



Daycent-Chem Simulations of Ecological and Biogeochemical Processes of Eight Mountain Ecosystems in the United States: Usgs Scientific Investigations

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Bibliogov, United States, 2011. Paperback. Book Condition: New. 246 x 189 mm. Language: English . Brand New Book ***** Print on Demand *****.Atmospheric deposition of nitrogen (N) and sulfur (S) cause complex responses in ecosystems, from fertilization to forest ecosystem decline, freshwater eutrophication to acidification, loss of soil base cations, and alterations of disturbance regimes. DayCent-Chem, an ecosystem simulation model that combines ecosystem nutrient cycling and plant dynamics with aqueous geochemical equilibrium calculations, was developed to address ecosystem responses to combined atmospheric N and S deposition. It is unique among geochemically-based models in its dynamic biological cycling of N and its daily timestep for investigating ecosystem and surface water chemical response to episodic events. The model was applied to eight mountainous watersheds in the United States. The sites represent a gradient of N deposition across locales, from relatively pristine to N-saturated, and a variety of ecosystem types and climates. Overall, the model performed best in predicting stream chemistry for snowmelt-dominated sites. It was more difficult to predict daily stream chemistry for watersheds with deep soils, high amounts of atmospheric deposition, and a large degree of spatial heterogeneity. DayCent-Chem did well in representing plant and soil carbon and nitrogen pools and...

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