
University of Pennsylvania



Institute for Environmental Studies

presents

Yude Pan John L. Hom

Global Change Program, USDA Forest Service

Impacts of Nitrogen Deposition on Forest Carbon Sequestration and Nitrogen Leaching Losses in the Chesapeake Bay Watershed

The Chesapeake Bay Program is continuing efforts to achieve and maintain a 40 percent reduction in nutrient inputs reduction goal agreed to in 1987, focusing on nitrogen losses from different land uses and sources. In the Chesapeake Bay Watershed, forests make up the greatest land use, roughly 56% of the total watershed area (9.5 million ha). To be effective in selecting management options to control nitrogen inputs it is necessary to have accurate estimates of nitrogen deposition in forested watersheds, nitrogen uptake by forest processes, and the nitrogen exports from these forests. This seminar describes how a forest ecosystem model, PnET-CN, was modified to assess the effects of increased nitrogen deposition on forest C accumulation and nitrogen leaching losses in the Chesapeake Bay Watershed. Nitrogen deposition scenarios, including a doubling of current deposition, was developed based on high-resolution, spatially modeled NADP/NTN wet deposition data averaged over ten years (1991-2000). Our results suggests that the chronic N increases over the past 70 years, has increased forest productivity by 20%, forest biomass by 9% and soil organic matter by 19% in the Chesapeake Bay Watershed. The combination of rising N deposition and elevated CO₂ created large C gains in forest biomass (35%) and soil organic matter (25%). The results from our spatial modeling can be used to identify areas of high nitrogen loading and areas sensitive to nitrogen leaching.

Date: Thursday, February 27, 2003

Time: NOON - 1:30 pm

Place: Auditorium at Wistar Institute

On Penn's campus: Spruce Street & Penn's 36th Street Walkway

No Food or Drink Permitted in Auditorium

NO REGISTRATION REQUIRED

Direct questions to:

215-573-3164

ies_penn@sas.upenn.edu

<http://www.sas.upenn.edu/geology/ies>
