5.085 Using chemistry observations to constrain sea-breeze transport.

Presenting Author:

Robyn Schofield, School of Earth Sciences, University of Melbourne, Melbourne, Victoria, Australia, robyn.schofield@unimelb.edu.au

Co-Authors:

Claire Vincent, School of Earth Sciences, University of Melbourne, Melbourne, Victoria, Australia

Scott Chambers, Australian Nuclear Science and Technology Organisation, Lucas Heights, New South Wales, Australia

Alastair Williams, Australian Nuclear Science and Technology Organisation, Lucas Heights, New South Wales, Australia

Joel Alroe, Science and Engineering, Queensland University of Technology, Brisbane, Queensland, Australia

Zoran Ristovski, Science and Engineering, Queensland University of Technology, Brisbane, Queensland, Australia

Travis Naylor, Chemistry, Science, Medicine and Health, University of Wollongong, Wollongong, New South Wales, Australia

Clare Murphy (nee Paton-Walsh), Chemistry, Science, Medicine and Health, University of Wollongong, Wollongong, New South Wales, Australia

Abstract:

Sea and land breezes influence temperature, humidity and visibility in our coastal regions. Near coastal areas making up ~4% of the land area disproportionately host ~40% of the world’s population and with urbanization increasing this number is likely to grow in the future. Most of the world’s megacities are found within these near coastal zones. Understanding the complexities around sea breezes and atmospheric chemistry is a challenge for the resilience of our future cities. Measurements of atmospheric composition combined with physical atmospheric properties and aerosol observations provide a means of determining the ability of models to simulate the timing and intensity of sea and land breezes. These sea-breeze effects are not currently incorporated in climate models, but can be simulated by mesoscale models. Here we test the model parameterizations and boundary layer dynamics with atmospheric chemical observations made in the coastal zone.