A Cross-Site Synthesis of Forest Ecosystem Response to Elevated Atmospheric N Deposition. (S07-rustad084957-Oral)

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Abstract:

Forested ecosystems in the northeastern US, eastern Canada, and northern Europe continue to receive elevated inputs of atmospheric N deposition. Few efforts have been made to synthesize research results across these three regions. To address this, a workshop on A Cross Site Synthesis of Forest Ecosystem Response to Elevated Atmospheric N Deposition was held in March 17-20, 2002 in Woods Hole, MA. The objectives of this workshop were to use meta-analysis to synthesize data from 50 N addition experiments to address hypotheses relative to forest ecosystem response to elevated N deposition. Initial results showed significant increases in plant tissue N concentrations, decreases in plant tissue Ca concentrations, and increases in soil solution N and Ca concentrations in response to N additions. These results support the hypotheses that elevated N deposition can (1) alter plant tissue Ca/N ratios, leading to possible detrimental impacts on forest health; (2) increase leaching of N to surface waters, resulting in decreased surface water quality; and (3) increase export of soil Ca, with possible consequences for soil acidification and base cation depletion.

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