

Southeast Regional Impacts

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[Editor Note: The photos referred to in the text were not available]

I am just going to show a very few slides that will simply illustrate that the southern United States has yet continuing concern about visibility effects. We have continuing concerns about acidification effects. We have a growing concern about eutrophication effects. These effects are leading to both industrial and public interest in these matters.

This is a picture taken from the summit of Mt. Mitchell, which one might envision was one of the more remote parts, since it is the highest elevation location in the eastern part of our continent.

The chemistry of the air that you can see at the top there, where it is brown, this is near the Blue Ridge Parkway, but we might reconsider its name these days. It is more commonly brown.

The chemistry of that layer of the air is roughly what you might find over Philadelphia. That is not a natural circumstance.

This is a condition in Raleigh, North Carolina, where white pines continue to suffer from ozone exposure. My wife told me last night that we have a serious ozone problem in the central part of North Carolina yesterday, and I expect we have one today as well.

This is what the forest looks like near the summit of Mt. Mitchell. It is not true that all of that is due to acid deposition or to acid water, but is from a combination of stresses that include a nematode that is unique to these high elevation forests. It includes very cold circumstances. It includes wind damage and ice freezing and so on.

Among the contributing factors are continuing high exposures to ozone concentrations and, at this elevation, those occur 24 hours a day under appropriate summer conditions.

This is the picture of our state flower. The dogwood is a much appreciated part of our landscape. The four blossoms that you see to the right received acid precipitation before being infected with an anthracnose organism. Those at

the left did not receive simulated acid precipitation. This is from the work of Robert Anderson.

Rich showed some pictures of what Boston looks like and I would like to show you some pictures from the Blue Ridge Parkway.

This is the sign of the Blue Ridge Parkway. Actually, many of you may have seen these slides. They were given to me by John Skilly(sic).

The Peaks of Otter is a very special place along the Blue Ridge. The Park Service has somewhat exaggerated the steepness of the slopes of the Peaks of Otter, but that is not what I am wishing to call to your attention.

This is what they really look like when there are two parts per hundred billion in the atmosphere. This is what they look like when they are 10. This is what they look like when there are 16 parts per hundred billion of oxidants in the atmosphere.

It may not matter if you are there on your honeymoon, but on the other hand, if you go back later at other times, indeed, it may matter to you more.

The south is not out of the woods yet. I should tell an interesting story. Many of you know that I lead the southern oxidants study, and my predecessor in the leadership of that organization was a man named C.S. Cleone (sic).

Among the very, very important things that he tried to do was increase concern about acid deposition and ozone exposures and particulate matter exposures in this part of our region.

I don't know how many of you know C.S. Cleone, but he came to this country in 1957, and he likes to tell this story.

I came to this country in 1957 and I heard about this civil war. I also heard that it ended in 1865. I looked up recently the amounts of federal investment in scientific research in the different states and I found the state of New York, the State of California and the state of Massachusetts each were receiving more than the combined investment of the Federal Government in research in the 14 southern states. I wondered if the war was over.

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I would like to end with the suggestion that all of us in this room are recognizing that we have a long ways to go if we are going to manage air quality in this country or in Canada or, for that matter, learn enough to help others in other parts of the world to manage it more wisely.

We must continue to make significant investments in research, both in those 14 southern states, and in the rest of the country, even in New York and California and Massachusetts.

QUESTIONS

AUDIENCE: I come from Virginia myself in the mountains, and I am curious to know how much of that is long-range transport and how much of that is coming from downwind, upwind, whatever, nearby states.

MR. COWLING: It comes from west of us, of course, but we are a substantial contributor to our own pollution. We had some discussion earlier about ammonia emissions. The ammonia emissions of the state of North Carolina now exceed the NO_x emissions of the state of North Carolina.

That is based on an assumption that cars produce only six percent. The current best evidence would suggest that it is probably 13 percent of the total ammonia emissions are from automobiles in North Carolina, instead of the six that the state has included.

I think we certainly are a downwind state from those west, and those of you who have looked up the emission statistics will recognize that Tennessee is a big emitter state and not so big as North Carolina.

We are all in this together, and I think that is one of the most important things we must understand. No state can do an effective job of managing its own air quality. No province in Canada can do it either.

We will have to undertake to consider the values our society wants to have from our landscapes and from our scenic vistas and from our trout streams and so on, and we will have to make more effective use of science in making those decisions.

I think North Carolina must do its part, together with many other states, if we are to improve air quality in my state or in other parts of the southern United States.

Question: (Inaudible)

MR. COWLING: I will repeat the question. To what extent does acid rain predispose flowering dogwood to anthracnose.

I think the experiment that Bob Anderson has done, he has done under controlled circumstances. At least under those simulated conditions, it is pretty clear we have a modest epidemic of dogwood anthracnose developing in our state.

We presume that the acidifying effects are a part of the predisposition that may lead to this episode. We do not know how much genetic variability we have in the populations of dogwood.

Among the things that we would like to know is not that the whole species is threatened, but perhaps some are, and we will need to do further investigations if we are to protect our state flower.