

Preface

This special issue presents the products of three workshops designed to compare differences in nitrogen cycling between tropical and temperate ecosystems across the Americas, as well as differences in how human societies have transformed the nitrogen cycle according to economic, social and cultural characteristics of the diverse countries of the Americas. The first workshop on “N fluxes and processes in tropical and temperate systems” was held in the city of Ubatuba, State of São Paulo, Brazil, in March 2003. From this workshop, a strong consensus developed to form an ongoing “Inter American Nitrogen Network.” Towards this end, two more workshops were held, one in San Juan, Puerto Rico in May 2004, and one in May of 2005 in the city of Brasília, Brazil. This effort to build the Inter American Nitrogen Network is a joint effort of the Latin American Nitrogen Center and the North American Nitrogen Center, two of the five continental-scale regional centers of the International Nitrogen Initiative (INI) created in 2003 by SCOPE and the IGBP. The INI’s main objective is “to optimize nitrogen’s beneficial role in sustainable food production and minimize nitrogen’s negative effects on human health and the environment resulting from food and energy production.” We hope the readers will agree with us that this issue of *Biogeochemistry* is an excellent start for the Inter American Nitrogen Network and the efforts of the INI in the Americas.

The first paper presented in this issue by Martinelli and other participants of the San Juan workshop is an overview of the nitrogen sources across the Americas and how they vary from one region to another. This paper is an introductory paper for a series of six following papers that detailed the nitrogen cycle in different countries or in important sub-regions of these countries. Among these papers, Schindler et al. discuss N-deposition related issues in Canada, followed by Austin et al. who present a nitrogen budget for Argentina, one of the most important regions of cereal production in the world. Filoso et al. for Brazil, Baisre for Cuba and Ortiz for Puerto Rico synthesize quantitative nitrogen assessments for these whole countries, while Borbor et al. restrict their analyses for the most developed watershed in Ecuador. After these country-scale assessments, Howarth et al. and Scavia & Bricker illustrate aspects of the nitrogen cycle in important regions of the USA. Howarth et al. illustrate how climate and human activity interact to regulate the nitrogen export from the major 16 watersheds of the Northeastern USA region, one of the most polluted regions of the country. Scavia & Bricker present a comprehensive approach to problems that the coastal regions of the USA are facing due to the large amount of nitrogen that these key areas receive. The last three papers in the issue are mostly a product of the first

workshop held in Ubatuba and deal more with nitrogen as a key element in natural systems. Bustamante et al. present nitrogen as one of the most important limiting element in savanna ecosystems throughout the world. Huszar et al. analyze nitrogen limitation in tropical lakes in comparison to temperate lakes. Finally, Ometto et al. present a detailed description of the variability of nitrogen and carbon stable isotopes in tropical forests of the Amazon region. We believe this volume represents a significant advancement in our ability to understand natural processes and human perturbations of the nitrogen cycle in both temperate and tropical systems, as well as to recognize several major differences in nitrogen cycling across several countries and regions of the Americas.

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