

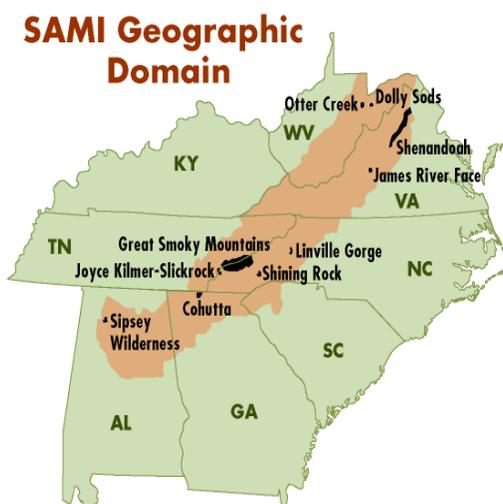
# SOUTHERN APPALACHIAN MOUNTAINS INITIATIVE

(MAY 2002)

## MISSION

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

## KEY FINDINGS AND CONCLUSIONS



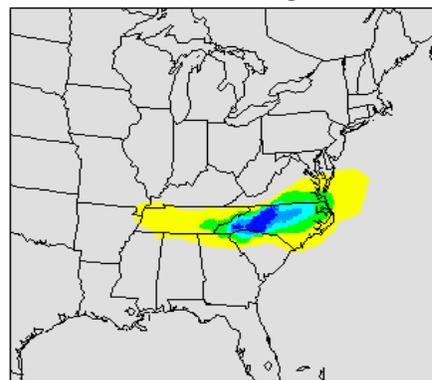
1. Sulfur dioxide, nitrogen oxides, volatile organic compounds and ammonia are the predominant emissions contributing to ozone, to the fine particles that cause haze, and to acid deposition. Coal-fired electric utility plants are the largest source of sulfur dioxide. Highway vehicles and utilities are the largest sources of nitrogen oxides, highway vehicles are the largest human sources of volatile organic compounds, and agricultural sources are the largest contributors to ammonia gas.

2. Sulfate (from sulfur dioxide) is the largest contributor to fine particles that impair visibility. Sulfur dioxide emissions reductions must be made to improve visibility. Reductions in ammonia will be beneficial for improving visibility, under some sulfur dioxide control strategies.

3. The highest acid deposition occurs in West Virginia and along the North Carolina-Tennessee border at high elevations. Sulfate deposition decreased under all SAMI strategies but nitrate deposition decreases were partly offset by ammonia deposition increases. Sulfur dioxide reductions under the 1990 acid rain controls are not sufficient to prevent sensitive streams from acidifying. Many streams improve with the most stringent SAMI strategy but few change to a different fish habitat class. To reduce acid deposition affecting some streams in the SAMI region, sulfur dioxide emissions reductions must be made.

4. High elevation spruce-fir forests are most at risk from acid deposition. Large reductions in nitrogen deposition generated by nitrogen oxide and ammonia sources inside and outside the SAMI region will be needed to reduce nitrogen saturation effects in these sensitive forests. Most forests in the SAMI region are not at risk from nitrogen saturation.

5. Ozone exposures are greater for forests growing on ridge-tops than for forests growing in valleys. Growth of most forest stands will not change in response to the SAMI strategies, and tree death is not anticipated even without additional emissions reductions. Small changes in the abundance of individual tree species within forest stands may occur. While probably not a region-wide concern, nitrogen oxide emissions reductions may be important to reduce ozone effects to certain species in specific locations.



An example of the relative benefit of controlling sulfur dioxide in an individual state.

6. Each state benefits most from emissions reductions that occur in that state, as shown by the example above for North Carolina with the weather patterns that occurred on July 15, 1995. Dark blue indicates the highest sulfate reductions. Each state will also benefit from emissions reductions in surrounding states. The SAMI region will benefit from emissions reductions in the Midwest, Central and Northeastern regions

7. For SAMI to accomplish its mission, emissions reductions are essential within each member state as well as outside the region.

### **ACCOMPLISHMENTS**

1. A voluntary, consensus-based organization composed of a variety of stakeholders investigated a complex environmental topic. Using conclusions drawn from this analysis, SAMI recommended actions to address air quality problems in the Southern Appalachian Class I parks and wilderness areas.

2. SAMI successfully applied an integrated, one-atmosphere model that addressed fine particles, ozone, and acid deposition simultaneously. Previous studies addressed these topics separately.

3. SAMI identified the states and regions contributing to the air quality impacts on Class I national parks and wilderness areas in the Southern Appalachians.

4. SAMI projected future changes in air quality and estimated the effect of those changes on streams, forests and visibility.

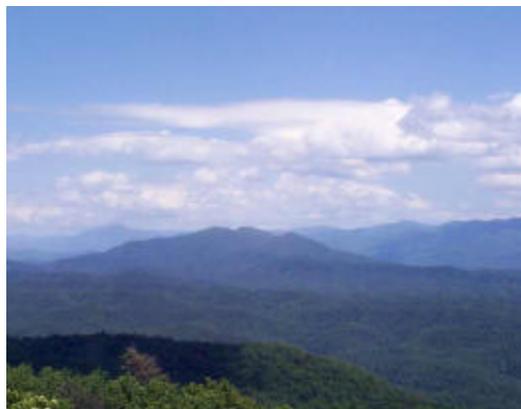
### **SAMI RECOMMENDATIONS**

The SAMI states support and will promote strong national multi-pollutant legislation for electric utility plants to assure significant sulfur dioxide and nitrogen oxides reductions both in and outside the SAMI region. This national multi-pollutant legislation should result in no less than the reductions for sulfur dioxide and for nitrogen oxides represented by the Administration's Clear Skies Initiative. Reductions from other source categories should also be considered in national legislation, and such national legislation should contain sufficient measures to protect Class I areas. Should the national legislation fail to materialize, the states that participated in SAMI will work together to consider regulatory alternatives and to encourage non-SAMI states to participate. Leadership by states ahead of national legislation is encouraged.

Each SAMI State should seek ways to reduce ammonia emissions from animal feeding operations. Also support should be given in future work such as VISTAS to improve the understanding of the sources of ammonia, to develop better inventories, and to seek more effective control approaches.

Where States have control strategy option choices in their eight hour ozone and fine particle State Implementation Plans, that also have co-benefit for the environmentally sensitive Class I areas, they should choose them. Ambient ozone monitoring should be conducted near all Class I areas in the future.

Each SAMI state should encourage energy efficiency, conservation, and use of renewable energy to reduce the emissions from stationary and mobile sources.



Look Rock in the Great Smoky Mountains National Park

For more information: [www.saminet.org](http://www.saminet.org) The final report is due in August 2002.