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EDITORIAL NOTE

The planet Earth is experiencing a strong human influence on its landscape where land use changes and the intense use of energy has shaped the structure and functioning of ecosystems distributed in all regions of the World. One of the most important consequences of such interference, with global implication, is the so called and well defined climatic changes, causing variations in the air temperature and hardly predictable changes in precipitation patterns. Temperature and water are two important drivers to several processes that regulate the structure and the functioning of ecosystems. These drivers may lead to positive or negative feedbacks that will enhance or decrease the amplitude of natural processes responses to climate conditions and to its functioning.

Climate changes effects are predict to happen in Brazil in different intensities and patterns according to the region, probably strongly affecting aquatic and terrestrial ecosystems. The country has one of the highest species richness in the world, hosting some of the world's major rivers (e.g., Amazon, Paraná and São Francisco), and a coastline of about 8,000 km, containing at least seven major estuaries and the entire continental shelf.

A better comprehension about how climate change will affect the Brazilian ecosystems relies on the availability of data and deep knowledge on fluxes and stocks of important elements (e.g., carbon, nitrogen, phosphorus) in different components of the biomes (terrestrial, aquatic, atmosphere). This is a major challenge to the scientific community and requires multidisciplinary effort to collect and synthesize the information, as well bridging acquired knowledge as support for climate changes effects predictions and public policies for mitigation and adaption.

The workshop "Brazilian Biomes and Climate Change: an Ecosystem Ecology Approach", occurred between November 8th – 13th, 2010 in Maresias, State of São Paulo, with forty biogeochemical specialists from thirteen Brazilian universities and five research institutes aimed summarizing the available information about basic functioning of the main Brazilian biomes, inland and coastal waters, and the ocean, including potential effects of climate change on the structure and functioning of these systems. This workshop and the papers published in this special issue is one of the products of the sub-project 3.1.4. Global Biogeochemical Cycles, under the coordination of the Brazilian National Science and Technology Institutes supported by the Conselho Nacional de Desenvolvimento Científico e Tecnológico – CNPq (National Council of Technological and Scientific Development).

Therefore, the contributions in this special issue present the stocks and fluxes of carbon, nitrogen, phosphorus of Brazilian Biomes, discussing the potential effects of changes in air temperature and precipitation in then ecosystems functioning. Discussions concerning rivers watershed biogeochemistry and potential sequestration of CO₂ by agricultural activities are also present. The lack of spatial information drove the analysis to specific regions of each biome, on which information was available. There is a lack of critical information particularly for the Pampas, Pantanal and Caatinga, whilst the Amazon and Cerrado present larger data available and better spatial distribution of the information. Recently intensive studies were developed in the Atlantic Forest, but still concentrated in a few areas. At the same time that this limitation constrains generalization to a particular biome, serves as a warning about the lack of this information at scales consistent with the broad areas of our biomes.

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