



Climate Change Projections for Austin

OFFICE OF
SUSTAINABILITY

CITY OF AUSTIN

Austin can expect
more extreme weather
in the future



high temperatures



extended periods
of drought



increasing risk
of wildfires



intense rainfall
events

PURPOSE

On November 21, 2013, City Council passed resolution 20131121-060 directing the City Manager to analyze climate change projections. In an effort to fulfill this request, the Office of Sustainability has worked closely with ATMOS Research, led by Dr. Katharine Hayhoe, to conduct geographically specific climate modeling through 2100 and data analysis for Austin using the Camp Mabry weather station.

METHODS

Projections are based on the draft results reported in the upcoming *2014 Third National Climate Assessment*. Future projections are based on simulations from nine newer global climate models. To address human activity uncertainty, preliminary projections for Austin are based on two emissions scenarios:

1. Lower Scenario—global carbon emissions peak and then decline by end of century
2. Higher Scenario—continued dependence on fossil fuels means that carbon emissions continue to grow throughout the century

The climate projections summarized below are averaged over 30-year time scales: historical (1971-2000), near-term (2011-2040), mid-century (2041-2070) and end-of-century (2071-2100) in order to address natural variability, which causes climate to vary from year to year and even decade to decade.

CLIMATE PROJECTIONS FOR AUSTIN	Historical	Near-term	Mid-century		End-of-century	
	Observed	(2011-2040)	(2041-2070)		(2071-2100)	
			Lower	Higher	Lower	Higher
Temperature						
Summer average high temperature (°F)	93.8	96.9	97.9	100.2	98.6	103.8
Cold nights (minimum temperature < 32°F)	16.6	10.8	7.8	6.4	7.0	3.9
Warm nights (minimum temperature > 80°F)	0.5	5.4	10.5	39.5	17.0	86.7
Hot days (maximum temperature > 100°F)	11.7	31.4	40.1	63.2	46.5	92.3
Very hot days (maximum temperature > 110 °F)	0.0	1.3	0.4	11.6	0.9	19.5
Precipitation						
Annual precipitation (inches)	33.7	31.8	33.6	33.3	33.0	31.4
Dry days (PR < 0.01 inches in 24h)	277.3	280.3	280.6	282.7	281.4	288.1
Longest dry spell (days)	53.1	53.3	54.4	54.7	54.0	60.4
Wet days (PR > 2 inches in 24h)	2.2	2.5	2.8	2.7	2.8	2.8
Wettest 5 days (inches of precipitaiton)	5.8	7.2	7.6	7.7	7.8	7.8

CONCLUSIONS

Observed changes are consistent with larger-scale trends observed across the U.S. and the world. For the Camp Mabry weather station in Austin, Texas, projected changes include:

- Increases in annual and seasonal average temperatures
- More frequent high temperature extremes
- Little change in annual average precipitation
- More frequent extreme precipitation
- A slight increase in the number of dry days per year
- More frequent drought conditions in summer due to hotter weather