

Through a cooperative effort, identify and recommend reasonable measures to remedy existing and to prevent future adverse effects from human-induced air pollution on air quality related values (AQRVs) of the Southern Appalachians, primarily those of Class 1 parks and wilderness areas, weighing the environmental and socioeconomic implications of any

## VISIBILITY IN THE SOUTHERN APPALACHIAN MOUNTAINS

### **WHAT IS VISIBILITY?**

**Visibility is frequently thought of in terms of the greatest distance that one can see landscape features. However, it is more than distance. Visibility also means the clarity of the air through which landscape features are viewed and appreciated. As visibility is reduced, colors appear washed out and less vivid, and geologic features become less discernible, or may disappear altogether.**



### **WHY IS VISIBILITY IMPORTANT?**

**Good visibility in scenic areas of the Southern Appalachian Mountains has many aesthetic and economic benefits. The vistas of the Class I federal areas (large national parks and some wilderness areas) and many other areas throughout our mountain region are treasured by tourists and nearby residents alike.**

**Visibility in these areas, including our nation's most visited national park -- Great Smoky Mountains National Park, is seriously degraded. The visibility impairment typically manifests itself as a uniform haze that reduces visibility in every direction. Because of the value placed on good visibility, Congress declared, in 1977, as a national goal "... the prevention of any future, and the remedying of any existing, impairment of visibility in mandatory Class I federal areas which impairment results from manmade air pollution." To move toward this national goal, state regulations and implementation plans must "... contain such emission limits, schedules of compliance and other measures as may be necessary to make reasonable progress toward meeting the national goal ..."** (See Section 169 of the Clean Air Act.)

### **BUT AREN'T THE SMOKY MOUNTAINS SUPPOSED TO BE HAZY?**

**In the Southern Appalachians, blue haze caused by water vapor and natural compounds emitted by trees and other natural airborne materials is normal. This Great Smoky and Blue Ridge Mountains get their names from the blue haze and misty clouds common to this area. However, the haze that often covers the mountains today is not natural. Manmade haze is usually dominated by small airborne particles and is white or grayish in color.**

### **SOUTHERN APPALACHIAN MOUNTAINS INITIATIVE**

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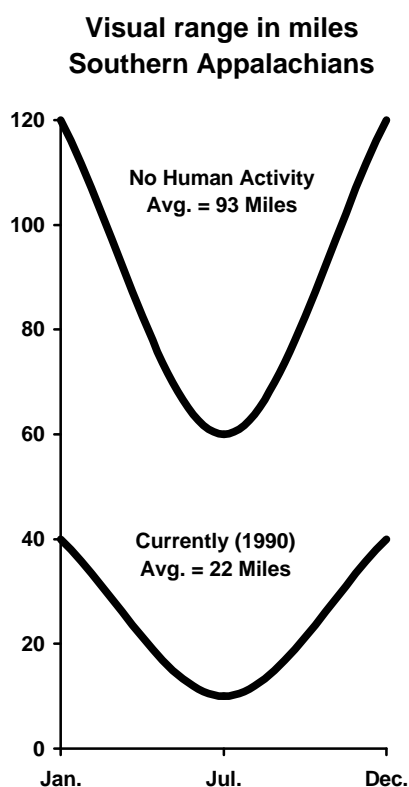
**Sulfates, organics, nitrates, carbon and dust particles reduce visibility by scattering or absorbing light. Today, visibility impairment in the Southern Appalachian Mountains region is largely the result of elevated levels of sulfates, which account for about two-thirds of the visibility loss. In the eastern United States, about three-fourths of the sulfates result from coal-fired power plants, while organics and nitrates come mostly from automobiles, certain industrial sources, and livestock feedlots. Carbon particles come primarily from burning wood and diesel fuel combustion.**

Scientists measure visibility in several ways:

- ◆ Visual Observation
- ◆ Photography
- ◆ Optical Instruments (measure how particles and gases scatter and absorb light)

### **WHAT ARE THE HISTORIC TRENDS IN VISIBILITY?**

**Since 1948, when the first reliable records of visibility were collected from regional airports, visual range has decreased in the Southern Appalachians and surrounding regions. Average annual visual range in the Southern Appalachians has decreased from a distance of 93 miles to the current average of 22 miles due to human activity. Visibility degradation is severe throughout the year, with the summer season somewhat worse.**



### **WHAT IS BEING DONE TO IMPROVE VISIBILITY IN THE SOUTHERN APPALACHIANS AND HOW MUCH WILL IT HELP?**

**The Clean Air Act Amendments of 1990 will reduce the emissions that contribute to degraded visibility. The best available estimates indicate that these emission reductions will increase average annual visibility in the Southern Appalachians from the current 22 miles to about 28 miles by 2010. Average summer visibility will increase from 12 miles to 15 miles.**

**In addition, the U.S. Environmental Protection Agency is currently developing a regional haze program to address the many sources of visibility impairment. This program will track progress and will benefit from continued scientific research on fine particles and visibility.**

### **WHAT IS SAMI DOING ABOUT VISIBILITY IMPAIRMENT?**

**Because visibility impairing pollutants travel across state boundaries, air quality management can best be addressed by a regional approach. The Southern Appalachian Mountains Initiative (SAMI) is working to:**

- ◆ **Build broad-based consensus and support for a regional air quality management strategy that will improve visibility conditions and other air pollution problems in the Southern Appalachians.**
- ◆ **Determine to what extent the implementation of the 1990 Clean Air Act Amendments will meet the national goal of reasonable progress toward reducing manmade visibility impairment, and recommend appropriate additional action(s), if necessary, to meet that goal.**
- ◆ **Produce a technical report that summarizes our current understanding of impacts on visibility and identifies gaps in that understanding.**

**The technical information in this fact sheet was obtained from the following sources:**

**Trijonis, J. et al. 1990. Visibility: Existing and Historical Conditions -- Causes and Effects, State of the Science/Technology Report 24, Volume III of the NAPAP, Washington, D.C.**

**Husar, R. B. 1988. Trends of Seasonal Haze and Sulfur Emissions over the Eastern United States. EPA 600/S3-89/062. Atmospheric Research and Exposure Assessment Laboratory, US EPA, Research Triangle Park, NC.**

**Stoeckenius, T., M. Pitchford and R. Dennis, 1993. Effects of the 1990 Clean Air Act Amendments on Visibility in Class I Areas: An EPA Report to Congress, EPA-452/R-93-014. Research Triangle Park, NC**

**If You Would like More Information about Visibility or SAMI, Please Call or Write the SAMI Office.**

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