INTERAGENCY MONITORING OF PROTECTED VISUAL ENVIRONMENTS

IMPROVE

Volume 5, No. 2 **Spring 1996** **July 1996**

IMPROVE MONITORING UPDATE

Preliminary data collection statistics for the Spring 1996 season (March, April, and May) are:

Data Type	Collection Percentage
Aerosol Data	96%
Optical (transmissometer) Data	94%
Optical (nephelometer) Data	94%
Scene (photographic) Data	89%

Particulate concentrations through November 1995 have been submitted for all measurements except carbon. Printed seasonal summaries for Spring, Summer, and Fall 1995 will be delivered as soon as the carbon concentrations are received and validated.

Figure 1 shows the current IMPROVE and IMPROVE Protocol sites.

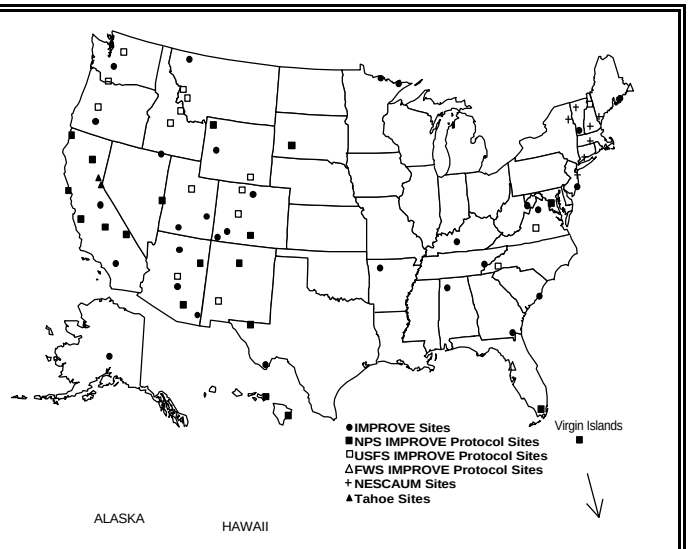

Figure 1. IMPROVE and IMPROVE Protocol Sites July 1996

Nephelometer Sites Installed

The USFS re-installed IMPROVE nephelometers in Great Gulf Wilderness, New Hampshire, and in Lye Brook Wilderness, Vermont, during June.

Because of severe winter weather conditions, the two locations monitor visibility only during the summer months. Both locations received Optec nephelometers. Great Gulf operated with a nephelometer last summer, and Lye Brook operated with a nephelometer the previous year, in 1994.

VISIBILITY NEWS....

USFS Annual Air Resource Manager's Meeting

USFS representatives from all regions attended the 1996 air resource management national meeting, May 13-16, 1996, in Salt Lake City, Utah. "ARMed for the Future," was the general topic of discussion. Managers looked at increasing the effectiveness of air resource management, regional assessments, the effectiveness of past and present monitoring programs, and strategic planning for the future.

Specific discussion included visibility protection, air quality-related values, the role of prescribed burn policy, and several other concerns. For more information, contact:

Steve Boutcher
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Telephone: 503/326-7131

Big Bend Visibility Exhibit

Visibility is an important issue at Big Bend National Park. To better inform park visitors, park staff designed an interpretive display that actively shows current visibility conditions as measured by the IMPROVE transmissometer. Data collected by the transmissometer is transmitted hourly by radio link to the interpretive display in the Panther Junction Visitor Center. A radio receiver and microprocessor update a digital screen on the display in both English and Spanish. The screen displays current visibility conditions, average seasonal visibility, and other information that provides the viewer with a clearer understanding of visual air quality in the park. Installed last April, this interpretive display is an important addition to the visitor center exhibits.

***Visibility News** continued on page 3*

SPECIAL STUDIES

U.S.-Mexico Propose Regional Air Pollution Study

American and Mexican governments are initiating a regional field study to determine the source regions and source types responsible for poor visibility conditions at Big Bend National Park, Texas, from both sides of the U.S. - Mexico border.

An initial meeting was held June 7, 1996, to discuss study objectives, monitoring strategy, and roles and responsibilities of both governments. A 19-station scoping study will occur during August-September 1996 to obtain preliminary information on air mass transport and spatial concentration gradients in the area. Scoping study data will be used to design two intensive studies scheduled for 1998.

The NPS is seeking sponsors and collaborators to help fund these intensives. For more information, contact:

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***Special Studies** continued on page 3*

Feature Article

Grand Canyon Visibility Transport Commission Recommends Strategy for the Colorado Plateau

After five years' work, the Grand Canyon Visibility Transport Commission (GRVTC) met June 10, 1996, to recommend a strategy for improving visibility on the Colorado Plateau. Congress created the commission to advise the U.S. Environmental Protection Agency on such strategies. The commission, made up of governors of eight states (Arizona, California, Colorado, Nevada, New Mexico, Oregon, Utah, and Wyoming) and four tribal leaders (Acoma Pueblo, Hopi, Hualapai, and Navajo) endorsed the recommendations of its Public Advisory Committee (PAC).

The PAC represented a broad range of public interests, and included representatives from all levels of government, industry, educational institutions, and environmental groups. The PAC came to consensus on a wide range of recommendations to reduce emissions that impair visibility on the Colorado Plateau. The plateau includes 16 national parks and wilderness areas, including: Grand Canyon, Petrified Forest, Zion, Bryce Canyon, Capitol Reef, Canyonlands, Arches, and Mesa Verde National Parks, and Sycamore Canyon, Mount Baldy, San Pedro, Weminuche, West Elks, Maroon Bells, Flat Tops national wilderness areas, and Black Canyon of the Gunnison national Monument. Figure 2 depicts these 16 protected areas.

The PAC worked for three years to develop the following recommendations which the GRVTC adopted at the June 10th meeting:

- *Stationary sources.* Large industrial facilities should reduce sulfur dioxide emissions by at least 13% from 1990 levels, by the year 2000. Emissions should then be steadily reduced from 50% to 70% below 1990 levels by the year 2040.
- *Mobile sources.* Vehicles, including cars, trucks, ships, and trains, should adopt national, regional, and local strategies. Such strategies include adopting low emission vehicle standards beginning in 2001, promoting cleaner burning fuels, and providing incentives to promote multiple-occupant vehicles and reduce single-occupant vehicles. The nationwide low-emission standards include reducing exhaust from new cars 70% by 2001 and 50% for new diesel trucks and buses by 2004.
- *Air pollution prevention*. Prevention recommendations include creating economic incentives for prevention efforts, encouraging renewable energy and energy conservation development, and investigating the feasibility of an emissions fee for certain polluters. State governments should find replacements for fossil fuels, and attempt to use solar, wind, and other renewable energy sources to supply 10% of the region's electricity by 2005 and 20% of the region's electricity by 2015.
- *Managed fire*. Smoke and fire management techniques and alternatives to prescribed-burns should be investigated. Obstacles to alternatives should be identified and removed by the year 2000. State governments, tribes, and private and federal land owners should set annual targets for prescribed burn emission levels. The burns should also be timed to minimize haze. Mechanical brush clearing should be an alternative to burning whenever possible.
- *Transboundary Emissions from Mexico*. State and federal government should assist Mexico in creating an inventory of pollution sources. The North American Free Trade Act and other international treaties should use monies that would finance air pollution control projects in Mexico.

In all, the Public Advisory Committee developed more than 70 recommended measures that the GRVTC adopted on federal, state, and local levels, regarding a variety of air pollution categories.

The committee's consensus includes a far-reaching, broad view of the future. Air quality is everyone's responsibility. Large industry, small industry, and individuals within the region's population are to blame for the poor air quality and poor visibility. By addressing large and small sources of air pollution alike, the strategy for the Colorado Plateau is unprecedented.

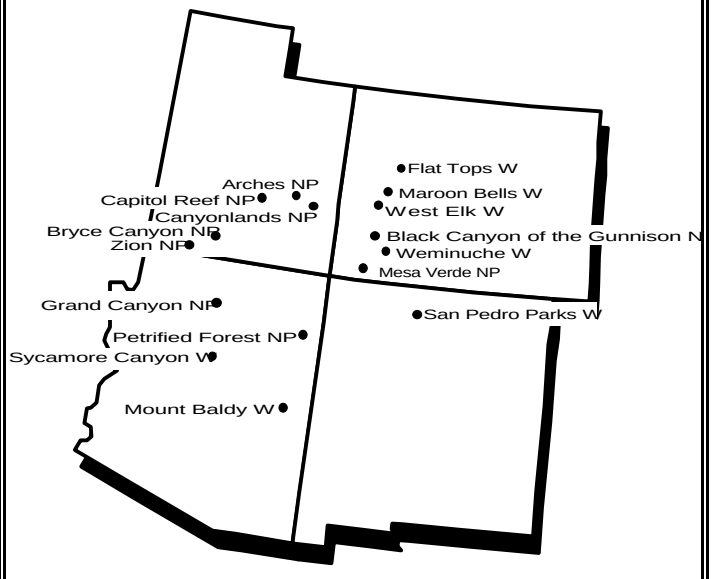

Figure 2. Protected Areas of the Colorado Plateau.

Visibility News *continued from page 1...*

Monitoring Program Established in Arizona

The State of Arizona Department of Environmental Quality has teamed with the National Park Service and the U.S. Forest Service to monitor visibility in Arizona's Class I areas. The cooperative effort among the three agencies will facilitate the characterization of visibility in most of the Class I areas in the state. Visibility monitoring is currently performed in three of these areas as part of the IMPROVE Program. This new program will collect data in five additional Class I areas.

The monitoring program will consist of optical (nephelometer), aerosol, and meteorological monitoring conducted according to IMPROVE protocols. Each site will be configured with the same instrumentation. The five monitoring sites will be operational for a two-year period, beginning Summer 1996.

The five additional sites selected for the program include: Superstition Wilderness, Mazatzel Wilderness, Mount Baldy Wilderness, Sycamore Canyon Wilderness, and Saguaro National Park/Wilderness.

For more information about the upcoming Arizona program, contact:

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Arizona Department of Environmental Quality
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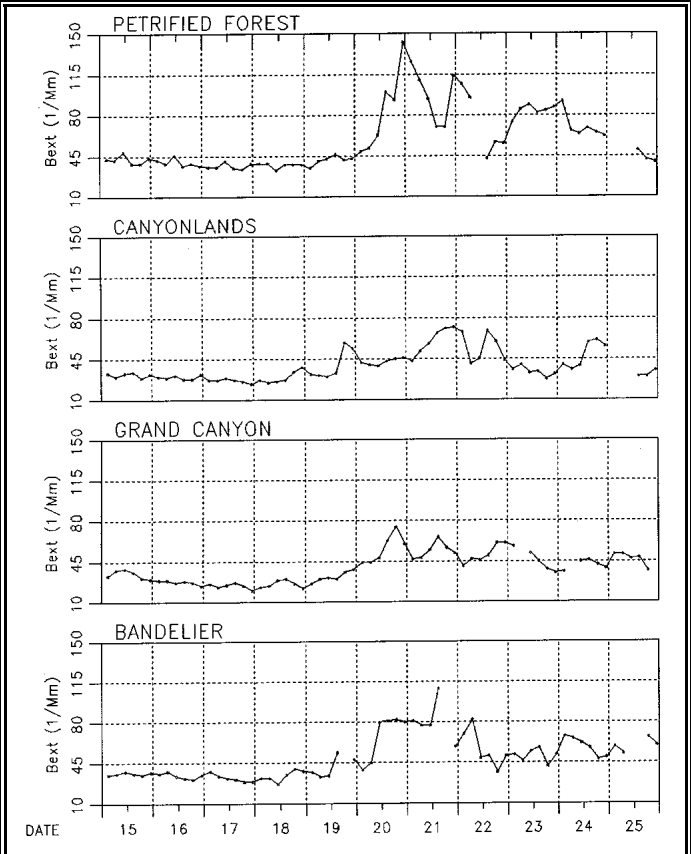

Figure 3. Fire Affected Data in Southwest U.S. for the Period May 15 - 25, 1996.

Special Studies *continued from page 1...*

Mt. Zirkel Reasonable Attribution Visibility Study

The final report for the Mt. Zirkel Reasonable Attribution Visibility Study will be available the week of July 15, 1996. The extensive report contains approximately 1,000 pages explaining the optical, aerosol, and scene components of the monitoring effort. Monitoring took place in the Mt. Zirkel Wilderness, in northern Colorado, between December 1995 and November 1996.

For more information, contact:

Dan Ely
Colorado Dept. of Public Health and Environment
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Dallas-Fort Worth Winter Haze Project

The final report for the Dallas-Fort Worth Winter Haze Project is scheduled to be available in September. The report consists of two volumes. Volume I will present measurements and descriptive data analyses and Volume II will include model results and study conclusions.

Several papers regarding the Dallas-Fort Worth project, which were presented at the 1995 AWMA conference, are now available. To obtain a paper, contact:

Peter K. Mueller
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Wildland Fires Influence Western Visibility

The western United States experienced an early occurrence of its wildland fire season. Since early April, several IMPROVE monitoring locations have noted extended periods of reduced visibility, with wildland fires being the most probable cause. During late May, a number of wildland fires were burning in Arizona, New Mexico, Utah, and Colorado.

Figure 3 shows daily extinction values from May 15-25 as measured by transmissometers at four IMPROVE monitoring sites (Grand Canyon and Petrified Forest National Parks in Arizona, Canyonlands NP in Utah, and Bandelier NM in New Mexico). The unusually high extinction values measured from May 20-25 coincide with wildland fires burning in the Flagstaff region in northern Arizona during this period. During this event, extinctions rose from an average of approximately 30 Mm^{-1} (130 km visual range) to greater than 70 Mm^{-1} (55 km visual range). Communications with IMPROVE site operators at the affected parks confirmed the presence of smoke from these fires.

This example illustrates how regional air quality events such as the mid-May fires are documented by the IMPROVE network. Events can be tracked immediately across a broad area by near-real-time optical data and IMPROVE aerosol analyses can later quantify the source types.

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IMPROVE STEERING COMMITTEE

IMPROVE Steering Committee members represent their respective agencies and meet periodically to establish and evaluate program goals and actions. IMPROVE-related questions within agencies should be directed to the agency's Steering Committee representative. Steering Committee representatives are:

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The next IMPROVE Newsletter will be published in October 1996.

Please Contact Us: If you know someone who would like to receive the newsletter or if you are no longer interested in receiving a copy, please call us at 970/484-7941. Your ideas and comments are always welcome. We continue to look for ways to improve the newsletter and to provide you with interesting and pertinent information.

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