INTERAGENCY MONITORING OF PROTECTED VISUAL ENVIRONMENTS

IMPROVE

Volume 7, No. 1 **Winter 1998** **April 1998**

IMPROVE MONITORING UPDATE

Preliminary data collection statistics for the Winter 1998 season (December, January, and February) are:

Data Type	Collection Percentage
Aerosol Data	94%
Optical (transmissometer) Data	89%
Optical (nephelometer) Data	87%
Scene (photographic) Data	76%

Particulate data have been submitted through November 1997 for all measurements except carbon. Seasonal summaries including carbon have been distributed through August 1997. Figure 1 shows the IMPROVE and IMPROVE Protocol monitoring sites.

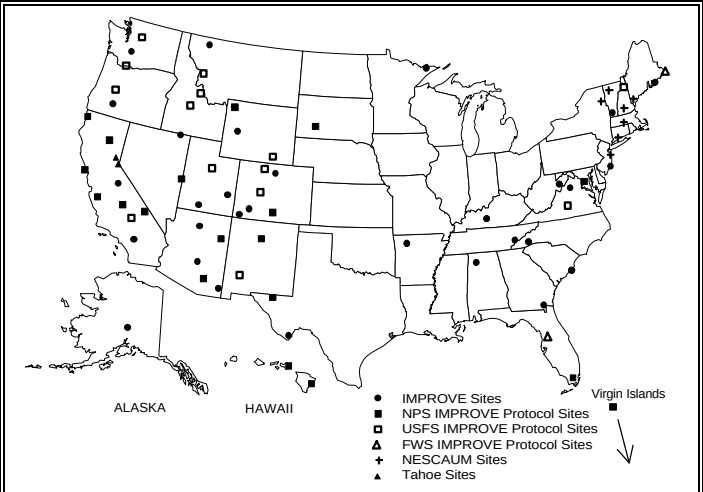

Figure 1. IMPROVE and IMPROVE Protocol Sites Winter 1998

Big Bend receives nephelometer

IMPROVE has added an ambient nephelometer to its monitoring network. Big Bend National Park, Texas, received the Optec NGN-2 nephelometer, which began operation February 25, 1998. The instrument will operate year-round, along with an IMPROVE aerosol sampler and LPV-2 transmissometer, two park-operated still-frame cameras, and a time-lapse video camera.

Big Bend has been the focus of attention in recent years over concerns that the transport of Mexican and U.S. air pollutants from distant sources into the Big Bend area are degrading visibility. Big Bend is expected to maintain a full complement of IMPROVE monitoring instruments for future studies.

VISIBILITY NEWS....

IMPROVE optical data now available

Transmissometer and nephelometer data collected since the inception of the IMPROVE program are now available on the Internet and on CD-ROM. Data from Winter 1987 through Summer 1997 are included for all IMPROVE sites and several others. The data have been reformatted with the following changes:

- Particle scattering is now reported instead of total scattering. (The Rayleigh scattering constant has been removed from nephelometer data).
- Extinction and scattering are now reported in units of inverse megameters (Mm^{-1}).
- Data validity codes have been simplified to be more consistent with each data type.
- A 4-digit year identifier has been applied to accommodate the year 2000 and beyond.

The data are available for download from the Internet, at:

ftp://alta_vista.cira.colostate.edu

Once connected to the ftp site, go to the DATA folder, then the IMPROVE folder, then to the OPTICAL folder.

To request the data on CD-ROM, send a fax to:

National Park Service
Fax: 970/491-8598

IMPROVE integration and expansion proposed

The EPA has proposed the integration of the IMPROVE program with the national $PM_{2.5}$ monitoring program, and has requested that IMPROVE protocol change to be more compatible with the $PM_{2.5}$ program. The IMPROVE steering committee recently agreed to change the aerosol sampling schedule to 1 in 3 days, to supply data to EPA's AIRS database, and to operate some sites with collocated samplers. IMPROVE sampler data are permitted under the new $PM_{2.5}$ standard, even though the IMPROVE sampler is not a federal reference or equivalent method.

The EPA also proposed to expand resources to IMPROVE to increase the number of aerosol monitoring sites. An additional 78 IMPROVE sites would help meet regional haze regulations monitoring requirements. The $PM_{2.5}$ data could also be useful to aid states in the implementation of the new PM regulation. For more information contact:

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Feature Article
IMPROVE visibility monitoring advances air quality efforts at Moosehorn Wilderness

Time-lapse videotape from the Moosehorn Wilderness IMPROVE protocol site recently helped the Fish and Wildlife Service's effort to reduce visibility impairment there. For years, plumes from the Georgia-Pacific Corporation's kraft pulp mill in Woodland, Maine, have entered the Moosehorn Wilderness, a Class I area 7 kilometers downwind of the mill. Attempts to convince Georgia-Pacific to reduce emissions and mitigate visibility impairment have been unproductive until now.

Georgia-Pacific kraft pulp mill in Woodland, Maine, 7 kilometers upwind from Moosehorn Wilderness

The irrefutable photographic evidence captured by IMPROVE monitoring equipment, documents plumes from the mill entering the wilderness. It has allowed the Fish and Wildlife Service (FWS) to open a dialogue with Georgia-Pacific. The State of Maine Department of Environmental Protection (DEP) and the Environmental Protection Agency (EPA) are now involved in the negotiations as well.

Bud Rolofson, meteorologist for the FWS Air Quality Branch, is encouraged by recent events. "After years of fighting this battle, Georgia-Pacific has finally acknowledged that plumes from the mill were degrading visibility in the wilderness area," Rolofson said. "Even more encouraging is that they've now agreed to do something about it." Rolofson was referring to Georgia-Pacific's new Action Plan for improving the mill's environmental performance. The Action Plan includes steps for improving the operation and maintenance of one of the mill's boilers. Rolofson likes this approach, "Not only will it reduce emissions, but it will also improve fuel efficiency, decreasing fuel costs for Georgia-Pacific. It's a win-win solution."

In 1984, former Moosehorn refuge manager Doug Mullen notified the FWS during a nationwide survey of air quality problems in FWS Class I areas. Mullen's observations about the magnitude and frequency of the plumes from Georgia-Pacific's Woodland mill prompted a site investigation by Rolofson. The National Park Service (NPS) used an 8mm camera to document plume dynamics on time-lapse movie film. The resulting photographic evidence was an "extremely effective use of funds" according to Mullen. "For a meager $5,000 we provided definitive photographic proof of visibility impairment," said Mullen. "We showed the proverbial smoking gun to EPA." In 1985, the Department of the Interior certified visibility impairment in Moosehorn. And in 1989, EPA formally attributed that visibility impairment to the mill.

In 1994, the FWS installed a time-lapse video camera at the wilderness. Videotapes that again documented plume impacts initiated more negotiations. Only with this current round of negotiations, however, did Georgia-Pacific agree to take responsibility for the plumes. On July 2, 1997, Rolofson met with representatives from Georgia-Pacific, Maine DEP, and EPA. At the meeting, he showed a video documenting 18 dramatic plume occurrences -- a sampling from the hundreds of plumes that enter Moosehorn from the Georgia-Pacific mill each year. "Showing the videotape to Georgia-Pacific and to Maine DEP was extremely effective," said Sandra Silva, chief of the FWS Air Quality Branch. "The video got their attention. Georgia-Pacific now knows that FWS can once again certify visibility impairment in Moosehorn."

If the FWS does certify visibility impairment, Rolofson believes Maine DEP would probably make a "reasonable attribution determination" that the mill is the source of the impairment. "We could have argued over whether plumes from the mill degraded visibility in the wilderness area forever, but we didn't have to," said Rolofson. "The video made our case for us."

Georgia-Pacific representatives were pleased that the FWS provided an opportunity for them to address the visibility problem in Moosehorn rather than seek regulatory action. Representatives from all parties agreed to continue working cooperatively to resolve this problem. They plan to meet in late summer or early fall 1998 to assess progress on Georgia-Pacific's Action Plan and to discuss any additional emission reduction actions needed.

The Moosehorn Wilderness, a Class I Air Quality Area

In the meantime the FWS will continue monitoring visibility at the site. Georgia-Pacific and Maine DEP will be informed of plume events.

Moosehorn refuge manager Mark Sweeny is pleased with the recent progress. "I'm glad that positive actions are being taken to address this long-standing problem," said Sweeny. "It's important that we find solutions that benefit the air quality in Moosehorn. It's a plus that cleaning up their emissions also benefits Georgia-Pacific." Sweeny believes that the IMPROVE monitoring and the cooperative approach taken by the NPS and the FWS were instrumental in bringing Georgia-Pacific to the table. He said, "lately, Georgia-Pacific has been cooperative as a partner in this process. They now have a better understanding of our record of the visibility problems in Moosehorn."

VISIBILITY NEWS continued from page 1....

IMPROVE selects aerosol expansion sites

The National Park Service, US Forest Service, and Fish and Wildlife Service have selected the top 10 priority sites for each agency to begin aerosol monitoring in 1998. The sites were reviewed and selected at an IMPROVE committee meeting in January. One selection criteria was that candidate sites would fill a geographic gap in the current aerosol monitoring program. Candidate sites for each agency are:

NPS	USFS	FWS
Theodore Roosevelt, ND	Eagle Cap, OR	Breton, LA
North Cascades, WA	Sawtooth, WA	St. Marks, FL
Joshua Tree, CA	Cohutta, GA	Mingo, MO
Guadalupe Mtns., TX	Great Gulf, NH	Witchita Mountains, OK
Capitol Reef, UT	San Gabriel, CA	Bosque del Apache, NM
Badlands, SD	Sula Peak, MT	Seney, MI
Grand Tetons, WY	South Pass, MT	Tuxdeni, AK
Petrified Forest, AZ	Wheeler Peak, NM	Swanquarter, NC
Zion, UT	Mt. Hood, OR	UL Bend, MT
Olympic, WA	Sycamore Canyon, AZ	Salt Creek, NM

IMPROVE aerosol sampler redesigned

Development of the modified particulate sampler is nearing completion. There are no changes in the particle collection characteristics. The major change is from a weekly programmable clock controller to a microprocessor controller. This will permit sampling on a 1 day in 3 schedule. A secondary feature is that the flow rate will be monitored throughout the sampling period. The new processor will read the flow rate gauges directly and show the results in digital form on the processor screen. This makes the readout gauges and the elapsed timers in the sampling modules unnecessary. The result is the sampling modules can be made much smaller. In order to tighten the quality control in sample changing, the hoses will be replaced by a manifold that directly connects to the filter cassettes.

The redesigned samplers are expected to be installed at existing IMPROVE sites and 20 new IMPROVE sites by December 31. At that time, the sampling protocols will be changed to 1 day in 3 at all sites with modified samplers. The filter cassettes will continue to be changed every Tuesday. In 1999, redesigned samplers will be installed in an additional 58 IMPROVE sites. UC-Davis recommends that the sampler be housed in a shelter, primarily to aid the site operator during inclement weather. Currently one-half of the sites have shelters. UC-Davis will be working with site operators at sites currently having outdoor stands to install shelters for the modified samplers. For more information, contact:

Bob Eldred / UC-Davis
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Western Regional Air Partnership workshop

The Western Regional Air Partnership (WRAP) is regarded as the successor to the Grand Canyon Visibility Transport Commission (GCVTC). The partnership is developing a credit-trading program to address visibility issues on the Colorado Plateau.

Under GCVTC recommendations, trading would be required if the pollution goals contributing to visibility impairment are exceeded after the year 2000. WRAP will try to determine if the GCVTC's recommended cap is similar to emissions limits set in EPA's proposed regional haze rule. Different measurement systems used by each group create some difficulty in comparing and assessing goals. GCVTC's goals were based on an emissions reduction measurement of SO_2, while the regional haze rule is based on deciview units.

WRAP is holding a monitoring workshop in June to discuss issues related to improving visibility monitoring in the West. It seeks a better coordinated approach to site selection and site operation to include federal, state, and tribal air agencies, industry officials, environmentalists, and small business firms. It also seeks to have more spatially and temporally representative monitoring in western Class I areas. Specifically, participants in the workshop plan to discuss:

- Planning and administration:
  - areas of responsibility
  - integration of related monitoring efforts
  - monitoring plan development
- Technical issues:
  - measurement comparability
  - network design and representativeness
  - measurement technology and protocols
  - data analysis methods
- Defining a WRAP forum on visibility monitoring:
  - identify workplan elements
  - identify interested participants

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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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