

Intensive measurements of ice nucleating particles at Ny-Ålesund, Svalbard, in summer 2016

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Occurrences of mixed-phase clouds, composed of both ice crystals and supercooled cloud droplets, have a significant impact on energy and hydrological cycles in the Arctic. It is thought that only a subset of cloud droplets containing ice nucleating particles (INPs) can freeze heterogeneously in mixed-phase clouds. The number concentrations of INPs vary over many orders of magnitude depending on temperatures, geophysical locations and atmospheric conditions [e.g., Tobo et al., 2013; Petters and Wright, 2015; DeMott et al., 2016]. Despite the fact that INPs must play a crucial role for the formation and persistence of Arctic mixed-phase clouds, few INP data have been obtained in the Arctic. To investigate the sources and abundances of INPs relevant to Arctic mixed-phase cloud occurrences, we conducted field measurements at Ny-Ålesund, Svalbard, in July 2016. For the analysis of the collected INP samples, we used a newly developed droplet freezing technique [Tobo, 2016]. In this presentation, we will report preliminary results obtained during the intensive measurement campaign.

References

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