

Disjunct eddy-covariance as a tool for biogenic volatile organic compounds flux estimation at the ecosystem-scale.

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Abstract

Emissions of volatile organic compounds (VOCs) have multiple atmospheric implications and play many roles in plant physiology and ecology. For compounds having the most important impact on the atmospheric chemistry, biogenic emissions, especially from forest ecosystems, are dominating the total emission budget^[1]. Long term ecosystem-scale BVOC flux measurements are thus highly desirable on a variety of forest plant functional types. These measurements have become technically feasible in the past ten years using the micrometeorological eddy-covariance method due to the advent of fast and sensitive mass spectrometers for the measurement of VOC concentrations^[2]. We will present the advantages and limitations of this technique using the case example of a two years dataset obtained within the framework of the IMPECVOC project (Impact of Phenology and Environmental Conditions on BVOC Emissions from Forest Ecosystems) at the site of Vielsalm, a temperate mixed forest. The usefulness of obtaining a robust long-term dataset will be demonstrated through the analysis of the seasonal variation of isoprene, monoterpenes and methanol exchanges and hypothesis will be made on the seasonal evolution of their metabolic pathways^[3].

References

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