INTERAGENCY MONITORING OF PROTECTED VISUAL ENVIRONMENTS

IMPROVE

Volume 7, No. 3 **Summer 1998** **October 1998**

IMPROVE MONITORING UPDATE

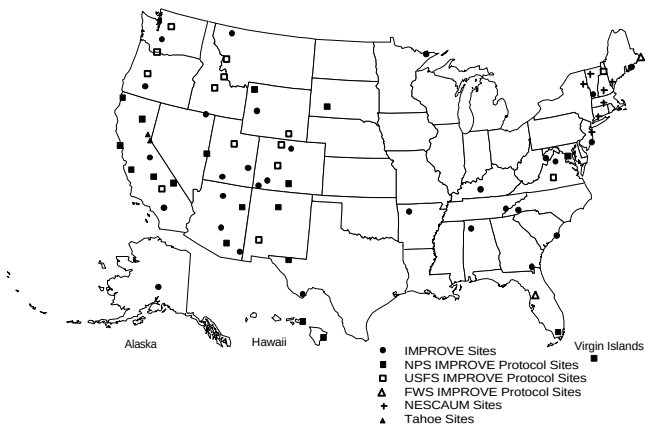
Preliminary data collection statistics for the Summer 1998 season (June, July, and August) are:

Data Type	Collection Percentage
Aerosol Data	94%
Optical (transmissometer) Data	96%
Optical (nephelometer) Data	95%
Scene (photographic) Data	84%

Particulate data have been submitted through May 1998 for all measurements including carbon. The data are available on the UC-Davis FTP site, and as hard copy seasonal summaries.

The transmissometer at Rocky Mountain National Park, Colorado, will resume monitoring this month. The power line that provided electric service to the instrument's receiver was removed due to a power distribution reconfiguration in the park. Because of this, the receiver shelter was moved to near the south entrance station where power is available.

The transmissometer at Chiricahua National Monument, Arizona, will be moved later this year to a different location within the monument. The existing site path has a large vertical angle and related data concerns. To provide a more horizontal site path, new locations for the transmitter and receiver have been selected and approved.



IMPROVE and IMPROVE Protocol Sites
Summer 1998

VISIBILITY NEWS....

IMPROVE aerosol monitor update

The IMPROVE aerosol monitoring network will be making two major changes in 1999. First, newly-designed aerosol samplers will be installed at about 60 new sites, to cover most of the Class I areas in the United States. Second, the sampling frequency will change from twice per week to one-day-in-three.

IMPROVE is looking to expand its aerosol monitoring network. UC-Davis has recently received authorization to build the new samplers for 20 additional monitoring sites. The EPA, states, and federal land managers are also working to develop a list of about 30 potential sites among the Class I areas without current air quality monitoring.

In addition to adding more monitoring locations, the sampling frequency of aerosol monitoring is expected to change. This will require replacing the existing programmable sampler clocks with a new microprocessor unit. The new and reconfigured samplers will initially operate on the IMPROVE schedule of Wednesday and Saturday. After the entire network has been upgraded, the sampling schedule will change to every third day. This will allow comparison to samples collected by the national speciation network and other regulatory monitoring networks.

The new UC-Davis samplers were briefly described in the April 1998 issue of the *IMPROVE Newsletter*. Once the samplers are constructed, they will undergo thorough testing before installation at monitoring locations. The samplers will first be installed at two or three existing sites for collocated sampling, to further ensure consistency with the original sampler.

The new samplers were expected to be in place by December 31, 1998. The schedule has been revised, however, delaying installation until early next spring. The samplers will first be installed at existing network sites, and at the selected new sites later in 1999.

For more information, contact:

Bob Eldred
University of California - Davis
Telephone: 530/752-1124

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Feature Article

IMPROVE preserves monitoring images with permanent photographic archive CD-ROMs

The IMPROVE program has taken data preservation one step further using CD-ROM technology. Color photographs documenting visual conditions at scene monitoring sites are now being digitally archived to CD-ROMs for future use.

Scene monitoring has been part of the IMPROVE program and its predecessor networks for two decades. Photographic film has its limitations, and even stored in an environmentally controlled atmosphere, film quality declines over a period of time. The National Park Service has thousands of photographic slides in its archives, and many of the older monitoring slides are showing signs of degeneration. Archiving selected images on CD-ROMs is a way to preserve representative visual conditions, and also allows the images to be used for a variety of projects using computer and graphic technology.

The CD-ROM "spectrums" as they are called, are being produced for each IMPROVE monitoring site that has over five years of slides in its archives. The spectrums contain slides selected from the archive, that illustrate the range of visual conditions at the site. Each CD also contains a site-specific map, a summary of the scene monitoring history of the site, and related data.

A spectrum typically includes 40 to 80 digital images. The images are provided in high resolution .PCD and .JPG formats, which can be viewed, printed, edited, or queried using Kodak Quicksolve software that is also provided on the CD (see Figure 1).

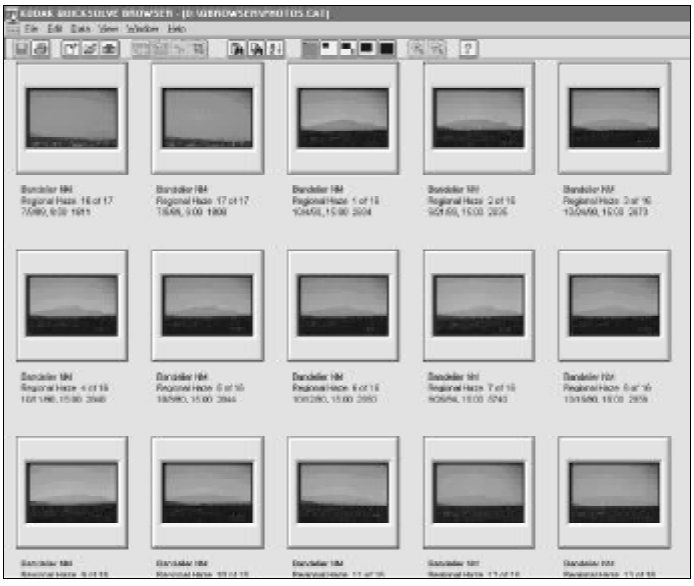

Figure 1. Quicksolve browser display of cataloged images for Bandelier National Monument, New Mexico, an IMPROVE Protocol monitoring site.

Images are selected for inclusion on the CD in four specific areas: 1) spectrums ranging from good to poor visual air quality for both a morning and afternoon time period, 2) layered hazes, 3) visual air quality episodes, and 4) scenic views.

In addition to the images, the CDs also contain text files that can be viewed and printed using the Adobe Acrobat software provided on the CD. These text files include:

- A table of contents detailing information for each of the selected images.
- A site specifications page detailing the camera location and its monitored vistas (see Figure 2).
- A table of estimated cumulative frequency summaries (using IMPROVE aerosol data) that corresponds to selected morning and afternoon spectrum series.
- Various text files detailing CD contents, provided software, and computer system requirements needed to access the CD archive.

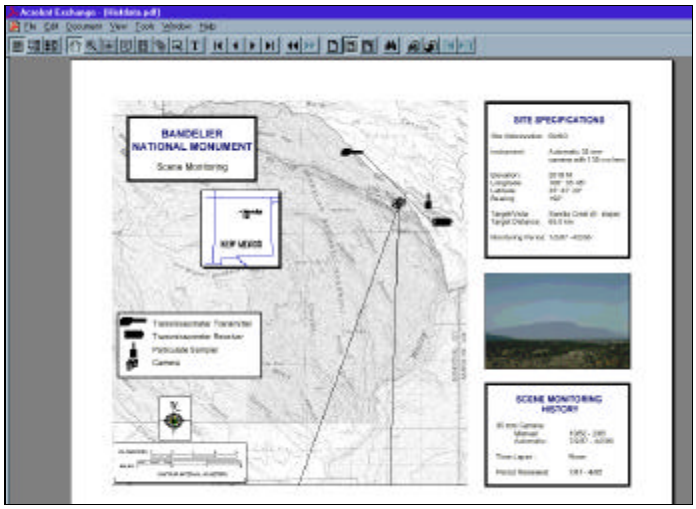

Figure 2. Adobe Acrobat display of site specifications for Bandelier National Monument, New Mexico, scene monitoring site.

The permanent archive CD-ROMs will help preserve a select set of photographs and representative visual conditions that scene monitoring took years to produce. The CDs also help researchers, land managers, and others to more efficiently present visual air quality issues to the public. As CD-ROMs are completed for each monitoring site, they are delivered to the National Park Service, Air Resources Division. For further information, contact:

Dee Morse
National Park Service - Air Resources Division
Telephone: 303/969-2817

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IMPROVE gains a mobile research facility

A mobile research facility was designed for this summer's Grand Canyon Regional Air Quality Visibility Study (GRAVS) and will be available for future studies. The intensive Grand Canyon study supplemented standard IMPROVE monitoring in the canyon, and the mobile research facility allowed researchers to work in an efficient, climate-controlled work area.

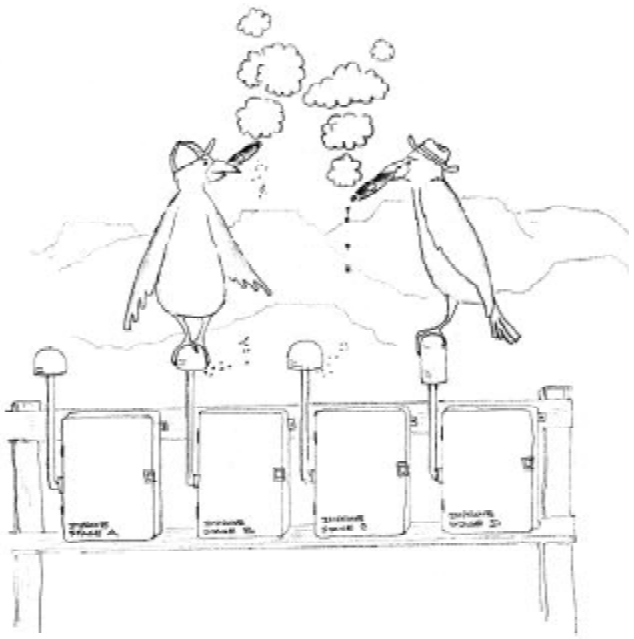
The 8' x 20' mobile research facility can be modified to accommodate a variety of air quality and computer equipment and it can be towed to just about any location with available electric service.

With the Grand Canyon study now over, the mobile research facility has been transferred to Fort Collins, Colorado, where it will reside between major IMPROVE-sponsored, regional studies.

IMPROVE optical data on CD-ROM

Optical IMPROVE data are available on CD-ROMs. Data are included for all IMPROVE optical monitoring sites and several other optical monitoring sites. Transmissometer and nephelometer data are included as:

- Seasonal files (3-month meteorological seasons)
- Annual files (12-month calendar year period)
- All Data files (a single data file for each site)



"This cigar smoke should give them a fine trajectory to Cuba."

The CDs contain data collected from each site's initial installation (beginning Winter 1987 for transmissometers and Fall 1990 for nephelometers) through Summer 1997 (or the last season an individual site was operational). To request a CD-ROM, contact:

National Park Service
Fax: 970/491-8598

Great Smoky Mountains featured on CNN

CNN recently featured Great Smoky Mountains National Park in the first of a three-part television program titled *Earth Matters*. Part one, *Air Apparent*, reported air quality issues in Great Smokies.

The three-minute feature, which aired September 6, 1998, forcefully stated that although Great Smoky Mountains National Park is the most visited national park, it also has the haziest summers in the United States and higher cumulative ozone levels than any eastern city.

Natalie Pawelski, who narrated the story for CNN, stated that visibility in the park has declined about 60% in the last half-century. Don Barger of the National Parks and Conservation Association said, "Quite often people will come to the mountains for the clean air and find that the air here is dirtier than where they left. It's a beautiful place, and if you could really see it, it would be much more beautiful."

CNN stated that almost all the air pollution at Great Smokies comes from sources outside the park, including factories, power plants, and automobiles. Jim Renfro, the National Park Service Air Resource Specialist at Great Smokies, told CNN, "It's affecting the natural resources, the streams, the soils, the vegetation," and illustrated that 30 plant species show visible damage from ozone pollution. Renfro stated the pollution comes from as far away as the Upper Midwest, northeastern states, and the Gulf states.

The program concluded by stating that the solution to Great Smokies' air quality problem, like the problem itself, must come from outside the park. A week before the show was taped, Great Smoky Mountains National Park measured its highest ozone level ever.

A real-time photograph and air quality information taken at Great Smoky Mountains National Park is provided on the National Park Service's web site:

http://www.aqd.nps.gov/ard1/parks/grsm/grsmvc.htm

For more information, contact:

Jim Renfro
Great Smoky Mountains National Park
Telephone: 423/436-1708

Air Resource Specialists, Inc.
1901 Sharp Point Drive, Suite E
Fort Collins, CO 80525

TO:

First Class Mail

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:

U.S. EPA /NOAA
Marc Pitchford
c/o Desert Research Institute
P.O. Box 19040
Las Vegas, NV 89132
702/895-0432 (Telephone)
702/895-0507 (Fax)

NPS
William Malm
NPS-AIR
Colorado State University
CIRA - Foothills Campus
Fort Collins, CO 80523
970/491-8292 (Telephone)
970/491-8598 (Fax)

BLM
Scott Archer
Service Center (SC-212A)
P.O. Box 25047
Denver, CO 80225-0047
303/236-6400 (Telephone)
303/236-3508 (Fax)

USFS
Rich Fisher
Air Specialist, Wash. Office
Central Administrative Zone
240 W. Prospect
Fort Collins, CO 80526
970/498-1232 (Telephone)
970/498-1010 (Fax)

FWS
Sandra Silva
Fish and Wildlife Service
P.O. Box 25287
12795 W. Alameda
Denver, CO 80225
303/969-2814 (Telephone)
303/969-2822 (Fax)

NESCAUM
Rich Poirot
VT Agency of Nat. Res.
103 South Main Street
Building 3 South
Waterbury, VT 05676
802/241-3840 (Telephone)
802/244-5141 (Fax)

STAPPA
Dan Ely
Colorado Dept. of Public
Health and Environment
Air Pollution Control Div.
4300 Cherry Creek Drive S.
Denver, CO 80222-1530
303/692-3228 (Telephone)
303/782-5493 (Fax)

WESTAR
Robert Lebens
1001 S.W. 5th Ave.,
Suite 1100
Portland, OR 97204
503/220-1660 (Telephone)
503/220-1651 (Fax)

The next IMPROVE Newsletter will be published in January 1999.

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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Air Resource Specialists, Inc.
970/484-7941 Telephone
970/484-3423 Fax

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