

## **2.017 Investigating organic carbon fluxes: Biosphere-atmosphere exchange of gas-phase organic compounds and particles over Manitou Experimental Forest.**

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Abstract:

Emission of biogenic hydrocarbons and the deposition of organic molecules and particles over surfaces impact the atmospheric organic carbon budget. The relative importance of upward versus downward organic carbon fluxes over forests remains observationally unconstrained. The lack of flux measurements of organic carbon is primarily due to the limited number of instruments capable of fast, sensitive and selective measurements of these compounds. During a series of field measurements at Manitou Experimental Forest in Colorado in 2015 and 2016, we used acetate chemical ionization time-of-flight mass spectrometry to make eddy covariance flux measurements of oxidized organic compounds, and an ultra high sensitivity aerosol spectrometer to make eddy covariance flux measurements of size-resolved particles. Both the potential and limitations of these techniques will be discussed. Both upward and downward fluxes of gas-phase organic compounds were observed. In addition, measurements of more reduced organic compounds through proton transfer reaction mass spectrometry provide context for the measurements. This presentation will present the flux measurements and discuss their potential impact on the atmospheric organic carbon budget.