Abstract Prof. Alexis Berne, EPFL Lausanne, 11.05.2020

Snowfall across scales, instruments and models

Snowfall is the dominant form of precipitation at high altitudes and high latitudes. Its significant variability in space and time is driven by the atmospheric circulation at large scales and by a variety of microphysical processes at small scales. In this presentation, the combination of in-situ and remotely sensed observations as well as atmospheric model simulations and re-analyses are used to investigate the variability of snowfall across scales. First, the influence of a warm conveyor belt on the local precipitation microphysics during an intense snowfall event over the Taebaek Mountains in Korea is studied by combining ground level observations, radio-soundings, radar observations at different frequencies and Lagrangian trajectories. Then, the sublimation of snowflakes by katabatic winds in Antarctica is evidenced using ground-based radar measurements, and its influence at the continental scale is estimated using a global model. Overall, the synergy between observations of different kinds and simulations from numerical models provides crucial information to decipher the complex variability of snowfall.