National Park Service
U.S. Department of the Interior

Natural Resource Program Center
Office of Inventory, Monitoring & Evaluation

Air Quality Data

Background

The quality of air in national parks can significantly affect park resources such as vegetation, soils, water, and buildings and monuments, as well as park visitors. Visibility, for example, has a strong impact on a visitor's experience and the perception of a national park. In some instances, air pollutants such as ozone, sulfur dioxide, or particulate matter can reach concentrations that injure plants or cause adverse health effects for persons visiting or working in parks.

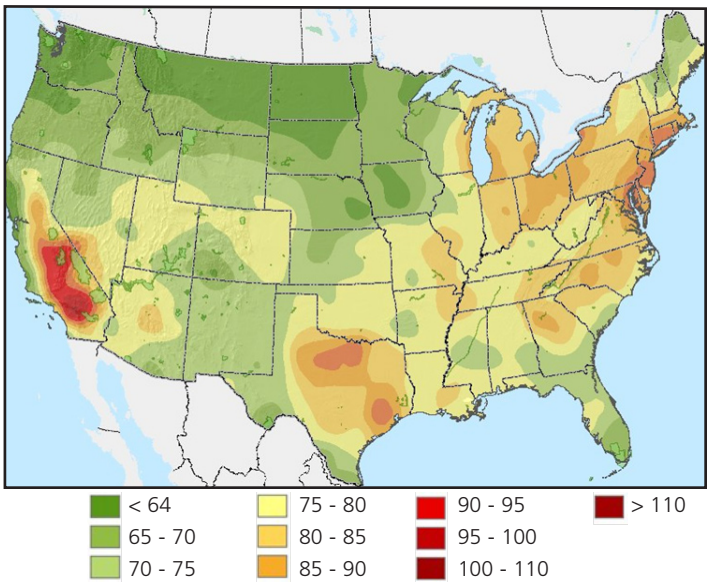
The Environmental Protection Agency (EPA) has defined a number of air pollutants known to cause adverse effects and has set standards for unacceptable concentrations. Other potentially hazardous or troublesome air pollutants have also been recognized by EPA, including mercury and acidic deposition; however, no direct standards have been set. Particles that cause haze and poor visibility are regulated by standards and rules designed to bring visibility in protected natural areas back to natural conditions.

The Air Quality Inventory focuses on indicator pollutants regulated under the Clean Air Act. Air quality assessments require monitoring to determine current conditions in relation to standards or limits that are designed to protect human health and sensitive vegetation. Trends and spatial variability are important for assessing the potential impact of air quality on natural resources.

As with the weather, air quality can vary from day to day, and monitoring requires measurements taken over the long term in order to assess conditions and trends. The challenge is to take air quality data that are available and determine how to best apply them to help understand current conditions in parks.

Products

Statistical summaries have been prepared from data collected by the national air monitoring networks during five-year periods of observation. These data were entered into a geographic information system (GIS) database where inverse distance-weighted and kriging techniques were applied to create gridded air quality estimates for the contiguous 48 states. The result is a series of GIS maps that portray the spatial concentrations of air pollutants over the U.S.



Example from Air Atlas displaying the 4th highest annual value of the maximum daily 8-hour ozone concentration in parts per billion.

The maps and estimated pollutant values at park locations are presented in a product called Air Atlas. The Air Atlas GIS viewer and five-year average estimated values are available on the web and from the NPS Data Store.

Status

The initial Air Quality Inventory using the GIS interpolation method was completed for the period 1995-1999 and posted to the web as Air Atlas. Two updates have been completed since then for the periods 1999-2003 and 2001-2005. An update for 2003-2007 is in progress. Air quality maps and estimate tables for 270 natural resource parks are complete.

More Information

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