

Observations of fluxes and gradients of NO_x and Peroxynitrates: Disentangling Chemical and Physical Mechanisms of Atmosphere- Biosphere Exchange of Oxidized N

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Abstract

Recent laboratory and field studies have highlighted the absence of observational evidence for many commonly held assumptions about atmosphere-biosphere exchange of the oxides of nitrogen, including “canopy reduction factors,” “compensation points,” and the assumption that deposition is dominated by the inorganic nitrate. In this talk I will first describe conclusions from our own field work indicating that within canopy chemistry has important consequences for N exchange rates of NO, NO₂ and peroxynitrates and that these species are important players in the total budget for N exchange. Then I will discuss prospects for improved in situ field studies, analyses of satellite observations and novel laboratory studies that would help address the prevalence of conflicting mechanisms present in current models of atmosphere-biosphere exchange of N.

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