

Title

An Arctic Aerosol size distribution dataset

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Theme

Sub-Theme 2: Implementing and Optimizing a pan-Arctic Observing System

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Poster title (brief)

Merging major multiplatform field campaigns and a long term monitoring network are essential to develop and constrain numerical models of atmospheric new particle formation

Abstract - text box

This work highlights some of the benefits which can be gained from coordinated networks of Arctic observations. Not only do these yield novel insights into fundamental processes, they also provide the data essential to develop and constrain numerical models of atmospheric new particle formation. The significant costs associated with coordinated multiplatform atmospheric observational strategies return vastly more information than each of the platforms operating independently. Particle Size Distributions (PSD) can be analyzed via K-means cluster analysis allowing to identify different aerosol categories from a single monitoring site. PSDs can also analyzed using a receptor model - Positive Matrix Fractionation (PMF). PMF can separate contributions to the PSD, whereas K-means clustering can describe the possible different combinations of PSD. Our work shows that major multiplatform field campaigns and a long term monitoring network are essential to address important research questions. Our aim is

to continue to collect aerosol size distributions from both long term and intensive field studies (including ship based measurements), because they are a critical variable for studying the evolution of ultrafine particles in the atmosphere. We aim to continue to use such techniques and continue expanding an Arctic aerosol size distribution database.