Project Summary
Rocky Mountains Cooperative Ecosystem Studies Unit

Project Title: Assessing Ecological and Biogeochemical Responses to Changing Atmospheric Nitrogen and Sulfur Deposition in Rocky Mountain National Park and other Protected Areas
Discipline: Natural Resources
Type of Project: Research
Funding Agency: National Park Service
Other Partners/Cooperators: Colorado State University, USGS, USFS, EPA
Effective Dates: 6/1/2005 - 9/30/2007
Funding Amount: $17,625

Investigators and Agency Representative:
NPS Contact: Tamara Blett, Air Resources Division, National Park Service, PO Box 25287, Denver, Colorado 80225, (303) 969-2011, tamara_blett@nps.gov

Investigator: Jill Baron, Colorado State University, Natural Resource Ecology Laboratory, Fort Collins, CO 80523, Office phone: (970) 491-1968, jill@nrel.colostate.edu

Project Abstract:

CSU researchers will apply a model (DayCent-Chem) that couples ecosystem nutrient cycling and plant dynamics with geochemical equilibrium equations to characterize the effects of nitrogen deposition in park units. Model applications will include ROMO, GRSA, ACAD and JOTR. The researchers will validate ROMO-Loch Vale model runs by simulating additional watersheds in Rocky Mountain National Park and nearby Green Lakes Valley (Niwot Ridge LTER), and further refine, test, and apply the DayCent-Chem model to diverse ecosystems across the United States. Goals include: a) to better understand biogeochemical processes related to atmospheric deposition; b) to forecast responses to changing atmospheric deposition caused by emissions reductions or increases; and c) to assist in the formulation and evaluation of new, innovative ecosystem protection approaches and benchmarks (e.g., formulation of critical loads of atmospheric N and S deposition for assessing nitrogen saturation, acidification or eutrophication of ecosystems). The proposed work will be cooperatively funded over several years by the Environmental Protection Agency, the US Geological Survey, the National Park Service, and the USDA Forest Service.

Outcomes with Completion Dates:

a. Website to describe the model and present data and model output from each participating site. Website established no later than December 2005.
b. Workshop to evaluate model output and synthesize results. January 2006.
c. Quarterly reports describing progress (Sept 05, Jan 06, Apr 06, Aug 06, etc.) and final report summarizing findings (April 07).
d. At least two synthesis papers submitted to a refereed journal, the first describing and comparing biogeochemical and geochemical processes across sites, the second describing responses to deposition scenarios. Anticipated submission by June 06.
e. At least two presentations at professional society meetings (Aug 06 at ESA, December 06 at AGU).

Keywords: nutrient cycle, ecosystem models, atmospheric deposition, nitrogen, sulfur, Rocky Mountain National Park, Colorado State University, Niwot Ridge, Loch Vale

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Date Annual Report Received:
Date Final Report Received:
Publications, etc. on file: