

Air Quality

NPS Air Resources Division

RESOURCE BRIEF

Importance

All units in the Southern Plains Network (SOPN) are designated Class II air quality areas under the Clean Air Act Amendments of 1977. Although most park units are some distance from cities and pollution sources, many experience occasional poor air quality from pollutants such as ozone, nitrogen oxides, sulfur dioxide, and volatile organic compounds. These air pollutants may adversely affect air quality and natural resources in the SOPN, including vegetation, wildlife, soils, water quality, and visibility. For example, high levels of ozone may affect vegetation, by causing foliar injury and growth effects, as well as the health of park visitors and staff. Sources of air pollutant emissions in the SOPN include mobile sources (e.g., motor vehicles), stationary sources (e.g., power plants and industry), and area sources (e.g., agriculture, fires, and road dust).

Status and Trends

There are no air quality monitors in the SOPN parks, but nearby monitors may be representative of conditions in the parks. Types of monitoring include ozone monitoring, wet deposition and dry deposition monitoring of atmospheric pollutants, wet deposition monitoring of mercury, and visibility monitoring. In situations where there are no monitors in close proximity to a park, NPS Air Atlas estimates are used for information (<http://www2.nature.nps.gov/air/Maps/AirAtlas/index.htm>).

SOURCE: WWW.EPA.GOV/AIR/DATA/INDEX.HTML

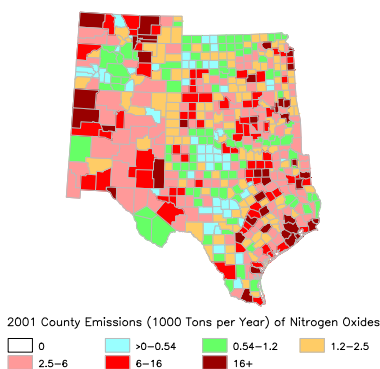


Figure 1. Nitrogen oxides emissions, by county, in Colorado, Kansas, New Mexico, Oklahoma, and Texas.

Some of the most common and abundant pollutant emissions in the SOPN include nitrogen oxides, ammonia, and sulfur dioxide. A distribution map for nitrogen oxide emissions in the SOPN and surrounding area is shown in Figure 1. In general, wet deposition and concentration of sulfate, nitrate, and ammonium are low in the western U.S. relative to the Midwest and East, and



pollutant deposition in the SOPN is consistent with this pattern. A trend analysis of 1994-2003 data indicates that sulfate concentrations are decreasing at many sites in the West, but nitrate and ammonium concentrations are increasing.

Estimates of total atmospheric deposition (for total inorganic nitrogen and total sulfur) for the SOPN are elevated above natural levels of deposition. This may be of concern because deposition of nitrogen compounds, for example, can have a fertilization effect on waters and soils, which may cause native plants (adapted to nitrogen-poor conditions) to be out-competed and replaced by nitrogen-loving nonnative species.

Ozone is increasing in many areas of the West. A 2004 risk assessment for SOPN parks (using 1995-1999 data) determined that Chickasaw NRA is at high risk from ozone injury, Lyndon B. Johnson is at moderate risk, and the remaining units are at low risk (two parks not included in assessment).

Visibility is not monitored in any of the SOPN park units, but nearby monitoring indicates that visibility is degraded to some extent throughout the SOPN area. Trend analysis indicates that visibility is improving slightly on the clearest days and worsening on the haziest days in many areas of the West.

Discussion

A 2005 NPS report recommended the following for the SOPN: obtain air quality data summaries and annual reports from NPS Air Resources Division (<http://www2.nature.nps.gov/air/index.htm>); consider a preliminary survey to examine vegetation for ozone injury at Chickasaw NRA; and periodically update ozone risk assessments for SOPN park units.

