RESEARCH SEMINAR

DEPARTMENT OF GEOGRAPHY & RESOURCE MANAGEMENT
THE CHINESE UNIVERSITY OF HONG KONG

Emissions of Biogenic Volatile Organic Compounds and their Contribution to Ozone Formation in the Subtropical Region, South China

21 March 2024 (Thu)
4:30 – 6:00 pm (UTC+8)
Zoom ID: 895 147 7468
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With the accumulation of data about biogenic volatile organic compounds (BVOCs) emissions from plants based on branch-scale enclosure measurements worldwide, it is vital to assure that measurements are conducted using well-characterized dynamic chambers with good transfer efficiencies and less disturbance on natural growing microenvironments. A self-made cylindrical semi-open dynamic chamber with Teflon-coated inner surface was characterized both in the lab with standard BVOC mixtures and in the field with typical broad-leaf and coniferous trees. BVOC emissions from twenty mature trees (15 evergreen broad-leaved and 5 evergreen needle-leaved) were measured using dynamic chambers in situ. The emitted BVOCs were collected using sorbent tubes and analyzed by a thermal desorption-gas chromatography/mass spectrometry (TD-GC/MS) system. In total, twenty BVOC compounds, including isoprene, 14 monoterpene species, and 9 sesquiterpene species, were quantified to calculate their emission factors. The emissions of BVOCs in the Pearl River Delta region were estimated by using the localized emission factor database, and their contributions to ozone formation were also estimated. Furthermore, field campaigns were also conducted to investigate the atmospheric chemistry of BVOC during ozone pollution episodes. These results can help us better understand the BVOC's roles in ozone formation and can guide a reasonable control of anthropogenic emissions.

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Dr. Yanli ZHANG is a professor at the Guangzhou Institute of Geochemistry, Chinese Academy of Sciences (GIG, CAS). She is the deputy director of the Guangdong Provincial Key Laboratory of Environmental Resources Utilization and Protection. Her research interests mainly relate to trace reactive organic gases that impact global change and the regional atmospheric environment. She has received funding from the National Natural Science Foundation of China for Outstanding Young Scholars and published more than 100 peer-reviewed SCI-indexed papers. Dr. ZHANG is a member of the Expert Group on China's Implementation of the Montreal Protocol on Ozone Depleting Substances.

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