

Reducing pollution at national parks: Scientists demonstrate significant improvements in air quality, visibility

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A photo that illustrates pollution in 1990 and in 2010 in Great Smoky Mountains National Park.

(Phys.org) —Air quality and visibility have improved dramatically at national parks and other areas of national scenic value in association with reduced air pollution emissions, according to new data analysis by the Cooperative Institute for Research in the Atmosphere at Colorado State

University.

Using atmospheric conditions from the 1990s and present day, CIRA researchers can simulate what the parks looked like then and now.

"The simulated images illustrate that at places such as [Great Smoky Mountains](#) National Park, mountains that were once regularly obscured by haze are now clearly visible," said Jenny Hand, a CIRA scientist who is working with the National Park Service to study air pollution trends and their causes.

In the 1960s and 1970s, high [air pollution levels](#), often referred to as acid rain, damaged terrestrial and [aquatic ecosystems](#) and in some cases resulted in die-offs of fish and trees. This same air pollution contributed to haze, reducing visibility to a few miles in many cities, and obscured majestic vistas in national parks.

The primary cause of the pollution had been identified as burning of fossil fuels, largely by coal-fired power plants, factories and automobiles, which releases sulfur dioxide and [nitrogen oxides](#) into the atmosphere.

To address air pollution, Congress passed the 1970 [Clean Air Act](#) and its amendments in 1977 and 1990. The 1977 amendments identified certain national parks and wilderness areas as places having high scenic values and set the national goal of reducing human-caused haze in these areas. The introduction of the Acid Rain Program in 1990 set further goals of reducing the sulfur dioxide and nitrogen oxide emissions from coal-fired power plants and automobiles.

As a result, from 1990 to 2010, [sulfur dioxide emissions](#) in the U.S. dropped from 23 million tons to 8 million tons, and [nitrogen oxide emissions](#) were cut in than half, based on annual emission inventories

from the EPA.

These and other emission reductions have led to remarkable improvements in visibility in many national parks, say CIRA scientists who have simulated the visual scenes at many national parks and wilderness areas.

"Though there have been dramatic improvements in air quality, high levels of air pollution still occur and are environmentally harmful," Hand said. "Diligence is required to maintain the improved air quality we now enjoy and to resolve remaining issues."

Provided by Colorado State University

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