

# SEMINAR

## **Atmospheric evolution of gaseous and particulate organic compounds: an explicit modeling of organic species sources and sinks**

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Thousands of organic compounds are present in the atmosphere. Either directly emitted by natural and anthropogenic sources or formed in situ by photochemical reactions, these organic compounds are nowadays known to largely impact air quality and climate. These environmental impacts are however difficult to quantify as the speciation and the properties of individual organic species still remain largely unknown.

In this work, the speciation and the properties of gaseous and particulate organic compounds in the troposphere are explored using an explicit modeling of their sources and sinks. Scenarios were developed in a box model for typical French rural environments in winter and summer conditions. A very detailed speciation was considered for organic compound emissions, with around 180 primary organic species. The quasi-explicit gaseous oxidation mechanisms of these emitted species were generated using GECKO-A (Generator for Explicit Chemistry and Kinetics of Organics in the Atmosphere), leading to the formation of more than 2 million secondary organic species. The gas/particle mass transfers were represented for all primary and secondary organic compounds. The simulated results are used here to examine (i) the mean diurnal and seasonal variability of the organic species concentrations, (ii) the speciation of the major gaseous and particulate organic compounds and (iii) their impact on OH reactivity, NO<sub>x</sub> budget and organic aerosol formation.

**Monday, August 5, 2019, 3:30 p.m**

Refreshments 3:15 p.m

NCAR Foothills Laboratory

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FL2-1022, large seminar room

Live webcast: <http://ucarconnect.ucar.edu/live>

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