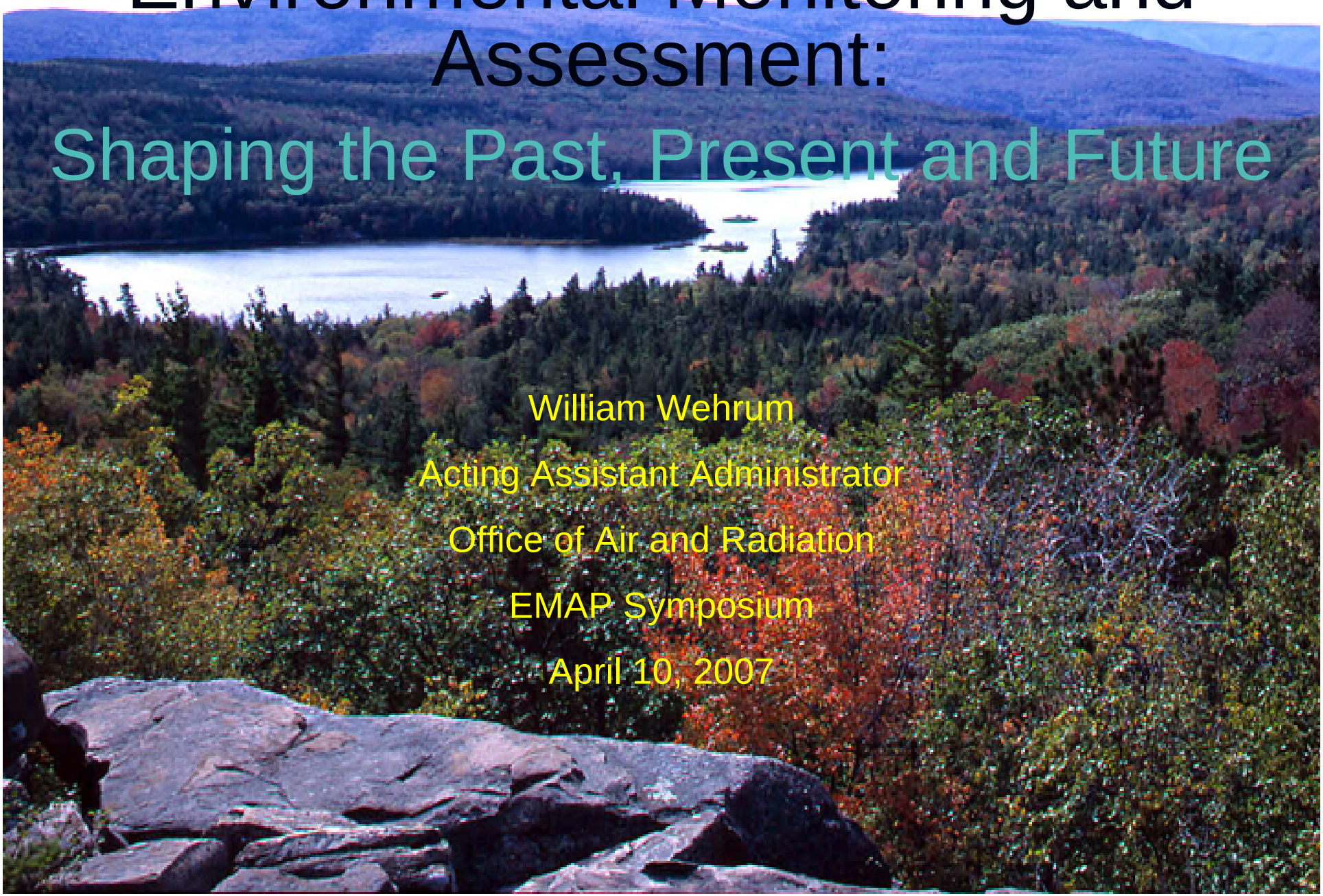
Environmental Monitoring and Assessment:

Shaping the Past, Present and Future



William Wehrum

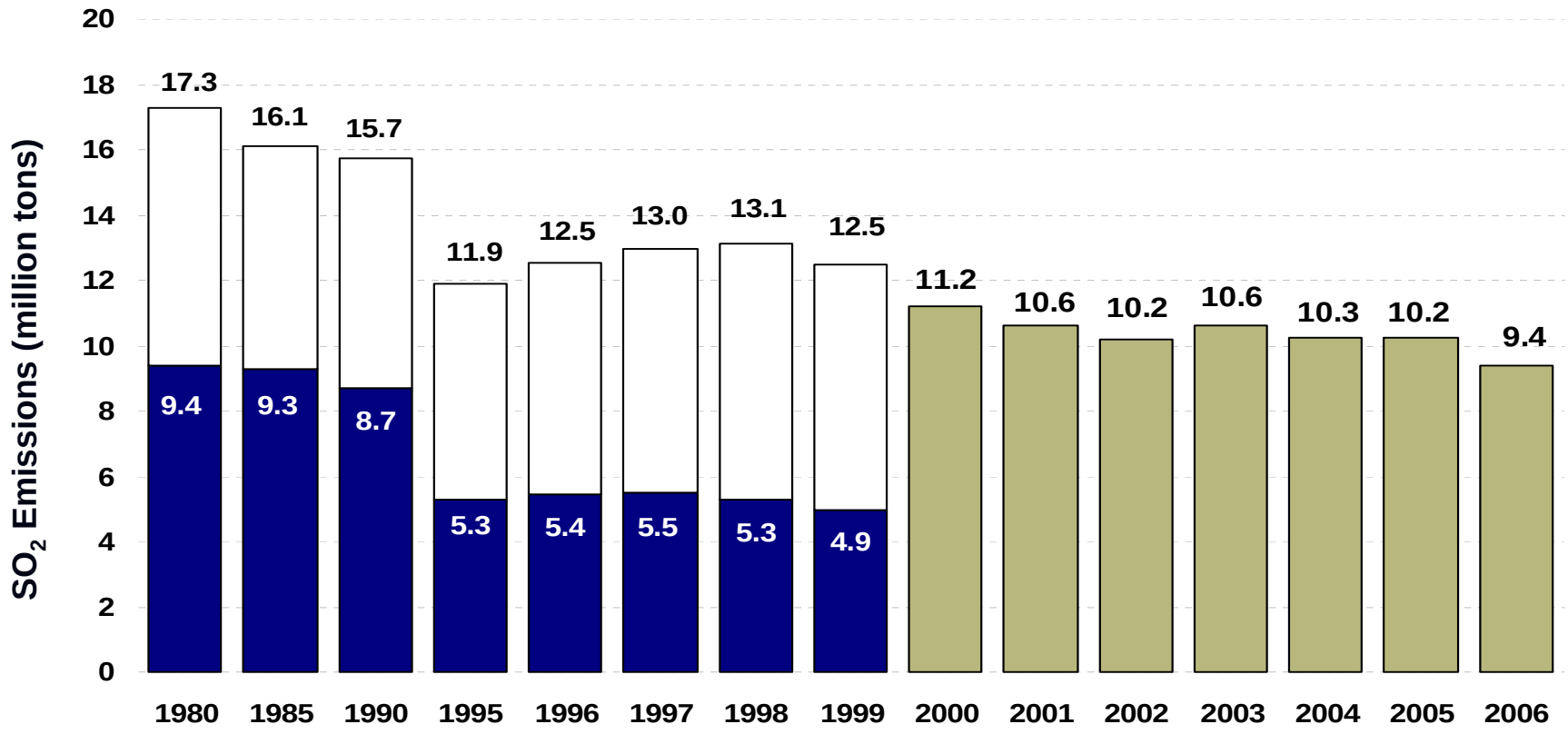
Acting Assistant Administrator

Office of Air and Radiation

EMAP Symposium

April 10, 2007

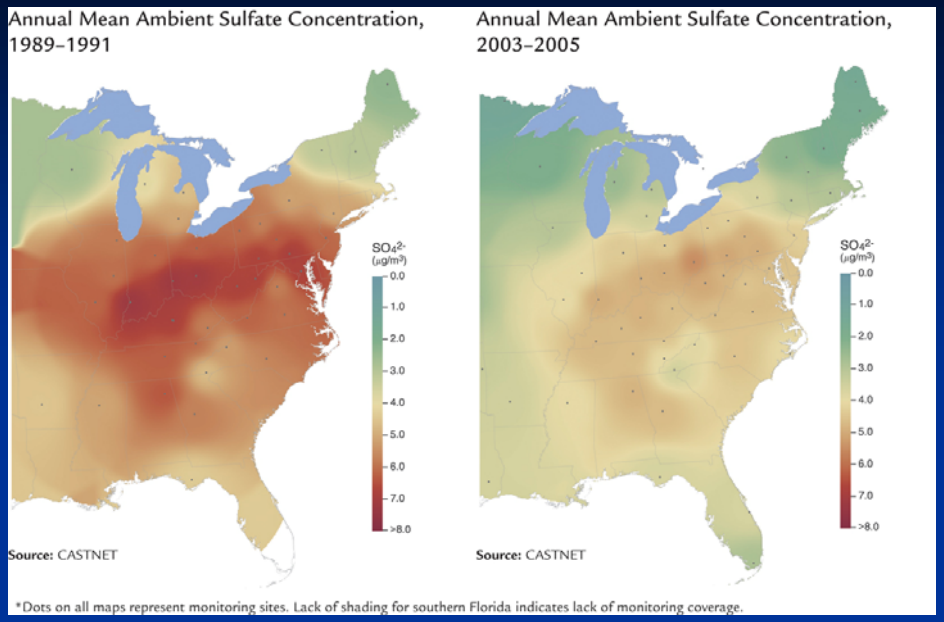
Acid Rain Program SO_2 Emissions 1980 - 2006



Note: Data for 2006 are preliminary and will be final Summer 2007

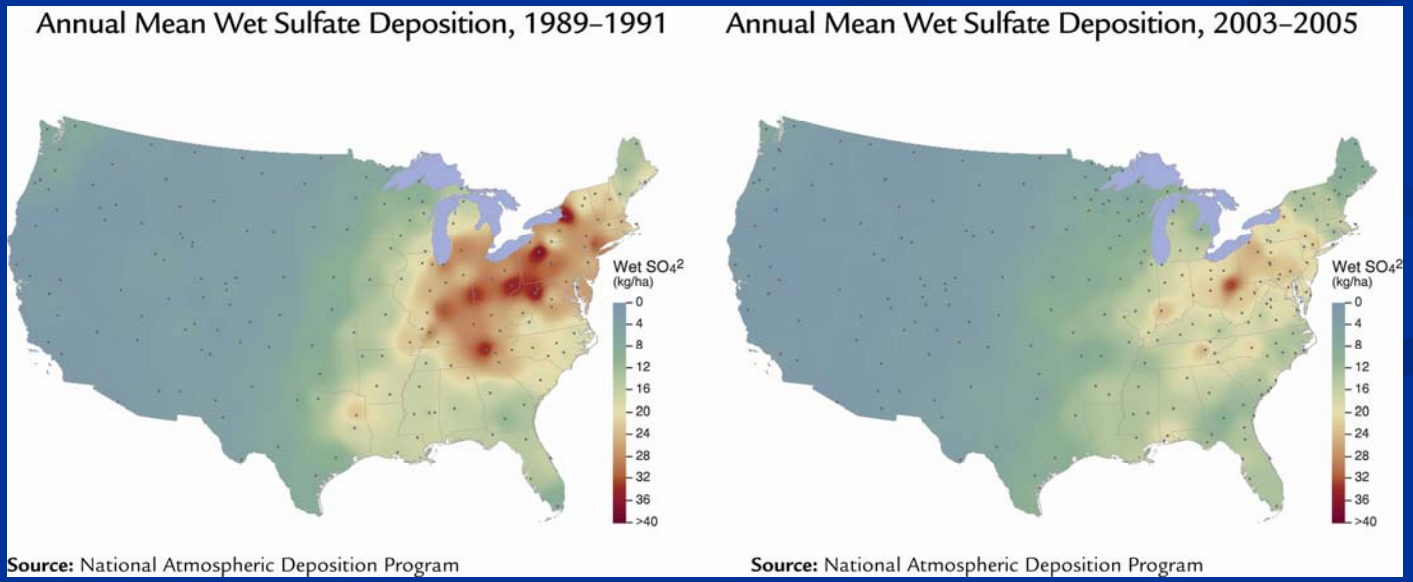
Monitored Reductions in Ambient Sulfate Concentrations

CASTNET



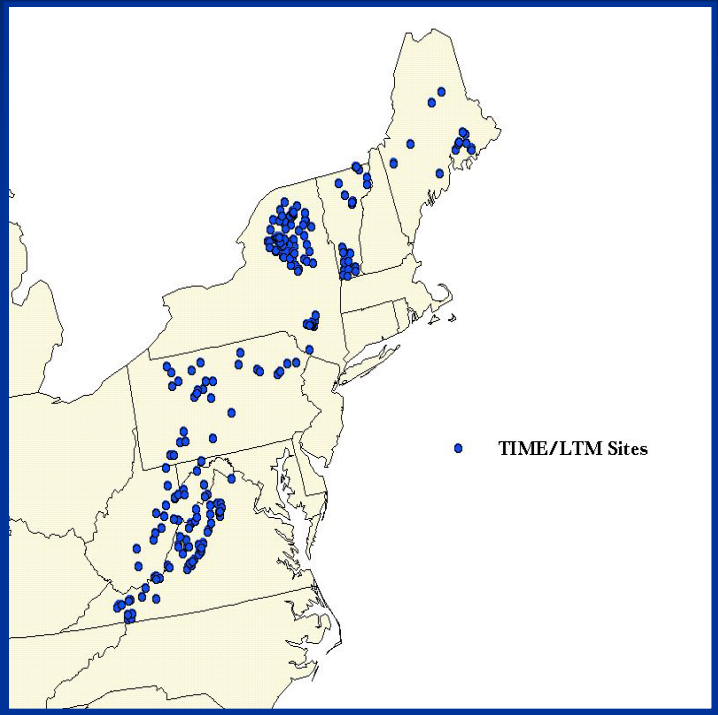
Monitored Reductions Wet Inorganic Sulfate Deposition

NADP

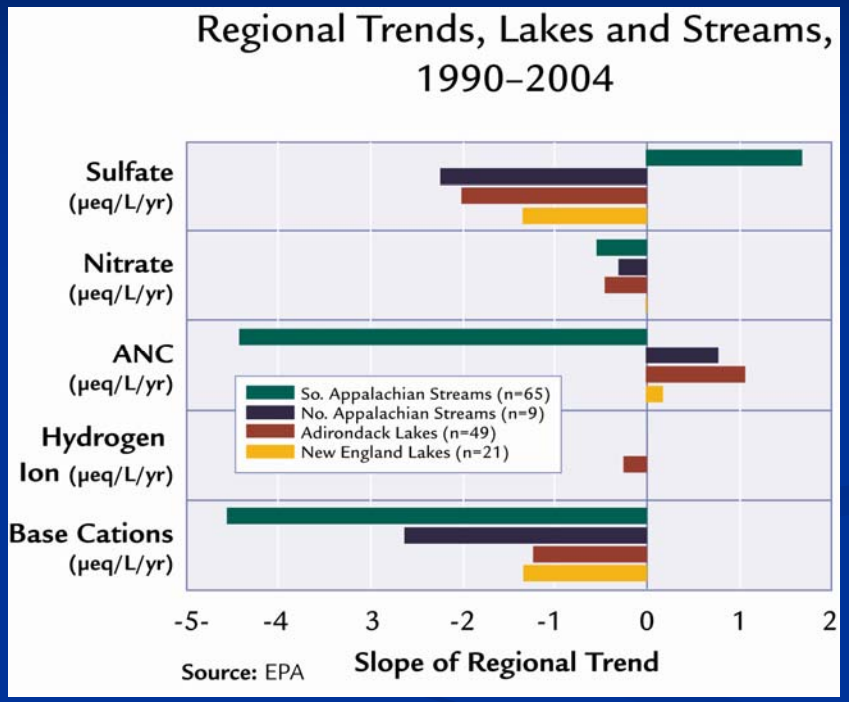


What are the Impacts of Deposition Changes on Ecosystems: Long-term Surface Water Monitoring Chemistry Trends

TIME/LTM (Surface Water Monitoring)



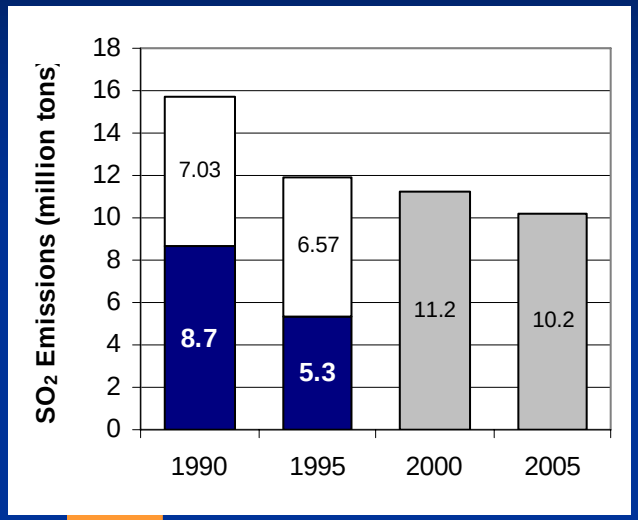
Regional Trends in Lakes and Streams Acidity, 1990-2004



- Regional declines in surface water sulfate can be directly linked to declines in emissions and deposition of sulfur
- In three regions, one-quarter to one-third of lakes and streams previously affected by acid rain are no longer acidic
- Regional Acid Neutralizing Capacity (ANC), a key indicator of recovery, did not change significantly in New England or in Blue Ridge streams
- Surface water nitrate concentrations are largely unchanged except in Adirondacks and Northern Appalachian Plateau

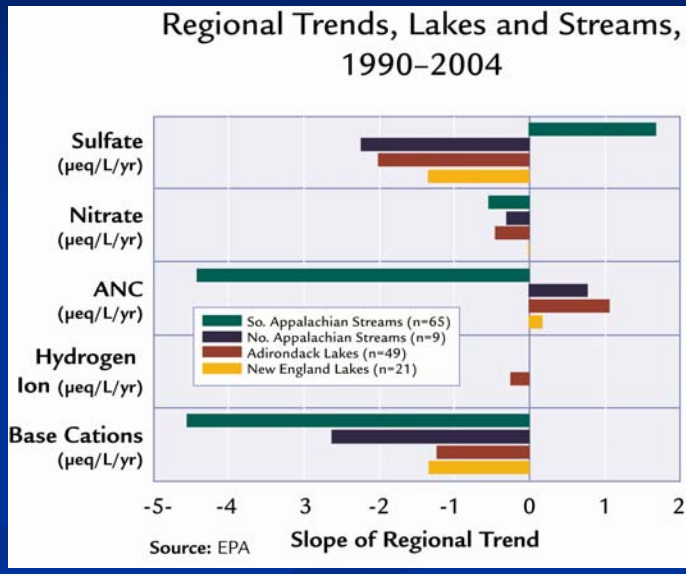
Putting it All Together: The Acid Rain Example

SO_2 Emissions Under the ARP

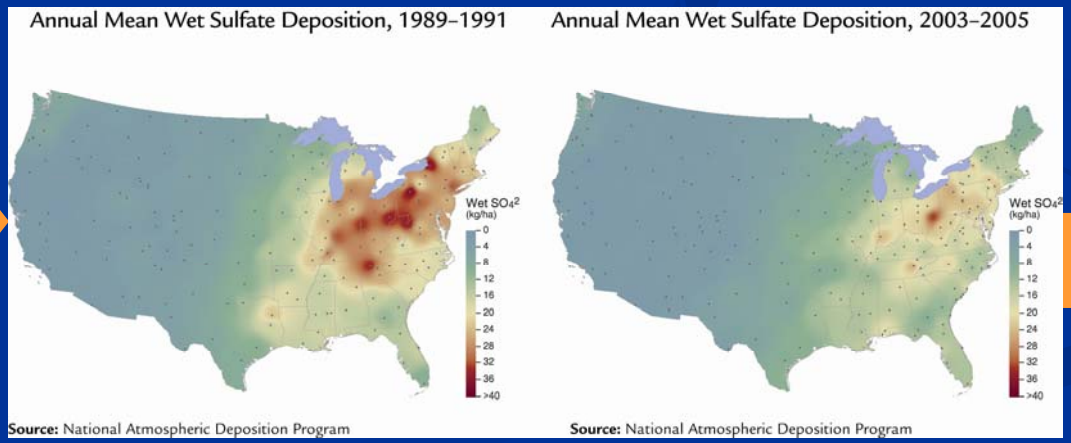


Assessing Environmental Change Over Time and Space to Demonstrate Program Effectiveness

Acid Lake Response



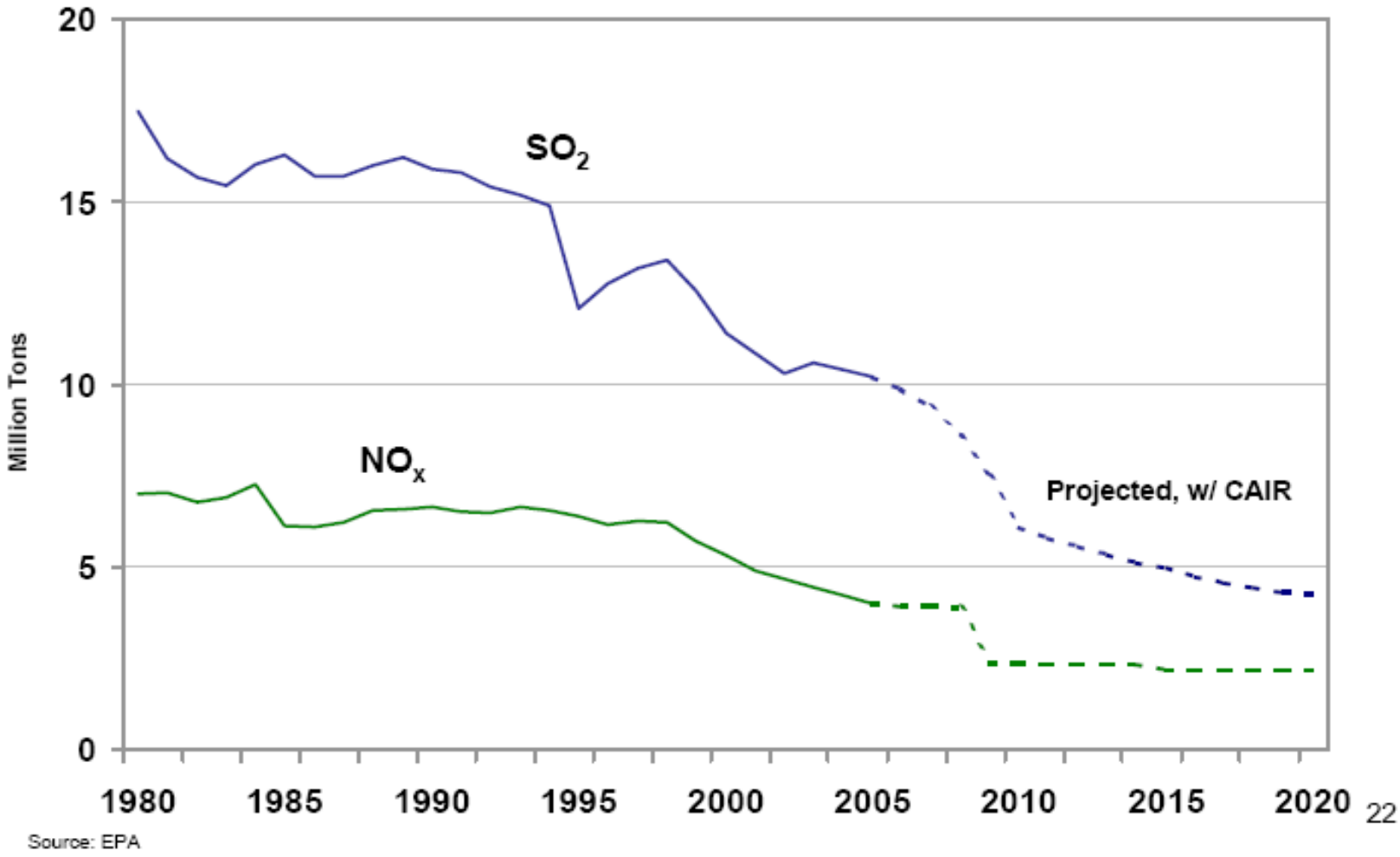
Wet Sulfate Deposition



1989-1991

2003-2005

Nationwide SO_2 and NO_X Emissions from the Power Sector



Projected Change in Sulfur Deposition with CAIR/CAMR/CAVR Acid Sensitive Ecosystems