



Detecting the melting layer with a Micro Rain Radar

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The melting layer height is especially important for aviation meteorology because it can help determining the precipitation type and assessing the risk of freezing rain. A new method using the Micro Rain Radar (MRR) to determine the melting layer height is presented. The MRR is a small vertically pointing FMCW Radar which measures Doppler Spectra of precipitation. From these Doppler Spectra, various variables such as Doppler velocity or spectral width can be derived. The melting layer is visible through a higher reflectivity and an acceleration of the falling particles, among others. These characteristics are fed to a neural network to determine the melting layer height. For the training of the neural network, the melting layer height is determined manually. The neural network is tested using data from two sites covering all seasons. For most cases, it is well able to detect the correct melting layer height.