

BayCEER Kolloquium

Lectures in Ecology and
Environmental Research

Summer 2024



UNIVERSITÄT
BAYREUTH

Thursday

11.07.2024

12:15 in H6, GEO



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Atmosphere in transition: A molecular level perspective

Exchange processes between the Earth's surface and the atmosphere are currently challenged by global change. Increased average surface temperatures, frequent droughts, diversity loss, or overloading the environment with novel entities are just a few examples of this transition, yet all have an impact on the Earth-atmosphere interface. One way to study this interface in transition is by observing organic trace compounds. In the atmosphere, organic compounds can be specific fingerprints of their sources, signals for underlying processes, indicators for reactions, and tracers for airborne transport. Thus, by identifying and quantifying organic trace compounds in the air, we gain knowledge about natural and disturbed processes with impact on air quality, weather and climate.

Dedicating this colloquium to my tenure-track evaluation, I will present an overview of the ongoing research activities of the Atmospheric Chemistry group at the University of Bayreuth and highlight three examples. Firstly, as the biosphere copiously emits volatile organic compounds (VOC) into the air, we explored their emission rates, typical composition, and vulnerability to environmental drivers such as increasing temperatures or drought. Secondly, we traced particulate organic marker compounds to understand the origin and fate of ultra-fine particles. Thirdly, as rising surface ozone poses an increasing risk to remote ecosystems, such as agricultural vegetation or forests, we explored the ozone formation potential with the help of organic photochemical indicators.

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