



Ozone deposition in a mixed forest ecosystem – temporal variation and removal processes

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Forests are a major sink for tropospheric ozone, however the fate of ozone within the forest canopy is still not well understood. In this study we will present results of 3 years ozone flux measurements at eddy covariance flux tower in Ispra (Northern Italy) over mixed forest ecosystem. The main tree species in this ecosystem are *Quercus robur* (80%), *Alnus glutinosa* (10%), *Populus alba* (5%) and *Carpinus betulus* (3%). The measurements were carried out continuously from January 2013 till December 2015. Flux measurements at the canopy level with the eddy covariance technique were complemented with measurements of meteorological parameters and measurements of VOCs (Volatile Organic Compounds) using PTR-MS (Proton Transfer Reaction - Mass Spectrometry) during an intensive observation period. Continuous measurements produced a big dataset which allowed us to investigate the controls on ozone fluxes and to do multiyear comparisons.

Patterns of ozone concentration, ozone fluxes and ozone deposition velocity over forest canopy will be presented in relation to physiological activity of the trees and time of the year. Current research is mainly aimed at better understanding of the contribution of destruction processes within the canopy. Therefore, the collected data were used to calculate the partitioning of total ozone fluxes between stomatal and non-stomatal sinks. We found that the stomatal uptake contributed less than non-stomatal uptake to the total ozone flux during the growing seasons. In particular, non-stomatal ozone removal by reactions with isoprene and other VOCs will be discussed. We will present contribution and change of individual ozone deposition sinks over the years in response to environmental parameters.