

## **Hydrometeor classification tuned for Austrian C-band polarimetric weather radar data**

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The restructuring of the Austrian weather radar network by changing to dual polarized radars allows for many new applications such as the identification of various types of precipitation.

The measurement of the horizontal reflectivity factor  $Z_h$  alone is often not sufficient to distinguish between different hydrometeor classes. The addition of polarimetric measurements provides valuable information about the particle size, shape, and falling behaviour as well as the aggregate state of precipitation particles.

On the basis of observations, different types of hydrometeors are classified. The challenge in Austria is the use of different weather radar sites located on flatlands and on the top of Alpine mountains.

First the ranges and heights (with respect to the freezing level) of polarimetric measurements, in which the observed precipitation classes are found, have to be determined. Confirmed events and the corresponding weather radar measurements are then linked to each other. The radar data are generated by measurements with C-band radars. At this wavelength, the attenuation along the propagation path can not be neglected anymore. In order to make an accurate estimation of  $Z_h$  and the differential reflectivity, an attenuation correction scheme has to be used. Furthermore, to distinguish between non-meteorological and meteorological echoes and to eliminate groundclutter, a texture of the differential phase shift has also to be applied.

The goal is to define membership functions for different hydrometeor classes for Austrian complex orography, so they may be used for classification based on Fuzzy-logical-methods.