

# A Multi-Agency Critical Loads Process for the Northeast U.S.

*A framework for multi-pollutant planning*

Gary Kleiman

NADP Fall Meeting

Boulder, CO • September 12, 2007



# Presentation Outline

- Motivation for Multi-P Context
- New England Governors/Eastern Canadian Premieres Process and Products
- Uses in the Region
- Renewed Interest in Acid Deposition
- Multi-Agency Process

# Air Quality Management Issues

- Acid Deposition
- Mercury Deposition
- Fine Particles (Health & Visibility)
- Ozone
- Air Toxics
- Climate

Requires 10  
Or more SIPs!

# Multi-Pollutant Planning

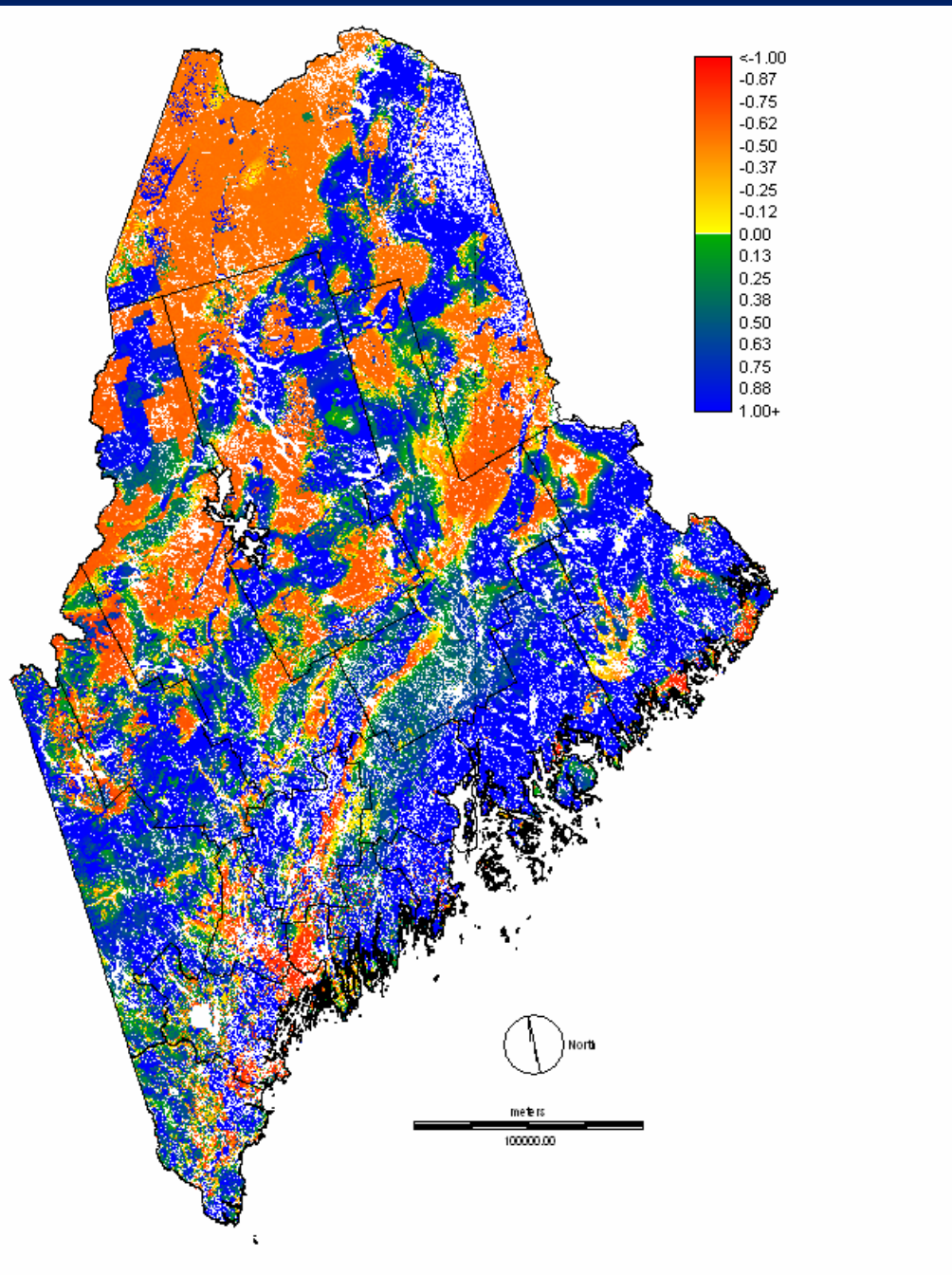
- June 2007: the federal Clean Air Act Advisory Committee recommended that governments adopt a comprehensive statewide air quality planning process and move from a single to a multiple pollutant approach in managing air quality

# Critical Loads in Multi-P

- Strong analog between multi-p and critical loads (i.e. comprehensive consideration of all interactions and trade-offs)
- The “critical loads” approach to ecosystems management fits well within the “accountability framework” of multi-P
- Multi-p planning requires consideration of multiple pollutants but also multiple effects of a single pollutant (e.g. primary vs. secondary NAAQS)

# NEG/ECP

- The New England Governors and Eastern Canadian Premieres Forest Mapping Working Group established precedent in the U.S. by assessing sensitivity of forests
- Miller, et al. take account of deposition, canopy interaction, plant type/nutrient requirements, harvesting, soil type, etc..
- High spatial resolution (30-m)



# Terrestrial Critical Loads

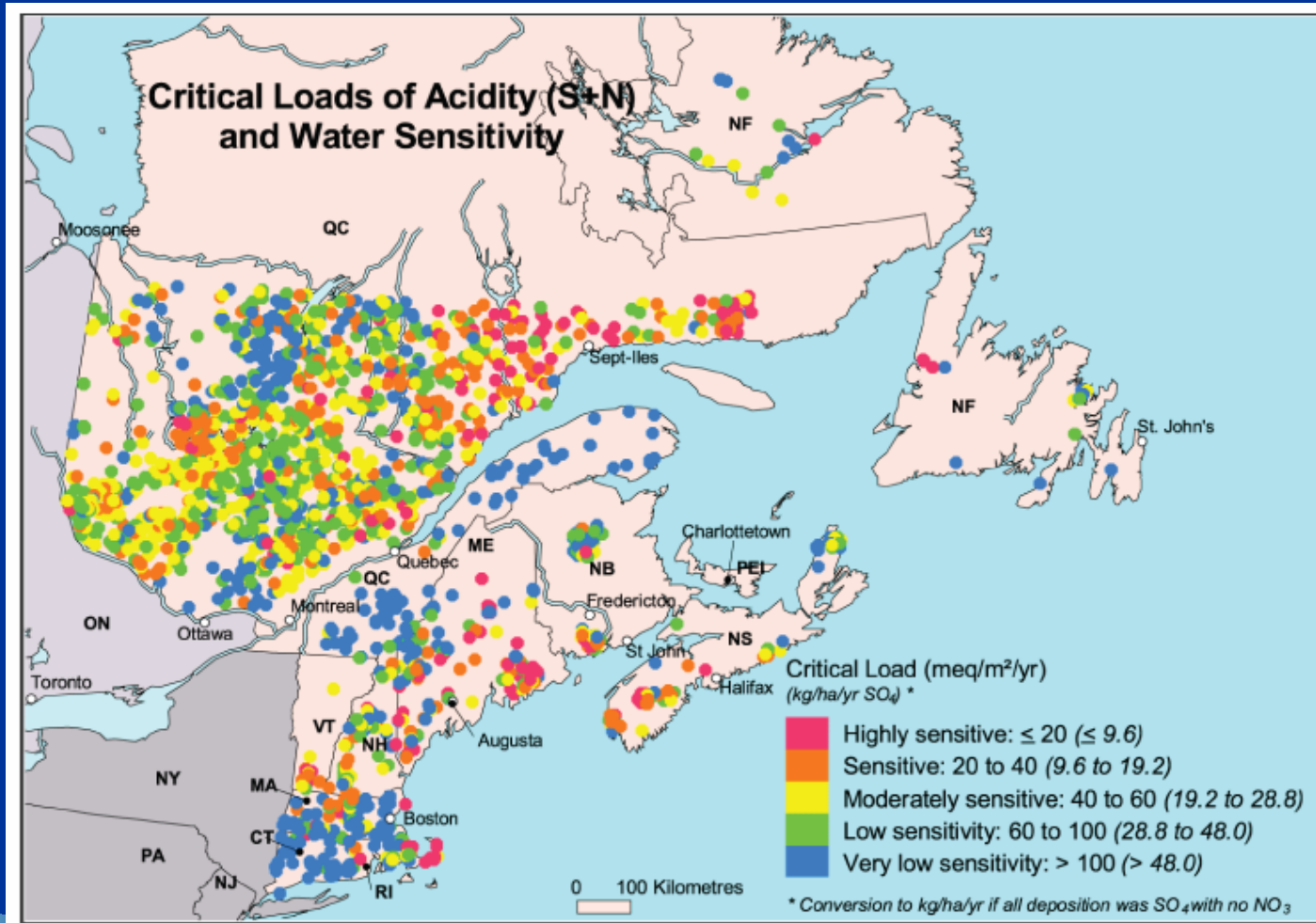
(deposition index:  
<math><0</math> -red/orange/yellow  
means current deposition  
exceeds critical load)

# NEG/ECP II

- Water Monitoring Working Group chose the Steady-State Water Chemistry (SSWC) and applied it to 2053 lakes in the NEG/ECP area
- Dupont, et al. calculated critical loads based on ANC, pre-industrial SO<sub>4</sub> and base cations, and assumption of pH=6 as critical threshold



# Surface Water Critical Loads



# Uses of these products

- NH Fish and Game Department: “Habitats at Risk” Survey
- Environment Canada: Sensitivity to Deposition for PM annex to Canada-U.S. Air Quality Agreement
- MA DEP recommendations for further acid rain research involving critical loads concepts

# Why Revisit the Issue in the Northeast U.S.?

- Recent advances in knowledge
- Availability of NEG-ECP crit. loads maps
- CAIR
- Multi-P planning needs to consider cross-pollutant interactions and tradeoffs

# Multi-Agency Process for Establishing Regional Critical Load

- U.S. EPA, FWS, USFS, USGS, NESCAUM, VA, WV (State air, water, forestry, etc.)
- Engage Stakeholders on project approach
- PIs to provide key sensitivities and decision points
- Conference calls and meetings to develop consensus approach and provide results
- Clear documentation as decisions are made

# Objective

- Agreement on scientific foundation and approach for the calculation of terrestrial and aquatic critical loads consistently across the region can serve as the basis for future management frameworks to address ecosystems that are achieving target loads

# Concluding Thoughts

- In the Northeast U.S., the acid deposition issue is ripe for new approaches that consider multi-pollutant planning and provide accountability at the individual ecosystem level.
- Previous work by the NEG/ECP is showing a way forward that is informing a robust multi-agency process

*Thank You!*

*The Clean Air Association of the Northeast States*

---

The logo for NESCAUM features the word "NESCAUM" in a bold, white, sans-serif font. It is centered between two stylized, wavy lines that resemble a ribbon or a wave, rendered in a light blue color with a gradient effect. The top wave arches over the text, and the bottom wave arches under it.

**NESCAUM**