

3.086 Towards a more comprehensive characterisation of biogenic volatile organic compounds in the greater Sydney region of southeast Australia.

Early Career Scientist

Presenting Author:

Elise-Andree Guerette, Centre for Atmospheric Chemistry, University of Wollongong, Wollongong, NSW, Australia, guerette@uow.edu.au

Co-Authors:

Clare Paton-Walsh, Centre for Atmospheric Chemistry, University of Wollongong, Wollongong, NSW, Australia

Malcolm Possell, School of Life and Environmental Sciences, University of Sydney, Sydney, NSW, Australia

Emily R. Portergill, Centre for Atmospheric Chemistry, University of Wollongong, Wollongong, NSW, Australia

Emilia E. Bushrod, Centre for Atmospheric Chemistry, University of Wollongong, Wollongong, NSW, Australia

Stephen R. Wilson, Centre for Atmospheric Chemistry, University of Wollongong, Wollongong, NSW, Australia

Alan Griffiths, Atmospheric Research Group, Australian Nuclear Science and Technology Organisation, Sydney, NSW, Australia

Scott Chambers, Atmospheric Research Group, Australian Nuclear Science and Technology Organisation, Sydney, NSW, Australia

Alastair G. Williams, Atmospheric Research Group, Australian Nuclear Science and Technology Organisation, Sydney, NSW, Australia

Abstract:

Coastal southeast Australia is home to many of Australia's largest cities, and to large swathes of eucalypt-dominated forests. Despite the importance of biogenic volatile organic compounds (BVOCs) to the airshed of these cities, relatively few measurements of BVOCs have been conducted in the area. In the greater Sydney region, ambient measurements so far have mostly been made at urban or suburban sites in the context of short-term air quality campaigns. These campaigns provide useful snapshots but typically do not have BVOC characterisation as their focus.

Here we report on recent measurement efforts to provide a more comprehensive characterisation of BVOCs in the greater Sydney region. These include repeated spot sampling at forested sites over the 2017-2018 austral summer using absorption tubes followed by analysis using thermal desorption gas chromatography mass spectrometry (TD-GC-MS). The sampling program was designed to investigate differences in BVOC composition between sites and sampling periods (early, mid and late summer). We also describe the commissioning of a new online BVOC measurement system based on TD-GC-MS. This system will provide year-round characterisation of ambient BVOC levels at the

Australian Nuclear Science and Technology Organisation campus in Lucas Heights, ~40 km southwest of the Sydney CBD and adjacent to large forested areas. This deployment is part of the COALA-JOEYS campaign (see <https://www2.acom.ucar.edu/campaigns/coala>).