

# Short Course Micro Rain Radar, METEK GmbH

Sunday, 1 July 2018 before ERAD 2018

The micro rain radar (MRR) is a very low power vertically pointing Doppler radar. It provides range resolved Doppler spectra of echoes up to few kilometers height. In case of rain these spectra can be converted into drop size distributions using the size dependent fall velocity of rain drops. The melting layer manifests itself in the acceleration of particle fall velocity. Thus, besides of research applications, the MRR is a unique tool for supporting weather radar based QPE by providing drop size distributions in the weather radar measuring volume with matched spatial and temporal resolution.

The short course will

- illustrate most important applications,
- explain the operation principle of the MRR,
- provide “hands on” exercises,
- discuss practical issues, as
  - installation,
  - frequency allocation,
  - trouble shooting,
  - FAQs.

The short course is organized as follows:

## **Morning**

- Introduction
  - Why profiles of drop size distributions (DSDs)?
  - Introduction of the Micro Rain Radar
  - Comparison with in-situ precipitation sensors
- Applications
  - Support of Weather Radar calibration
    - Suggested set up and evaluation scheme
    - From local to areal adjustment?
  - Research
    - DSDs
    - Z-S-relations
    - Development of DSDs on the fall path
    - Temporal Development of DSD in a rain event
    - Snow observations
    - Volcano monitoring

## **Afternoon**

- Operation Principle
  - FMCW Doppler Radar
  - Resolving Range Velocity Ambiguity
  - Max-Range Max-Velocity trade-off

- Main Specifications and differences between MRR2 and MRR-PRO
- Data Management
  - Data Format, ASCII, NETCDF
  - File Structure
- MRR-PRO Demonstration
  - System Control and Data Access, Data Storage
  - Quick-Look Data Viewer
- Planning the installation of a MRR
  - Siting conditions
  - Frequency allocation
  - Safety considerations
- How to recognize and to settle the most common interferences
- Frequently asked questions