INTERAGENCY MONITORING OF PROTECTED VISUAL ENVIRONMENTS

IMPROVE

Volume 5, No. 4 **Fall 1996** **January 1997**

IMPROVE MONITORING UPDATE

Preliminary data collection statistics for the Fall 1996 season (September, October, and November) are:

Data Type	Collection Percentage
Aerosol Data	95%
	95%
Optical (transmissometer) Data	94%
Optical (nephelometer) Data	91%
Scene (photographic) Data	

Particulate data through August 1996 have been submitted for all measurements except carbon. Printed seasonal summaries including carbon have been sent through November 1995.

Figure 1 shows the current IMPROVE and IMPROVE Protocol sites.

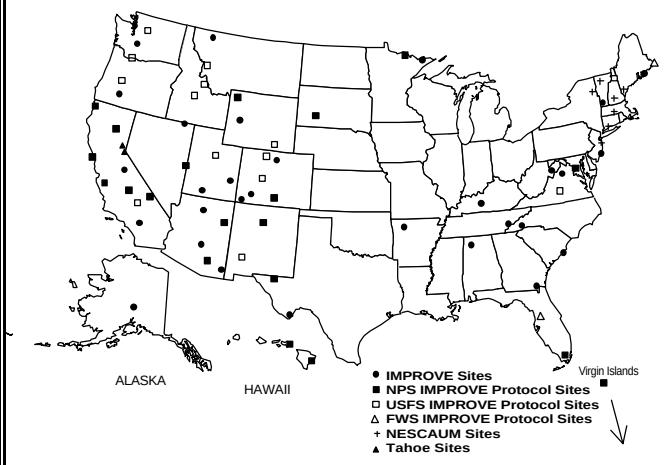

Figure 1. IMPROVE and IMPROVE Protocol Sites January 1997

Shenandoah Expands Air Quality Monitoring

Scientists at Shenandoah National Park, Virginia, have expanded the park's air quality monitoring effort by purchasing an Optec NGN-2 ambient nephelometer. The nephelometer began operation September 1, 1996 and is funded by the park.

The park currently operates an Optec LPV-2 transmissometer and an IMPROVE particle sampler as part of the IMPROVE monitoring network. Shenandoah National Park is also the center of numerous studies that involve a variety of other monitoring instrumentation.

***IMPROVE Monitoring Update** continued on page 3....*

VISIBILITY NEWS....

New Air Quality Standards Proposed

The U.S. Environmental Protection Agency recently proposed tougher air quality standards. The proposal, made public last November, addresses tighter restrictions for ozone and fine particulate matter.

If accepted, the new standard would require reducing ozone levels from 0.12 parts per million cubic feet of air (the current standard) to 0.08 parts per million. The measurements would be taken over an average of 8 hours, rather than a single 1-hour period that is used now.

The new standard also would regulate particulate matter 2.5 microns in diameter and smaller. The EPA currently only regulates particles 10 microns in diameter or larger. The new regulation would limit the $PM_{2.5}$ particles to concentrations of 15 micrograms per cubic meter annually and 50 micrograms per cubic meter daily. Current standards limit PM_{10} particles to concentrations of 50 micrograms per cubic meter annually and 150 micrograms per cubic meter daily.

The EPA is required by the Clean Air Act to review air quality standards every five years. It reviewed more than 200 scientific studies and concluded that current health standards do not adequately protect the health of Americans. The agency also believes the new standards will save the nation billions of dollars each year in lower health costs and fewer missed work days.

Health officials also favor the new standards. They say the $PM_{2.5}$ particles, which come from combustion sources such as automotive tailpipes, wood smoke, and utility and industrial smokestacks, lodge in the lungs and cause respiratory problems. Industries and local governments, however, are generally against the new proposal, saying the new standards will be expensive, unnecessary, and harmful to the economy.

The EPA has been under a court order to decide whether or not its standards should be revised. The decision was required to be made by the end of last November. The order was made in response to a suit by the American Lung Association.

A 60-day public comment period follows the announcement of the new standards proposal. An extended review process will follow the comment period, and a final ruling by Congress is expected in June. For further technical information, contact:

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

Feature Article

Cindy Thompson Encounters More Than Swamp at the Okefenokee National Wildlife Refuge

For the past two and a half years Cindy Thompson has worked among the creatures in the swamp at Okefenokee National Wildlife Refuge, Georgia. Located in the extreme southeastern part of the state, the refuge is one of the largest and most primitive swamps in America. It is home to a variety of wildlife, including over 200 species of birds, 60 species of reptiles, and 620 species of plants. The refuge includes over 390,000 acres of swampland, with forested uplands surrounding its perimeter. Native Indians named the swamp Okefenokee, "Land of the Trembling Earth," because of its sponge-like earth qualities. Okefenokee is one of nearly 500 refuges in the National Wildlife Refuge System, and is managed specifically for wildlife by the U.S. Fish and Wildlife Service.

Cindy came to Okefenokee to perform a variety of duties as an Assistant Biologist. She services the air quality monitoring instruments, including an IMPROVE NGN-2 nephelometer and an IMPROVE aerosol sampler. Air quality in the refuge is an important component of the health and vitality of the refuge's diverse flora and fauna. As population and human activities expand in the southeast, monitoring of the refuge's resources continues to be important. For example, land immediately adjacent to the refuge contains minable mineral resources that are currently being evaluated by private industry.

Cindy also develops and performs wildlife surveys, and monitors populations of birds, mammals, fish, reptiles, and amphibians that reside in the refuge. Cindy's chief responsibility is coordinating activities concerning the red-cockaded woodpecker.

Another part of Cindy's responsibilities is assisting other researchers. "There are lots of research activities going on in the swamp," says Cindy, "and I occasionally get involved with and help coordinate these other studies," which primarily include water quality and wildlife research studies.

Cindy earned a bachelor of science degree in wildlife biology at Colorado State University, and promptly entered her chosen field by working with the U.S. Forest Service. She has held various jobs since then, including working with the Florida Game and Freshwater Fish Commission, the National Audubon Society, and now the U.S. Fish and Wildlife Service.

The area surrounding the Okefenokee National Wildlife Refuge is owned primarily by timber companies. One of the swamp's inhabitants, the red-cockaded woodpecker, is one of the species on the federal endangered species list. "The population of these birds has decreased primarily to habitat loss," says Cindy, "they require pine trees for cavities for shelter, and the remaining timber stands are too young for the birds to utilize." Progressive wildlife management in the refuge helps endangered species by preserving the natural qualities of the swamp and providing habitat for the wildlife.

Some of Cindy's personal interests also revolve around swamplife. When not assisting with the various research studies, she likes to sit back and birdwatch. Birdwaching is a common recreation activity for refuge visitors, as well as other wildlife observation, photography, and hiking. Other activities Cindy enjoys are sailing, local architecture and culture, and regional history.

Cindy encounters and coordinates many activities at Okefenokee. With the many researchers interested in the refuge's offerings, and Cindy's interest in the wildlife and environmental quality there, perhaps the swamp can offer more to both human and animal species in the future.

Biologist and site operator Cindy Thompson checks air quality monitoring equipment at the Okefenokee National Wildlife Refuge, Georgia.

Visibility News continued from page 1....

Federal Reference Method Sampler Comparison

The proposed new Federal Reference Method (FRM) particle sampler is being used in several studies to compare its operation and data with that of the IMPROVE particle sampler. The FRM sampler was proposed to be the standard sampler for measuring $PM_{2.5}$ mass concentrations.

To support the newly proposed $PM_{2.5}$ particulate standard, the EPA published specifications for the FRM particle sampler. The initial samplers built to the specifications are being tested in several U.S. cities. Because the particulate standards also reference the existing IMPROVE Modular Aerosol sampler, the IMPROVE samplers are also being included in several of these urban tests.

As seen in Figure 2 below, the FRM sampler has a PM_{10} inlet to remove large particles, and a newly designed impactor to set a sharp 2.5 μm size cut point. Air samples are collected on 47mm Teflon filters. Figure 3 shows a standard four-module IMPROVE sampler.

The first test of the FRM took place in Birmingham, Alabama, in late fall 1996. Collocated IMPROVE Teflon modules are being tested in Phoenix and Denver during December and January, and in Bakersfield, California, beginning in mid-January.

Figure 2. A Federal Reference Method (RFM) sampler, installed and operating in Denver, Colorado.

Figure 3. A four-module IMPROVE sampler, installed and operating in Denver, Colorado.

IMPROVE Monitoring Update continued from page 1....

Air Quality Sites not Exempt to Severe Weather

IMPROVE air quality monitoring sites have also experienced the severe winter weather that has hit the United States this year.

At Bridger Wilderness, Wyoming, transmissometer operation shut down in late December due to heavy snowfall. Both shelters, which house the transmissometer components, and the solar panels, which power the system, were found underneath four to five feet of snow just before Christmas. The site operator used an avalanche probe to find the equipment, then formed a crew to go out and begin the shoveling.

Nephelometer operation at Mount Rainier National Park and Columbia River Gorge National Scenic Area, both in Washington, and Three Sisters Wilderness, Oregon, remains uninterrupted by snow and heavy rains. Data are successfully retrieved daily by telephone modem.

Snoqualmie National Forest, Washington, is also equipped with a nephelometer system. The system uses a storage module to collect data every two weeks. Even with heavy snowfall, the instrument is expected to keep working, but retrieving the storage module may be an adventure.

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The next IMPROVE Newsletter will be published in April 1997.

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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