

VISIBILITY IN SCENIC AREAS

Air pollution can impair visibility—and not just in cities. Reduced visibility affects many of our best known and most treasured national parks and wilderness areas, such as Grand Canyon, Yosemite, Yellowstone, Mount Rainier, Shenandoah, and Great Smoky Mountains national parks, and the Mount Hood and Okefenokee wilderness areas, as well as urban areas. Visibility impairment results from the scattering and absorption of light by air pollution, including particles and gases. This limits the distance we can see and can also degrade the color, clarity, and contrast of those views. The same fine particles that are linked to serious health effects and premature death can also significantly affect visibility.

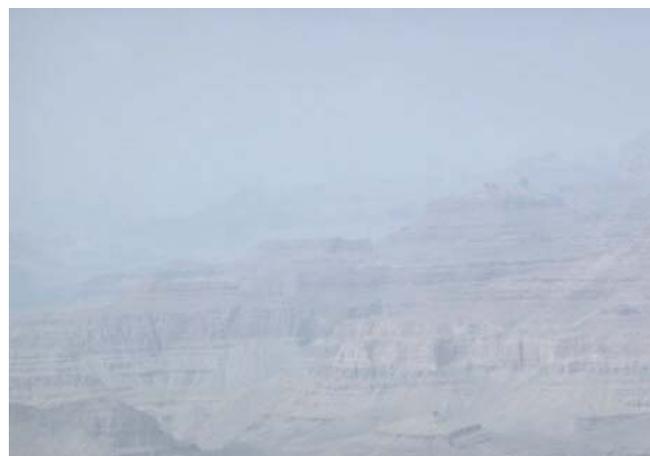
Some particles that contribute to visibility impairment are emitted directly into the atmosphere from their sources, such as dust from roads or elemental carbon (soot) from wood combustion. In other cases, particles form in the atmosphere from primary gaseous emissions such as sulfates (formed from SO₂ emissions from power plants and other industrial facilities) and nitrates (formed from NO_x emissions from power plants, automobiles, and other types of combustion sources).

EPA monitors visibility trends, defined by the Regional Haze Rule, in 155 of the 156 mandatory Class I areas (certain national parks and wilderness areas meeting the criteria established in the 1977 Clean Air Act amendments). The Regional Haze Rule requires states to identify the most effective means of preserving conditions in Class I areas when visibility is at its

best—based on the best 20 percent visibility days—and to gradually improve visibility when it is most impaired—based on the worst 20 percent visibility days. Trends in visibility for the annual 20 percent best and worst visibility days are shown in Figure 37. Several locations showed improving visibility (decreasing haze) for the best visibility days at eastern national park and wilderness monitoring sites (Acadia, Moosehorn, Lye Brook, Dolly Sods, and Shenandoah), and one location showed improvement for the worst visibility days (Great Smoky Mountains). The western U.S., which has most of the Class I areas, showed improvement at 24 locations for the best visibility days. Mount Rainer and Redwoods also showed improvement on the worst visibility days. Only one location—Petrified Forest, Ariz.—showed a notable degradation in visibility (increasing haze) for the worst days.

In 2001, EPA promoted the establishment of five Regional Planning Organizations (RPOs) to serve as centers for conducting the coordinated Regional Haze Rule technical assessments and policy development required of states and tribes in concert with federal land managers and other stakeholders in five regions of the U.S. More detailed information concerning measured visibility levels, as well as links to all five RPOs, are available at the Visibility Information Exchange Web Site (VIEWS) at <http://vista.cira.colostate.edu/views/>.

For more information about EPA's Regional Haze Program, visit <http://www.epa.gov/visibility>.



These photographs taken at Grand Canyon National Park show how visibility can differ. PM_{2.5} concentrations were 0.2 µg/m³ (left) and 37.3 µg/m³ (right).

(Source: <http://vista.cira.colostate.edu/improve/Publications/GrayLit/NPSSpecialImages/Updated%20NPS%20Special%20Images.pdf>)

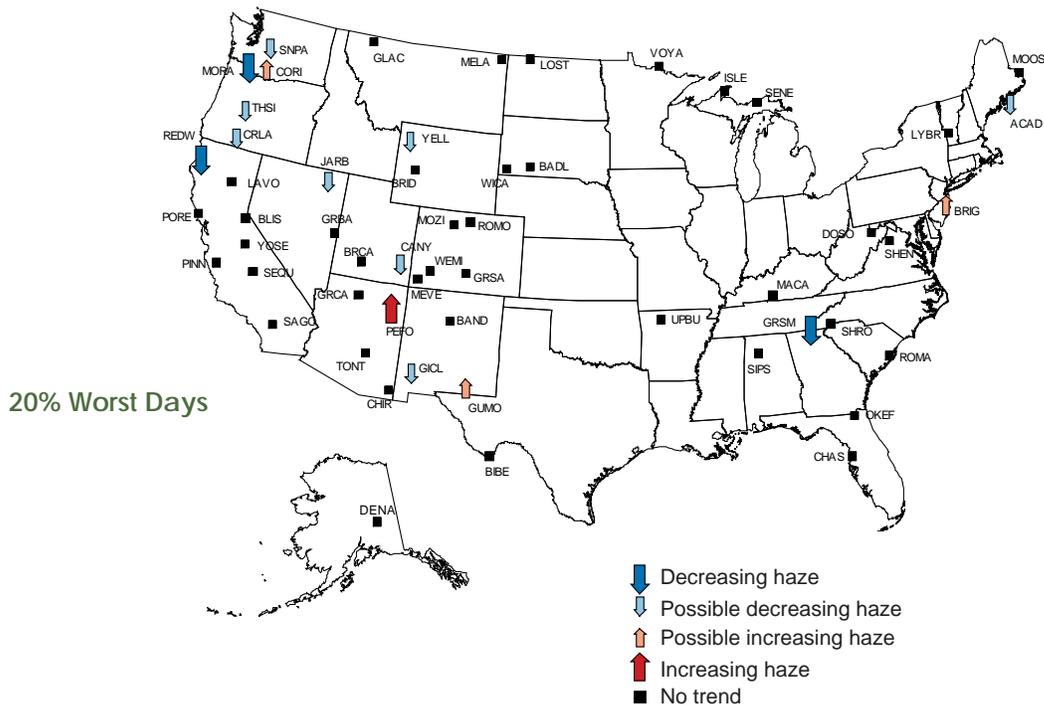
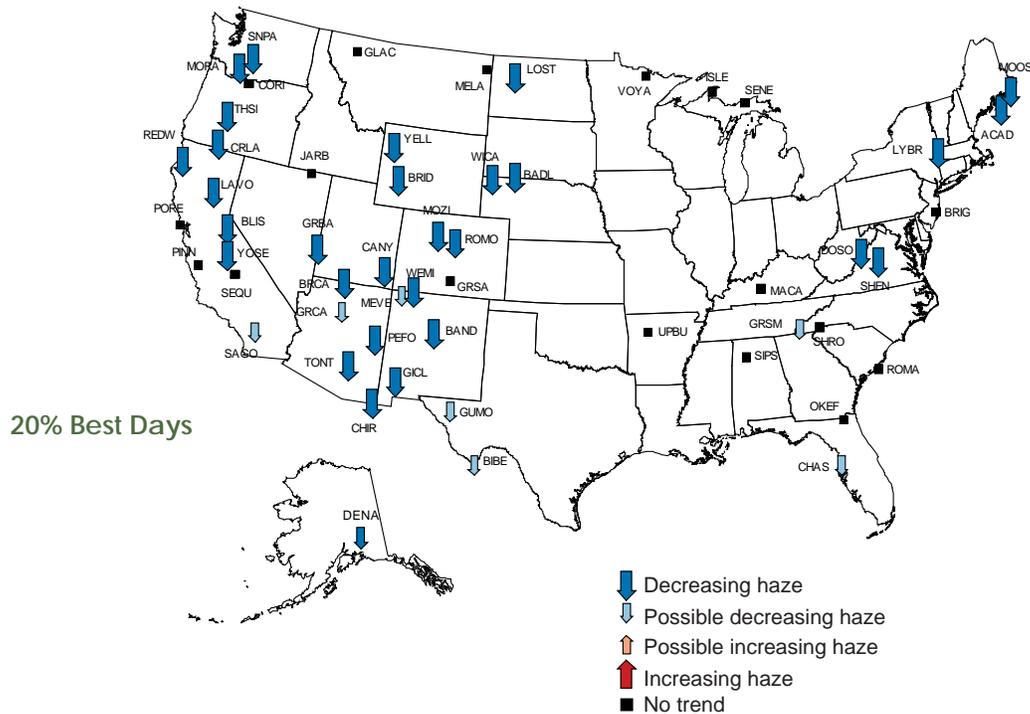


Figure 37. Trends in visibility (haze index in deciviews) on the 20 percent best and worst visibility days, 1996-2005. (Source: <http://www.nature.nps.gov/air>)

Note: Visibility trends using a haze index for the annual average for the 20 percent best and worst visibility days are based on aerosol measurements collected at Interagency Monitoring of Protected Visual Environments (IMPROVE) monitoring sites. The haze index is measured in deciviews (dv), a visibility metric based on the light extinction coefficient that expresses incremental changes in perceived visibility. Sites having at least six years of complete data were used.