



Alpine snowfall observation using an X-band polarimetric radar

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Precipitation is crucial for water resources and natural hazards in mountainous regions. Because of lower temperatures at higher altitudes, snowfall is a significant if not the main part of total mountainous precipitation. Similarly to rainfall, snowfall is highly variable in space and time, which poses an issue for its measurement. In addition, snowflakes have a largely variable density, which makes difficult the estimation of their water equivalent.

In order to improve the estimation of alpine snowfall using weather radar, a field campaign has been organized in Davos, Switzerland, during all winter 2009-2010. First, an X-band dual-polarization Doppler radar system has been installed at about 2150 m of altitude, collecting 3D high-resolution measurements of precipitation. At two sites (Wannengrat and Weissfluhjoch) distant of about 5 km from the radar, weather stations provide meteorological variables (wind speed and direction, pressure, temperature, humidity and precipitation). Concerning the microstructure of precipitation, a video-disdrometer providing size and shape distributions of the falling hydrometeors has been installed at Weissfluhjoch. Three optical disdrometer (Parsivel type) have been deployed along a transect from 1500 to 2600 m of altitude. In addition, manual observations of snow height and density are performed twice a day at Weissfluhjoch. This contribution presents this field campaign and some preliminary analyses conducted on the data collected so far.