



A globally operating network for INP sampling

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Despite their relatively low concentrations in the atmosphere, ice nucleating particles (INPs) are a key parameter for precipitation processes and cloud formation in mixed-phase clouds. These aerosol particles provide the surface on which the first activation and subsequent growth of ice take place. Yet, INPs are often poorly represented in weather and climate models due to a limited understanding of the geographic and vertical variation of their concentrations. Hence, a better coverage of measurements, preferentially long-term observations, in underrepresented regions is needed. We will present INP data from a novel sampling network composed of unique remote sites ranging from the Arctic to the Equator.

Between 2015 and 2017, particles were electrostatically precipitated onto silicon substrates at the Zeppelin Observatory on Svalbard in the Norwegian Arctic, the Amazon Tall Tower Observatory (ATTO) in Brazil, and the Volcanic and Seismologic Observatory of Martinique in the Caribbean Sea. Subsequently, INP concentrations were determined in the deposition/condensation freezing modes using the FRIDGE isostatic diffusion chamber for ice nucleation.

First insights suggest that the INP concentrations in the Amazonian Rainforest were unaffected by fire emissions during the biomass burning season. INP concentrations at the Caribbean site seem to be primarily influenced by the long-range transport of Saharan mineral dust. On average Svalbard INP concentrations were the lowest of the three stations.