

**Polarimetric radar observations of winter clouds and precipitation in the Alps - CLACE2014**

Jacopo Grazioli

Ecole Polytechnique Fédérale de Lausanne (EPFL), Environmental Remote Sensing Laboratory (LTE),  
Switzerland

Wolfensberger, Daniel (EPFL, LTE)

Raupach, Timothy (EPFL, LTE)

Berne, Alexis (EPFL, LTE)

*E-mail: jacopo.grazioli@epfl.ch*

The cloud and aerosol characterization experiment (CLACE) is a series of field campaigns conducted by many international institutions, in the Swiss Alps and it is focused on aerosol-cloud activation mechanisms and ice nucleation processes.

During CLACE 2014, the mobile X-band dual polarization Doppler weather radar (MXPOL) of the Environmental Remote Sensing laboratory (LTE) of the EPFL of Lausanne (CH), was deployed during February 2014, at an altitude of 2065 m at the Kleine Scheidegg mountain pass, in the vicinity of summits above 4000 m of altitude. In the framework of CLACE, the instrument aims at documenting the transition between clouds and winter precipitation and at providing information on precipitation characteristics at a scale of 10 - 15 km in the mountain valley.

MXPOL was scanning continuously with a protocol designed to capture the vertical evolution of precipitation. Two range height indicator (RHI) scans were repeated every 5 minutes, and full Doppler spectra were collected and stored for some of these scans. Additionally, high resolution vertical profiles of Doppler spectra were collected every 1.5 minutes in order to capture the evolution of the hydrometeors fall velocities within the precipitation column. About 15 precipitation events, totaling 220 hours of measurements were collected. Recurring patterns, as wind shear layers, strong vertical gradients of reflectivity and reflectivity enhancements up to 35 dBZ have been observed in the deployment period of one month. A preliminary investigation of the dominant microphysical processes characterizing the snowfall will be presented, by analyzing the weather radar measurements as well as the local environmental conditions, sampled by the other sensors deployed during CLACE, and by operational weather stations.