

**Davos Atmosphere and Cryosphere Assembly 2013**Air, Ice & Process Interactions
An IUGG (IAMAS & IACS) Event

July 8-12, 2013

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Dynamics and impact of ice formation in clouds

The most fundamental and complex problems in weather and climate research today are our poor understandings of the basic properties of clouds and our inability to determine quantitatively the many effects cloud processes have on weather and climate. Atmospheric ice particles play a role in the formation of over half of the world's precipitation, yet many details about the initiation and evolution of ice particles in clouds are poorly understood. For example, the primary and secondary mechanisms by which ice particles form, the composition of ice nuclei, and the dependence of their growth due to deposition, riming, and evaporation on cloud and environmental conditions have not been well determined. Further, the linkage between melting, evaporation and sublimation on dynamics, critical for understanding precipitation, has not been well established. An enhanced understanding of these issues is needed for improving the representation of cloud processes in numerical weather and climate models, and for determining their impact on the cryosphere.

This session will examine the current state of knowledge of ice formation and evolution in clouds, remaining questions, and the challenges to answering these questions. Papers are solicited on all aspects of ice microphysics and precipitation and its impacts on weather, climate and the cryosphere, including studies predicting the impact of aerosols on weather and climate. Results from in-situ measurements, laboratory studies, numerical modelling studies at all scales and remote sensing studies are welcomed.

Session conveners

Lead convener: Greg McFarquhar (mcfarq@illinois.edu)

Co-convener: Roland List