



Biogenic Volatile Organic Compounds in the Atmosphere: Missing compounds and unrepresented processes.

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Past studies have revealed both the importance of biogenic volatile organic compounds (BVOCs) in the atmosphere and the inadequacy of our current understanding of BVOC sources, sinks and transformations. For example, surprisingly large unaccounted OH reactivity and secondary organic aerosol has been observed, especially in forest environments, and attributed to BVOC and their oxidation products. These findings emphasize the need for a more comprehensive suite of compounds and controlling processes in order to improve the predictability of climate and air quality models. While the current BVOC representation in these models represents progress over earlier approaches, there are still significant gaps and uncertainties that must be reduced in order to improve model predictions of the response to landcover and climate change.

This presentation will address whether specific compounds and processes that are absent from BVOC emission models, such as extreme weather and microbes, can influence BVOC emissions to the level that they can impact ozone and particles and modify BVOC feedbacks associated with air quality and climate. Results of laboratory and field observations of the impact of stress induced emissions and leaf microbes will be presented and the implications for ozone and aerosol will be discussed. Efforts to incorporate missing compounds and previously unrepresented processes into the Model of Emissions of Gases and Aerosol from Nature (MEGANv3.1) will be assessed and discussed along with plans for future improvements.