



Eddy covariance measurements of monoterpenes and oxidation products over a Ponderosa pine plantation in Central California.

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Photo-oxidation has been shown to be extraordinarily strong at the Blodgett forest site, a Ponderosa pine plantation at the western slope of the Sierra Nevada Mountains in Central California, USA. Chemical reactions with ozone in the forest canopy dominate the flux during summer; stomatal uptake and dry deposition account for less than 50% of the ozone deposition into the ecosystem. Reactions of ozone with alkenes are a net source of HO-radicals and therefore it is likely that chemical ozone loss produces additional oxidants in the canopy and oxidation products have been detected with a PTR-MS system by measuring gradients through the canopy. During an intensive field campaign in summer 2005 we measured ecosystem fluxes of the sum of isoprene + methyl-butenol (MBO), total monoterpenes, and an oxidation product with an eddy-covariance system. The compounds were detected with a PTR-MS instrument at molecular weights of 69, 137, and 113 amu; typical fluxes were 4-18, 2-6 0.4-1.5 $\mu\text{mol}/\text{m}^2/\text{h}$ for MBO+isoprene, monoterpenes, and the oxidation product, respectively. Production of oxidation products, co-spectra, and parameters controlling the day to day variation of the fluxes will be discussed.