



Ice Nucleating Particles around the world – a global review

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In the atmosphere the formation of new ice particles at temperatures above ~ -36 °C is due to a subset of aerosol called Ice Nucleating Particles (INP). However, the spatial and temporal evolution of such particles is poorly understood. Current modelling of INP is attempting to estimate the sources and transport of INP, but is hampered by the availability and convenience of INP observations. As part of the EU FP7 project impact of Biogenic versus Anthropogenic emissions on Clouds and Climate: towards a Holistic UnderStanding (BACCHUS), historical and contemporary observations of INP have been collated into a database (<http://www.bacchus-env.eu/in/>) and are reviewed here. Outside of Europe and North America the coverage of measurements is sparse, especially for modern day climate – in many areas the only measurements available are from the mid-20th century. As well as an overview of all the data in the database, correlations with several accompanying variables are presented. For example, immersion freezing INP seem to be negatively correlated with altitude, whereas CFDC based condensation freezing INP show no height correlation. An initial global parameterisation of INP concentrations taking into account freezing temperature and relative humidity for use in modelling is provided.