

## **Riming in alpine snowfall during CLACE 2014: Polarimetric radar and in situ observations**

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Riming occurs when ice crystals or snowflakes encounter supercooled liquid water (SLW) droplets during their fall to the surface within a mixed-phase cloud. It is an efficient mechanism to convert cloud liquid droplets to precipitating ice particles, frequently seen in snowfall in the mid-latitude regions.

This study investigates the microphysics of winter alpine snowfall occurring in mixed-phase clouds in an inner-Alpine valley during January and February 2014. The available observations include high-resolution polarimetric radar and in situ measurements of the ice-phase and liquid-phase components of clouds and precipitation.

Radar-based hydrometeor classification suggests that riming is an important factor to favour an efficient growth of the precipitating mass and correlates with snow accumulation rates at ground level. The time steps during which rimed precipitation is dominant are analyzed in terms of temporal evolution and vertical structure. Snowfall identified as rimed often appears after a short time period during which the atmospheric conditions favour wind gusts and updrafts and supercooled liquid water (SLW) is available.

When a turbulent atmospheric layer persists for several hours and ensures continuous SLW generation, riming can be sustained longer and large accumulations of snow at ground level can be generated. The microphysical interpretation and the meteorological situation associated with one such event are detailed in the presentation.