

## **MIRA-36 Cloud Radar Observation of Fog**

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A scanning MIRA-36 cloud radar was operated at the airport Munich during the fog season 2011/2012. The measurements took place in the frame of the Innovative Airport Project (iPORT), a German government funded research action for improving safety and efficiency of air traffic. Therefore ample supplementary meteorological instrumentation including the routine airport weather information with ceilometers and visibility sensors was available for assessing the potential of cloud radar data for fog characterization and fog profiling. A quarter-hourly scanning cycle has been performed during the campaign. During 7 minutes of each cycle the beam was tilted parallel to the gliding path of the aircrafts (5 deg elevation). This allows detecting fog at much lower altitudes than the minimum range of the radar system, and comparing the radar measurements with the observations of the pilots. During the rest of the cycle a PPI/VAD scan with 45 deg elevation was performed.

The data from this scan can be used estimating the horizontal wind vector and the vertical velocity for detecting rain and drizzle. Even though tilting the radar beam to very low elevations the clutter from fixed targets, plankton, and air traffic could be removed effectively from the Doppler spectra with help of the polarization information. The sensitivity of the cloud radar seems to be sufficient for detecting even thin fog. First comparisons with data from a vertically pointing SODAR showed excellent agreement of the fog top height. Further comparisons for example with in-situ measurements of visibility are underway, and approaches will be discussed how ambiguities of the retrieval of quantitative visibility from cloud-radar data (for example due to drizzle) can be reduced.