INTERAGENCY MONITORING OF PROTECTED VISUAL ENVIRONMENTS

IMPROVE

Volume 6, No. 2 **Spring 1997** **July 1997**

IMPROVE MONITORING UPDATE

Preliminary data collection statistics for the Spring 1997 season (March, April, and May) are:

Data Type	Collection Percentage
Aerosol Data	96%
Optical (transmissometer) Data	92%
Optical (nephelometer) Data	94%
Scene (photographic) Data	90%

Transmissometer data are validated and finalized through May 1996. The *Summary of Transmissometer-Based Visibility Data, Summer 1995 Through Spring 1996 Seasons*, was delivered to the National Park Service on May 28, 1997. Transmissometer data for June 1996 through February 1997 are through preliminary validation and should be available later this month.

Figure 1 shows the current IMPROVE and IMPROVE Protocol monitoring sites.

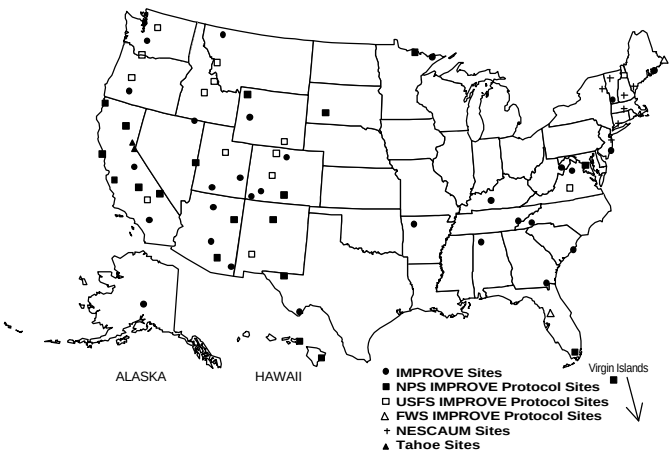

Figure 1. IMPROVE and IMPROVE Protocol Sites July 1997

Nephelometer removed from Okefenokee NWR

Nephelometer monitoring ended at Okefenokee National Wildlife Refuge, Georgia, in June. The Fish and Wildlife Service has operated the instrument since its installation in February 1993. Air quality will continue to be monitored at the site with an IMPROVE modular aerosol sampler.

Mammoth Cave monitoring site to relocate

The air quality monitoring shelter at Mammoth Cave National Park, Kentucky, will be relocated as soon as weather permits. Heavy rains have delayed the move. The local utility company informed the park that it is abandoning the power line, since the shelter is the only electric connection on a 7-mile stretch. The shelter also has no telephone line. Park personnel arranged for construction and installation of a replacement shelter, which will be located several miles away from the original site. The shelter, equipped with electric and telephone lines, will house a full complement of visibility and air quality instruments.

Photographic monitoring ended at Mammoth Cave on May 12, 1997. The site monitored visual air quality for 5 years and collected over 5,500 color slides. IMPROVE guidelines suggest that 5 years is an adequate historical record of visibility conditions at any site.

Chiricahua transmissometer site reconfigured

The transmissometer sight path at Chiricahua National Monument, Arizona, will be reconfigured this summer. The instrument was installed in February 1989 with a larger than optimal sight path angle between the transmitter and receiver. Extinction measurements from this angled sight path may be influenced by temperature stratification of the atmosphere, but different siting options at the monument were difficult to obtain until recently. Both the transmitter and receiver will be relocated to obtain a sight path that monitors a more uniform air mass.

VISIBILITY NEWS....

Draft monitoring guidance document delivered

A new visibility monitoring guidance document is being developed by the EPA to guide agencies and organizations interested in developing air quality monitoring programs. The draft document was distributed in June to a group of technical reviewers. The document includes strategies for aerosol, optical, and scene monitoring, and provides an overview to visibility monitoring needs, selecting instrumentation, and monitoring issues, goals, and objectives. For more information, contact:

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VISIBILITY NEWS continued on page 3....

Feature Article

Bob Carson monitors air above and below the surface at Mammoth Cave National Park

Mammoth Cave National Park, Kentucky, is not among the largest of the national parks, but it does have the longest cave system in the world with 348 miles of known passageways. Bob Carson, Air Quality Specialist at the park, has had the opportunity to monitor air quality both above ground and below, in the caves.

Bob came to Mammoth Cave in 1976 as a Radon Specialist, studying radon concentrations in the caves and buildings and maintaining employee exposure records. In 1989 he transferred to the National Park Services' Air Quality Division (now the Air Resources Division) in Denver. As a Data Manager there, he assisted with NPS ambient air quality monitoring network operations. To satisfy a longing to return to his home state, Bob returned to Mammoth Cave three years ago to operate an enhanced air quality monitoring station for the *1995 Southern Oxidant Study, Nashville/Middle Tennessee Ozone Intensive Study*. The Mammoth Cave station was one of seven enhanced stations that measured ozone, sulfur dioxide, carbon monoxide, nitrogen oxide, reacted oxides of nitrogen, and volatile organic compounds. Approximately 120 other regional stations participated in the study.

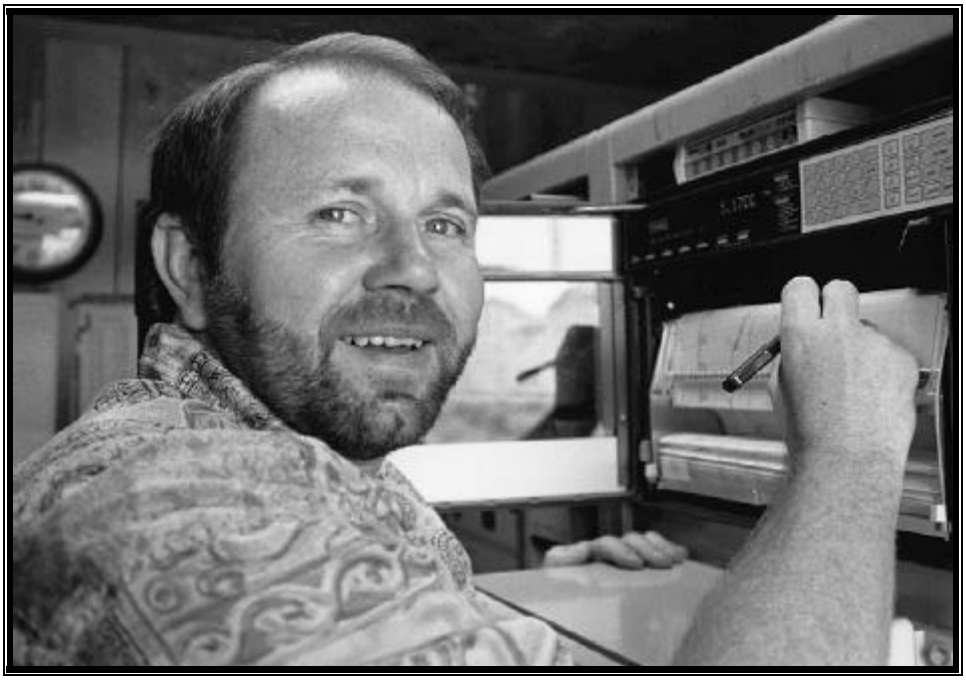
Bob currently works as a Natural Resources Management Specialist for the NPS Southeast Regional Office. He is also an Air Quality Specialist for Mammoth Cave National Park, and manages the parks' air resources program, reviews resource management plans, provides technical assistance to other parks and agencies on natural resources issues, and coordinates air quality permit reviews affecting park units in the Southeast Region. "I'm also involved with the SAMI (Southern Appalachian Mountains Initiative) in various capacities, and have recently completed a report with a SAMI study team on mobile emission reduction options in Class I parks within the SAMI region," says Bob.

Bob received a B.S. degree in geography and earth sciences, with a concentration in meteorology, from Western Kentucky University. Before coming to the NPS he was a Weather Communications Specialist at the National Weather Service Forecast Office in Louisville. Bob says, "I've been very fortunate the past 21 years to have had opportunities to work in two occupations that I truly enjoy: meteorology and air quality, and to be able to work in national parks... what more could anyone ask for?"

Mammoth Cave National Park is approximately 54,000 acres or about 80 square miles in size, and is one of only a handful of national parks in the eastern United States. The area receives an average of 55 inches of precipitation annually, the highest in Kentucky. Because of acid rain and SO_2 concerns in the Ohio River Valley, the park is an important resource and research concern.

The local power utility company that serves the park recently informed Bob that the air quality station would lose its electric service. "The park had many power problems due to overhead power lines," says Bob. "The utility company wanted to bury the power lines within the park. Since the air quality station was the only customer on a 7-mile stretch of line, we either had to pay for the cost of burying a line to the air quality station, or relocate the station." The park elected to relocate the station, but couldn't find any land within the park's boundary appropriate for the station. Land for the new shelter had to be leased from land adjacent to the park, and Bob coordinated efforts to make it all happen.

Bob spends his free time playing softball, maybe a round of golf (family permitting), and mostly spending time with wife Vickie (a public information officer at Mammoth Cave) and their three children. "I really enjoy spending time with the family and doing whatever they feel like doing," says Bob. Oddly enough, that doesn't include spelunking, or cave exploring. "I leave that to the professionals," says Bob, "you really need to know what you're doing." After monitoring air quality in the caves below for 13 of his 21 years in the NPS, Bob now chooses to spend a little more time above ground studying the surface resources of Mammoth Cave National Park.



Bob Carson, Air Quality Specialist, annotates a strip chart recorder inside the air quality station at Mammoth Cave National Park.

SPECIAL STUDIES

Binational Big Bend Regional Air Quality Study

A second 35mm camera was installed at Big Bend National Park, Texas, in June. The park has operated one 35mm camera for photographic visibility monitoring since 1981. The second camera will be operated according to IMPROVE protocol in support of the Binational Big Bend Regional Air Quality Study, a cooperative effort between the NPS, EPA, Texas Natural Resources Conservation Commission, Texas Parks and Wildlife Department, and Mexico's Procuraduría Federal de Protección al Ambiente. The camera will view southeast toward Mexico.

Intensive study periods are scheduled for 1998. For more information, contact:

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NPS Air Resources Division
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WESTAR representative to IMPROVE changes

The Western States Air Resources Council (WESTAR) has changed representatives on the IMPROVE Steering Committee. John Core is no longer with WESTAR; the new representative is:

Robert Lebens
WESTAR
Telephone: 503/220-1660

AWMA International Specialty Conference

The Air and Waste Management Association (AWMA) International Specialty Conference will be held September 9-12, 1997, in Bartlett, New Hampshire. Bartlett is located near Mt. Washington in the White Mountain National Forest.

This year's conference, *Visual Air Quality, Aerosols, and Global Radiation Balance*, will include discussion about the transfer of visible and infra-red radiation through the atmosphere, and about the origins, physics, and chemistry of the aerosols that scatter and absorb that radiation. Discussion will also include the effects of air pollution on visibility and climate.

For more information about the conference, contact Ivar Tombach:

fax: 805/388-3577
e-mail: visibility@ensr.com

NESCAUM supports new air quality web site

NESCAUM (Northeast States for Coordinated Air Use Management) is pleased to announce a new, interactive, internet air quality analysis facility called NEARDAT (NorthEast Airshed Regional Data Analysis Toolshed). The NEARDAT web site provides a forum to exchange air quality-related data and information in support of more efficient air resources management in the northeastern United States and eastern Canada. Web users are invited to explore the NEARDAT site and access the various data sets, analysis tools, technical reports, and discussions. Anyone who registers on NEARDAT (no cost) is also encouraged to submit their own versions of the above items, ideas, comments, etc. by using the site's interactive features. Items currently accessible on the site include:

- Freeware copies of Voyager, Movie, and other data analysis tools (look under "Software").
- IMPROVE and NEPART-IMPROVE aerosol data in Voyager and ASCII formats. The data are processed as daily, monthly, quarterly, and annual means (look under "Datasets and Animations").
- Plans for a Trajectory Climatology Study for selected northeastern forests and parks, including several IMPROVE sites (see "VForEM Seeks Partners in Northeast Forest Trajectory Climatology Project" under "Technical Reports").

Check out NEARDAT at http://capita/wustl.edu/neardat, or contact Rich Poirot at richp@qtm.anr.state.vt.us.

IMPROVE plays a role in Centralia controls

IMPROVE data collected in the early 1990s suggested that visual impairment was occurring in southwest Washington. Analyses, based in part on IMPROVE data, indicated that the Centralia Power Plant, a coal-fired facility in the region, was at least partially responsible.

After months of negotiations, the plant has agreed to reduce its emissions by 90%, under a proposed solution reached by the owners of the plant, the NPS, USFS, and other state and federal regulatory agencies. The Collaborative Decision-Making group reached a control solution that protects both the environment and workers' jobs at the plant. Two scubbers will be installed by the end of 2002, dropping SO_2 emissions from the current allowable limit of 110,000 tons per year to less than 10,000 tons per year.

The proposal was recently accepted by the State of Washington, who will provide tax relief to the plant to make the project feasible. For more information, call:

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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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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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