

1.122 Urban-Coastal Environment: Particle Formation and Growth Mechanisms.

Early Career Scientist

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Abstract:

A field aerosol measurement campaign as part of the MUMBA (Measurements of Urban, Marine and Biogenic Air) campaign was conducted between 16th January 2013 and 15th February 2013 in the coastal city of Wollongong, Australia. The objectives of this research were to study the occurrence frequency, characteristics and factors that control particle behaviours and also new particle formation processes. Particle number size distribution ($14 \text{ nm} < D_p < 660 \text{ nm}$) was measured using a Scanning Particle Mobility Sizer (SMPS) was used in this study. Four Class I particle formation events were observed, equivalent to 13% of the total observation days. All events occurred during the day time, starting at 8:30 Australian Eastern Standard time approximately with an average duration time of five hours. The events also appear to be positively linked to the prevailing easterly to north easterly sea breezes that carry pollutants from sources in and around Sydney. This suggests that photochemical reactions and a combination of oceanic and anthropogenic air masses are among the factors that influenced these events. Relative humidity also appears to play a role in the Class II particle formation event.