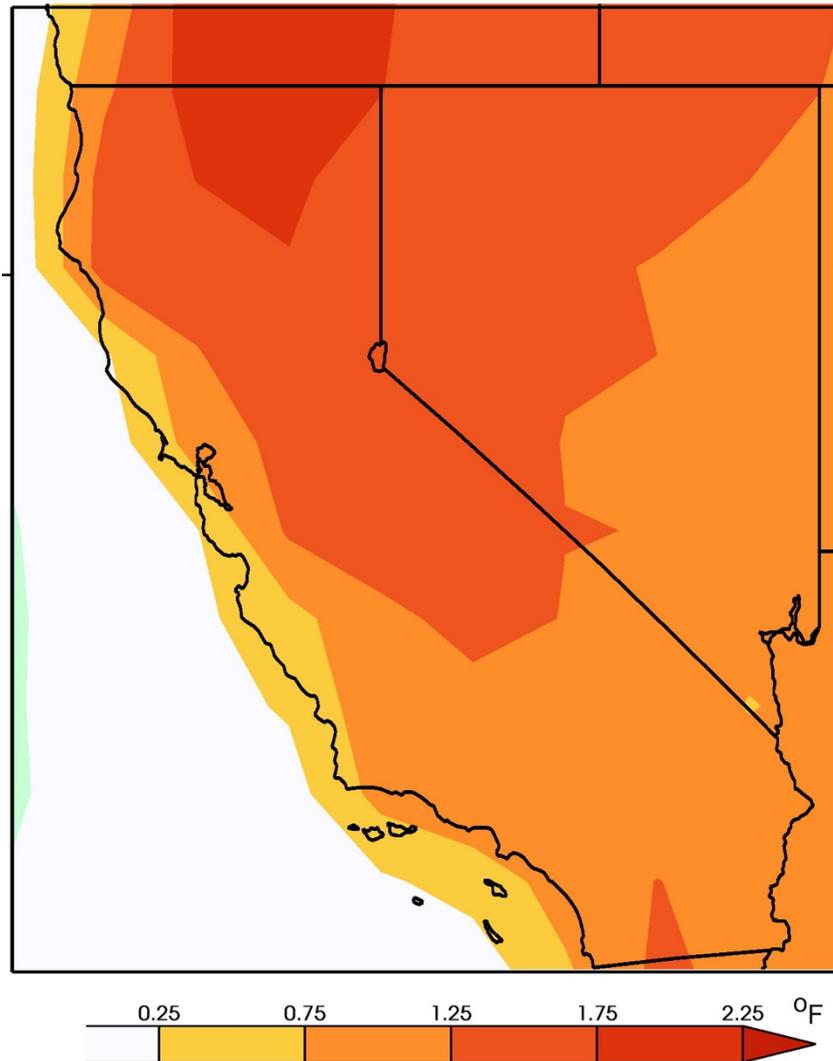
### Attributable human increase in rare heat waves



Currently, climate change has caused rare California heat waves to be 3 to 4 degrees warmer (adapted from Wehner et al 2018 using the high resolution version of CAM5.1 described in Wehner et al. 2014)

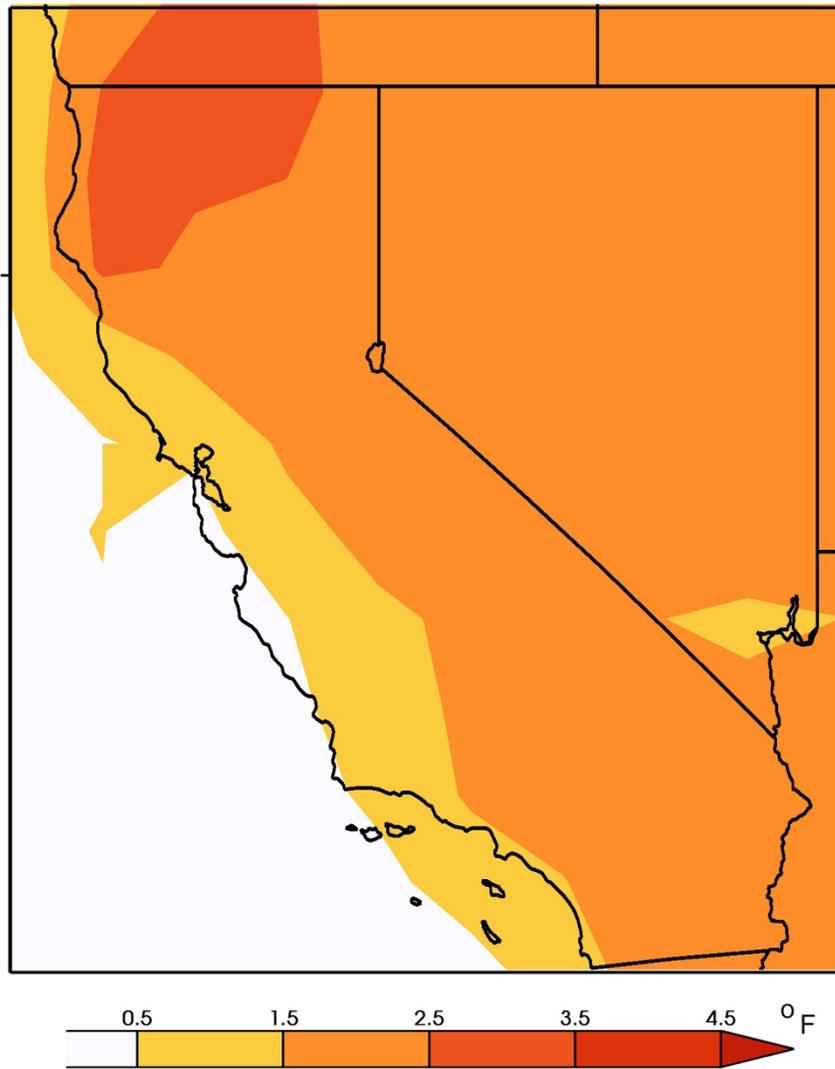
In the future directly from Tebaldi and Wehner 2018 (note that temperature color scales are all different:

### Projected change in rare heat wave temperature at 2030 under low or high emissions scenario



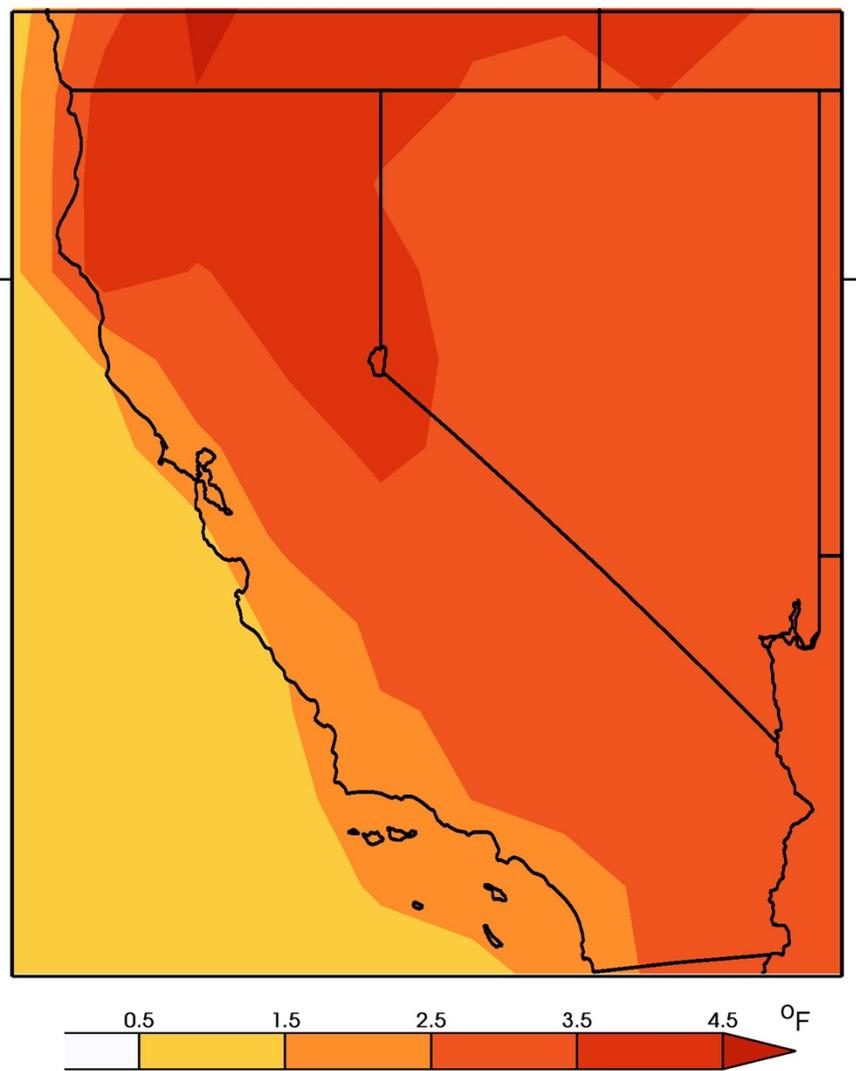
Under either a low (rcp4.5) or high (rcp8.5) emissions scenarios, California heat waves would be 0.5 to 1 degree Fahrenheit warmer at the end of the decade.

Projected change in rare heat wave temperature at 2050 under low emissions scenario



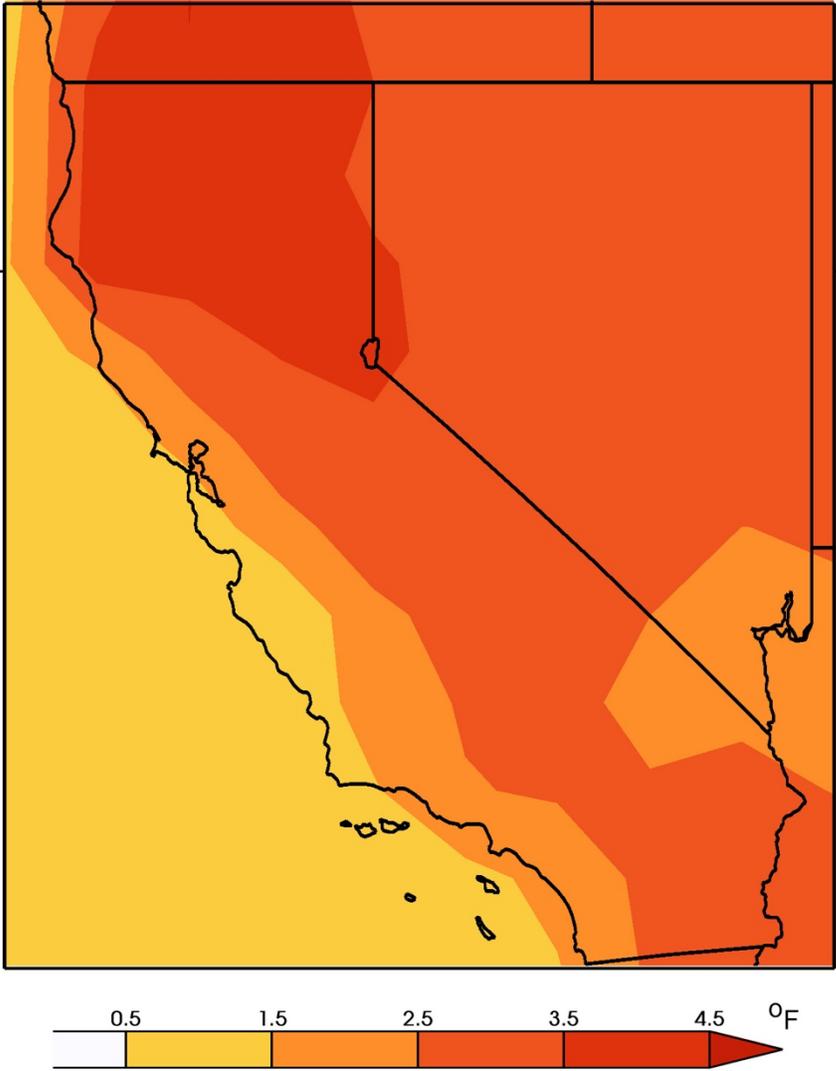
Under the lower emissions scenario, California heat waves would be about 2 degrees Fahrenheit warmer at mid-century (2050).

# Projected change in rare heat wave temperature at 2050 under high emissions scenario



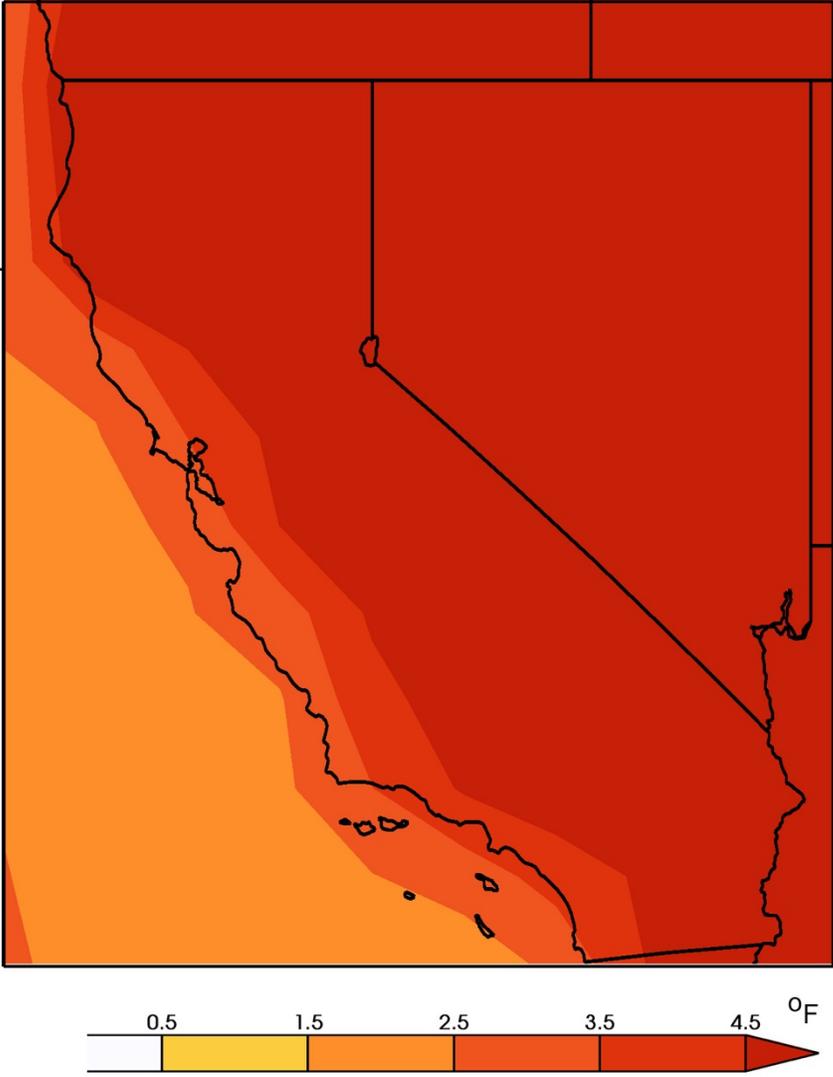
Under the higher emissions scenario, California heat waves would be about 3 degrees Fahrenheit warmer at mid-century (2050).

Projected change in rare heat wave temperature at 2080 under low emissions scenario



Under the lower emissions scenario, California heat waves would be about 3 degrees Fahrenheit warmer at late-century (2080).

Projected change in rare heat wave temperature at 2080 under high emissions scenario



Under the higher emissions scenario, California heat waves would be about 5 degrees Fahrenheit warmer at late-century (2080).

## References:

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*These statements are my own scientific opinion and do not necessarily reflect the positions of the Lawrence Berkeley National Laboratory, the University of California nor the US Department of Energy.*

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