



Climate and Temperature in the Santa Ana River Watershed



Key Findings

- All of the climate projections demonstrate clear increasing temperature trends.
- Increasing temperatures will result in a greater number of days above 95 °F in the future.
- The number of days above 95 °F gets progressively larger for all stations as you move further into the future.
- By 2070 it's projected that the number of days above 95 °F will quadruple in Anaheim and nearly double in Riverside . Big Bear City is projected to increase from 0 days historically to 4 days in 2070.
- Although there are clear trends in the median values, the spread of results (shown by the red shading in Figure 1) is also quite large.

Additional Considerations

- Results are shown for the single grid cell where the city is located. Additional analysis could consider regionally averaged temperature trends.
- Downscaled climate variables can be biased . Reported temperature values were not bias corrected to match projected historical values to local temperature gages.

Results

How many more days over 95 °F are expected in Anaheim, Riverside and Big Bear City?

Figure 1 shows the distribution of the annual number of days above 95 °F from 1950-2099 for each of the cities for all 112 climate projections. As shown here, there is a clear increasing trend in the number of days above 95 °F for all three locations. Riverside has the most days followed by Anaheim. Big Bear City has the least number of days with a median of zero for all years prior to about 2030. The red shading in Figure 1 shows the range of the 112 climate projections and demonstrates a large spread in projected results. Table 1 summarizes the median number of days above 95 °F for each location for the historical time period (1951-1999) and three 30 year future time periods centered around 2020, 2050 and 2070. As shown in Table 1 the number of days increases for all stations as you move further into the future. Changes are quite significant; for example, the median value for Anaheim quadrupled from 4 to 16 days between the historical time period and 2070. Similarly the median value for Riverside nearly doubled between the historical time period and 2070 going from 43 to 82 days.

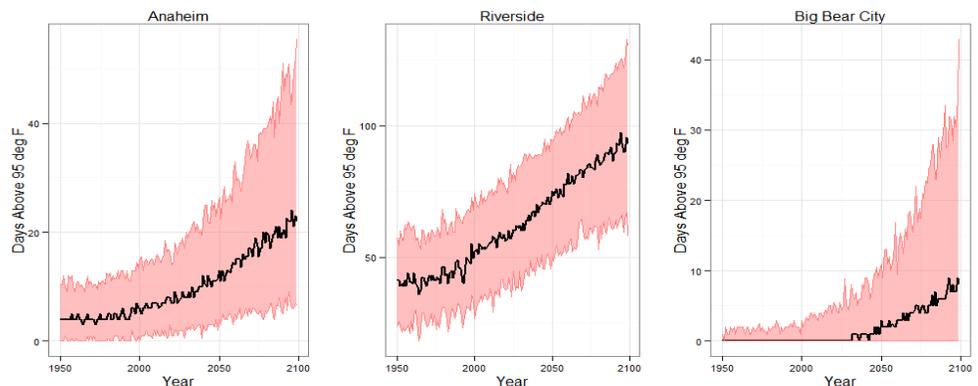


Figure 1 - Projected annual number of days above 95 °F. Solid black line is the median and the red shading denotes the 5th and 95th percentile bounds

| | Historical | 2020 | 2050 | 2070 |
|----------------------|------------|------|------|------|
| Anaheim | 4 | 7 | 12 | 16 |
| Riverside | 43 | 58 | 72 | 82 |
| Big Bear City | 0 | 0 | 2 | 4 |

Table 1 - Median annual number of days above 95 °F for one historical (1951-1999), and three future (2005-2034, 2035-2064, 2055-2084) time periods

Methods

Daily maximum temperature values came from the BCSD-CMIP3 archive for 112 climate projections. Each projection has 1/8° x 1/8° (~12 km x 12km) grid cell daily forcings that start on January 1, 1950 and run to December 31, 2099. For this analysis the location of each city was matched to the single grid cell that contains it. Results summarize temperature trends for all 112 projections from 1950 to 2099 for the selected grid cell.