

SESSION: Oceans 3 (Chairs: Sarah Fawcett & Susanne Fietz)

MARS Themes:

Earth Systems Observations

Title:

Observations of Southern Ocean marine aerosols in Simon's Town, False Bay

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Abstract:

Marine aerosols are the largest component of natural aerosols which impact climate through radiative forcing and feedback in the climate system. The Intergovernmental Panel on Climate Change (IPCC) considers aerosols as short-lived climate forcers and deems it a necessary part of their mandate to assess the changes of aerosol emissions and abundances in the atmosphere as inputs to climate models. Unfortunately, the large spatial-temporal variability in atmospheric aerosol concentrations and composition causes a significant uncertainty in establishing a reliable value for the forcing effect and hampers our understanding of current and future climate change. The vast and remote Southern Ocean is one of the few places where marine aerosols can be investigated away from large anthropogenic sources. As such, this region offers a unique location for investigating the present-day controls on the sources and formation processes of natural marine aerosols and the preindustrial atmosphere. This study set out to use an extended set of observational aerosol data acquired at the coastal location of Simon's Town in False Bay, South Africa to determine the concentrations, sizes, and types of aerosols. Not only does it contribute to the data scarce region of the Southern Hemisphere, but the unique location also makes it possible to measure pristine marine aerosols from the Southern Ocean. Findings on the concentrations and processes of aerosols can be incorporated into Southern Hemisphere models for evaluating the preindustrial atmosphere and the role of the Southern Ocean in natural climate forcing.

Format:

Oral presentation

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Marine aerosols; aerosol concentrations; size distributions