



## Global warming, heat waves and unhealthy air

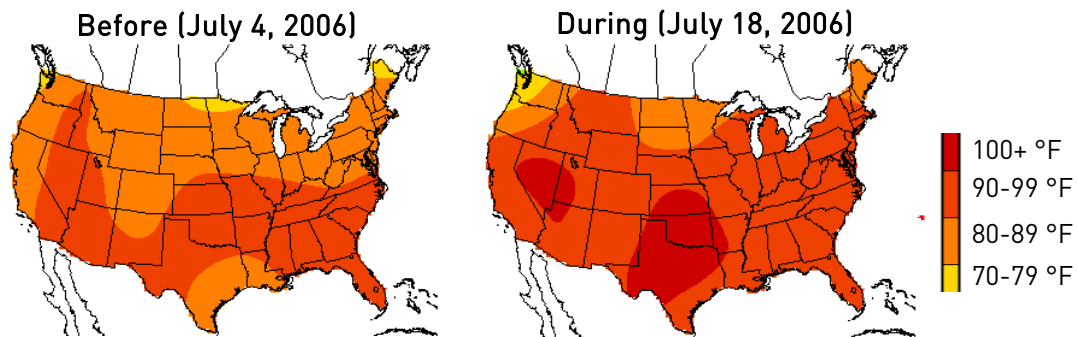
Scientists have long warned that global warming will exacerbate air pollution. This summer's blistering heat wave provided a sobering case in point. As the heat swept across the United States, America's skies were filled with unsafe levels of smog and ground-level ozone pollution.

The heat wave of 2006 was one of the worst in recent memory—not only because of its severity, but also because of its reach and length. The heat wave lasted nearly a month and swept across the entire country, cutting a swath of record or near-record temperatures from southern California to the East Coast. Hundreds of people died, crops withered, wildfires raged, roads buckled and electric grids struggled to provide power to sweltering customers. Tens of thousands of New York residents lost power for over a week.

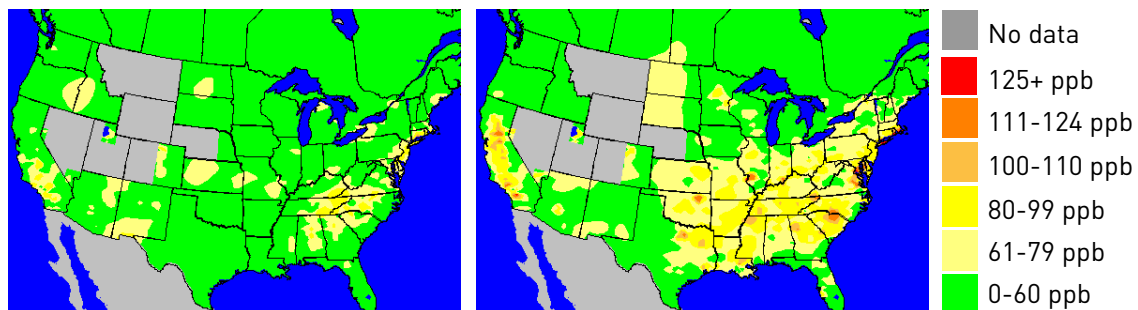
The maps below illustrate how much worse the nation's air quality was during the heat wave than it was on a more normal summer day just two weeks earlier. The searing temperatures brought unhealthy levels of photochemical smog and ground-level ozone pollution to much of the nation. This pollution reduces lung function and aggravates respiratory diseases such as asthma, bronchitis and emphysema. It increases the number of emergency room visits involving respiratory problems, especially for children and people with asthma. Mortality among the elderly and infirm is also exacerbated.

### Temperatures and ozone concentrations before and during July's heat wave

#### Temperatures



#### Ozone concentrations



Ozone pollution increased during the heat wave. The maps show temperatures (top) and one-hour average peak ozone concentrations in parts-per-billion, ppb (bottom) before and during the heat wave.

Sources: NOAA ([www.hpc.ncep.noaa.gov/dailywxmap/](http://www.hpc.ncep.noaa.gov/dailywxmap/)); AIRNow ([www.airnow.gov/index.cfm?action=airnow.archives&RegionID=0](http://www.airnow.gov/index.cfm?action=airnow.archives&RegionID=0)).

The effects of the heat wave on air quality were not surprising. Scientists and health officials have long known that high temperatures accelerate the chemical reactions that lead to the production of smog and ground-level ozone pollution. The graphs to the right illustrate what these chemical reactions meant for air quality in U.S. cities as the heat wave swept across the country.

### The role of global warming

How does climate change fit into the 2006 heat wave and its accompanying air pollution? It is impossible to attribute any single event to global warming, but scientists do know that heat waves like this one will become more and more common as global warming continues. For example, researchers recently calculated that global warming has already doubled the risk of severe heat waves like the one that killed tens of thousands of Europeans in the summer of 2003.

This summer's heat wave is a stark illustration of what may be in store for Americans if global warming is allowed to continue unabated: blistering heat and deteriorating air quality will bring a one-two punch to public health. But if we work together to cut our greenhouse gas emissions, we can slow global warming and reduce its effects—and we can all breathe a little easier.

