INTERAGENCY MONITORING OF PROTECTED VISUAL ENVIRONMENTS

IMPROVE

Volume 4, No. 4 **Fall 1995** **January 1996**

IMPROVE MONITORING UPDATE

Preliminary data collection statistics for the Fall 1995 season (September, October, and November) are:

Data Type	Collection Percentage
Aerosol Data	95%
Optical (transmissometer) Data	94%
Optical (nephelometer) Data	92%
Scene (photographic) Data	87%

Figure 1 is a map of the current IMPROVE and IMPROVE Protocol sites.

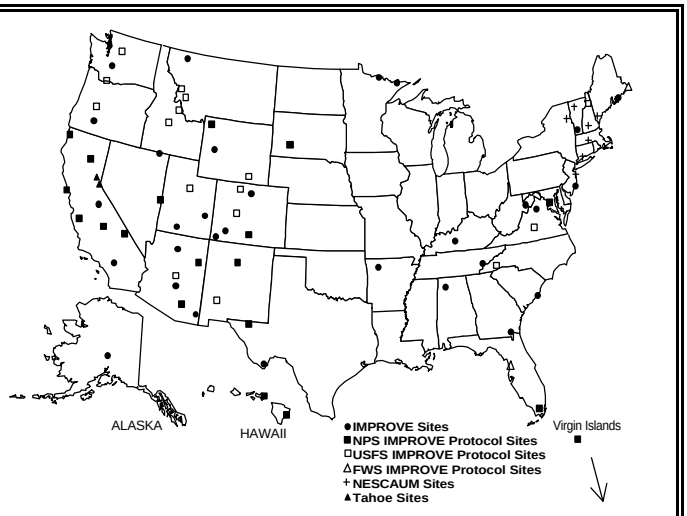

Figure 1. IMPROVE and IMPROVE Protocol Sites January 1996

CASTNET Reductions

The EPA informed the CASTNET contractors of its decision to terminate the optical and scene monitoring components of CASTNET at all sites effective November 30, 1995. In addition, the overall CASTNET network may undergo a reduction in sites.

Craig, Colorado BLM Visibility Site Closes

As of November 30, 1995, the BLM suspended operation of its scene monitoring site in Craig, Colorado. The site had operated since 1979 with various instrument configurations. In the late 1970s and early 1980s monitoring included manual teleradiometer, manual camera, and meteorological instrumentation. Since the mid-80s, however, monitoring was performed with an automatic camera.

VISIBILITY NEWS....

Sahara Dust Reaches Eastern United States

A recent article in Science News (Volume 148, December 23 and 30, 1995) quoted Thomas A. Cahill of the University of California-Davis, regarding the presence of Sahara dust on IMPROVE aerosol samples in the U.S. Virgin Islands and eastern United States. Previous studies of fine particles less than 2.5 micrometers in diameter found on IMPROVE filters from the Virgin Islands indicated that some of the dust originated on the Sahara Desert. The largest dust episodes each summer at Shenandoah NP and other eastern IMPROVE sites matched this dust, and no local dust was observed in the southern Great Plains at these times. Cahill and his colleagues requested trajectory analyses from NOAA that confirmed global circulation patterns capable of carrying African dust to the eastern U.S. by way of Texas. For further information see Science News or contact:

Tom Cahill
Air Quality Group, University of California, Davis
Telephone: 916/752-4674

SPECIAL STUDIES

Dallas-Fort Worth Winter Haze Project

A draft of "Final Report, Volume I: Measurements of Haze Climatology, Dallas Fort Worth Winter Haze Project" is currently being reviewed by the project Steering Committee. The final report will be composed of two volumes. The first volume will be available in the spring and will present the measurements and descriptive data analyses termed "Haze Climatology." The second volume, to include model results and study conclusions, will be prepared during the spring and will be available later this year. For further information contact:

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Electric Power Research Institute
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Mt. Zirkel Reasonable Attribution Visibility Study

The year-long monitoring component of the Mount Zirkel Reasonable Attribution Visibility Study ended on November 30, 1995. Intensive monitoring periods were conducted in February 1995, August 1995, and September 15 to October 15, 1995. A meeting of project participants was held in early December to review collected data and to further focus the data reduction and analyses components of the program. The program plan calls for a final report to be compiled by June 1996. For more information contact:

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

Feature Profile

Jim Renfro Unites Diverse Interests at Great Smoky Mountains National Park

Since 1987, Jim Renfro has focused on air quality throughout Great Smoky Mountains National Park, with duties as diverse as the number of plant and animal species that dwell within the park's boundaries. Encompassing nearly 800 square miles of rugged mountainous terrain in eastern Tennessee and western North Carolina, the park has one of the most comprehensive air quality monitoring programs in the National Park Service. Air pollution is one of the biggest problems facing the park, affecting both natural resources and visitor experience.

Jim earned bachelor's and master's degrees in Forestry from Southern Illinois University. His association with the park began in 1984 where he made 75 cents per hour studying back country visitor use impacts on the Appalachian Trail. He then served as a Social Science Research Technician for two years, performing various visitor use and socio-economic research studies. Jim now oversees air quality and visibility monitoring operations, including coordinating the operation of a variety of monitoring instruments that are dispersed throughout the park.

His enthusiasm has radiated throughout his career at Great Smokies and is seen in the variety of functions he carries out. In addition to ensuring the air quality program is running smoothly, Jim dives into research studies centered around park and personal interests, including numerous ozone effects studies on native plant species. He also represents the park on air quality policy-related matters and informs and educates the public about air quality issues important to the region. Jim works with numerous groups (governmental agencies, academic groups, private businesses, and other public agencies) who are trying to fill the air quality knowledge gap.

"My primary responsibilities are to coordinate, supervise, and maintain the air quality monitoring and research program at the park," says Jim. "The air quality program continues to grow and expand, and the work products generated provides critical information for managers and policy-makers." Married to a storyteller/naturalist and former park ranger, Jim's delight in roaming the park is also apparent in their three-year-old son, Jacob, who has covered over 600 miles of park trails.

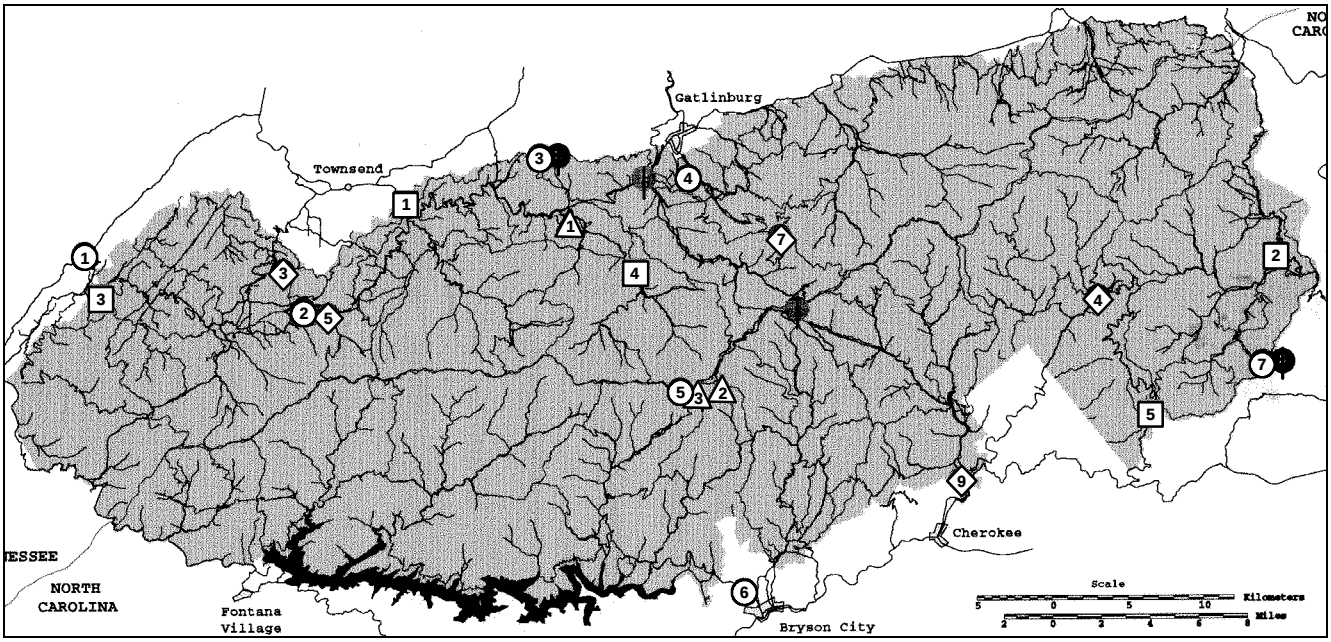
Air quality-related programs in Great Smokies include: visibility, ambient air quality, acid deposition, water quality, and vegetation studies. It is one of the most intensely studied areas in the eastern U.S., as illustrated in Figure 2. Special studies have also focused on specific resource issues. For example, during Summer 1995, the Look Rock area was home to the Southeastern Aerosol and Visibility Study (SEAVS). The study's purpose was to enhance the understanding of fine particle characteristics and visibility under humid, summer conditions in the south-eastern U.S.

The National Park Service also is interested in the Southern Appalachian Mountains Initiative (SAMI). Formed in 1992, SAMI is a regional effort to manage air pollution problems affecting class I areas of the Southern Appalachian region, including Great Smoky Mountains National Park. Jim serves on several of SAMI's committees.

With increasing awareness and concern over environmental issues from the public and government alike, Jim's role is sure to become yet more diverse in an effort to preserve, protect, and enhance what Great Smoky Mountains National Park was established to protect, and to ensure that it will offer the same in years to come.

Jim Renfro, Air Resource Specialist, pictured atop the air quality station at Look Rock, in the Great Smoky Mountains National Park, Tennessee.

Great Smoky Mountains National Park Air and Water Quality Monitoring Sites



△ **Atmospheric Deposition Sites**
1. Elkmont (2,100') - NADP Site (pH, conductivity, and wet chemistry)
2. Noland Divide Watershed (5,700') - (acid deposition to aquatic and terrestrial resources)
3. Clingmans Dome (6,660') - EPA Site (wet, dry, and cloud chemistry)

◇ **Weather Stations**
1. Cove Mountain (4,150') - NOAA Meteorology
2. The Purchase (4,900') - NOAA Meteorology
3. Indian Grave (2,600') - RAWS Meteorology
4. Cherokee (3,380') - RAWS Meteorology
5. Cades Cove (1,850') - NPS Temperature and Precipitation
6. Park Headquarters (1,500') - NPS Temperature and Precipitation
7. Mt. LeConte (6,500') - NPS Temperature and Precipitation
8. Newfound Gap (5,040') - NPS Temperature and Precipitation
9. Oconaluftee (2,100') - NPS Temperature and Precipitation

○ **Air Quality Monitoring Stations (NPS, TVA, TN, and NC)**
1. Look Rock (2,700') - O_3, Visibility (camera, nephelometer, IMPROVE) and Meteorology
2. Cades Cove (1,850') - O_3 and Meteorology
3. Cove Mountain (4,150') - O_3, SO_2, CO, NO-NOy, Hydrocarbons, and Meteorology
4. Twin Creeks (1,970') - O_3
5. Clingmans Dome (6,670') - O_3 and Meteorology
6. Bryson City (1,900') - O_3, SO_2 and PM-10
7. The Purchase (4,900') - O_3 and Meteorology

□ **Hydrology/Water Quality**
1. Little River (1,120') - USGS Benchmark Hydrologic (discharge)
2. Cataloochee River (2,470') - USGS Benchmark Hydrologic (discharge)
3. Abrams Creek (1,110') - Water Quality (pH, conductivity, temperature, depth, and dissolved O_2)
4. Little River (2,640') - Water Quality (pH, conductivity, temperature, depth, and dissolved O_2)
5. Bunches Creek (4,560') - Water Quality (pH, conductivity, temperature, depth, and dissolved O_2)

Figure 2. Map detailing air quality monitoring locations operating within Great Smoky Mountains National Park.

***Special Studies** continued from page 1...*

California Regional PM10 Air Quality Study

As part of the California Regional PM10 Air Quality Study (CRPAQS), several field monitoring studies are being conducted. These studies are designed to provide information to better plan a long-term program, as well as to provide enhanced interim data.

From November 1, 1995 through January 6, 1996, daily monitoring using portable PM10 monitors was conducted in the San Joaquin Valley, in south-central California. Monitoring was conducted at numerous sites to monitor conditions typical of fall and winter PM10 exceedances.

Surface meteorological and upper air data were also collected at a number of sites. Data will be submitted by the end of March 1996. For further information contact:

Karen Magliano or Andrew Ranzieri
California Air Resources Board
Telephone: 916/324-4069

Northern Front Range Air Quality Study

To seek continuing progress in the assessment and mitigation of air quality along the Northern Front Range, the Colorado Legislature adopted House Bill 95-1345 during the 1995 session authorizing the Northern Front Range Air Quality Study (NFRAQS). On October 30, 1995, the NFRAQS Technical Advisory Panel recommended that climatologically representative aerosol and optical measurements of air quality in the Greater Denver Area be made at one base monitoring location during Winter 1995-96. These measurements, when combined with an array of surface and upper air meteorological observations to be collected by NOAA, could be used to help design a more intensive monitoring program to fully meet the requirements of House Bill 95-1345.

An aerosol/optical monitoring contract was awarded in early January and intensive monitoring will be conducted from mid-January through February 1996 at one site in northeast Denver. For more information contact:

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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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