



Organic and Inorganic Nitrogen in Amazon and Atlantic Forest: Coupling in aerosol fog water and rain water interactions

L. L. Lara (1), E. Holland (2), P. Artaxo (1), J. Collett (2), Plínio Camargo (3), T. Pauliquevis (4), L. Martinelli (3)

(1) Institute of Physics, University of São Paulo, Brazil (Rua do Matão, Travessa R, 187, 05508-900, São Paulo, S.P., luciene@if.usp.br)

(2) National Center for Atmospheric Research, University of Colorado, USA

(3) CENA, University of São Paulo, Piracicaba, Brazil

(4) INPA, Instituto nacional de Pesquisas da Amazônia. Brazil

In pristine areas biogenic aerosols are critically important component of the ecosystems in tropical and temperate forests. They are a component that regulates radiation balance, cloud condensation nuclei properties and nutrient cycling. We have analyzed results from aerosols, rainwater and fog samplers in different sites at Atlantic Forest in Southern Brazil and in Amazon Basin. Our results include physical properties of aerosol as well as chemical concentration focusing on nitrogen compounds, dissolved organic nitrogen (DON) and inorganic compounds in rainwater, fog and aerosols. The composition of the most of the cloud condensation nuclei (CCN) particles over Amazonia and Atlantic forest is organic, with traces of several important forest nutrients such as phosphorus, potassium, nitrogen and others. Deposition of phosphorus is not well understood, and involves night time emissions of coarse mode phosphorus at forest floor. Deposition of nitrogen compounds is being modified rapidly with land use changes and biomass burning, especially in the arc of deforestation in the Amazon. The DON concentrations have been significantly higher than the inorganic nitrogen compound, suggesting that the first measurements of nitrogen in Brazil could be underestimated. In the Atlantic Forest, fog water could be one of the major processes

of nutrient recycling, mainly nitrogen, to the forest. Aerosol fluxes measurements that are a component of the dry deposition process shows intriguing diurnal emission patterns, and very different features compared with temperate and boreal forests. Wet and dry deposition is also being monitored at several sites and indicates large variations in the nitrogen deposition pattern (DON and inorganic) over the seasons.

Acknowledges: FAPESP, BIOTA/FAPESP, CNPq, LBA/Instituto do Milênio.