

Polarization Doppler Radar (POLDIRAD)

Measured values

- Precipitation
- Wind
- Scattering-Matrix

Description of facility

The Polarization Doppler Radar (POLDIRAD) is a C-Band weather radar. It is capable to create various polarizations to distinguish between different kinds of hydrometeors, like rain, snow, graupel or hail. Furthermore, a quantitative rain rate estimation is feasible.

The wind speed can be derived from the Doppler measurements. Using the bistatic extension, the three dimensional wind field can be derived (e.g. from thunderstorms).

Its main feature is the polarization network, which allows to change transmit and receive polarization (e.g. horizontal, vertical, linear 45° or circular) for each radar pulse.

Application

The variable polarized radar beam is used to derive the type and quantify hydrometeors (rain, snow, graupel, hail). This is done by utilizing the different shapes of the hydrometeors and their different scattering parameters for various polarized electromagnetic waves. By using polarimetric radars, the rain rate can be estimated more precisely than with non-polarimetric ones. The POLDIRAD radar was used in the past for various projects and experiments, especially in thunderstorm research.

Literature / References

- Friedrich, K., Hagen, M.: Wind Vector Field Determination with Bistatic Multiple-Doppler Radar Network. 30th International Conference on Radar Meteorology, Munich, 19-24 July

2001, 30th International Conference on Radar Meteorology, Munich, S. 133-135, (2001)

- Hagen, M.: On the Variation of the Parametrization of Rainfall Rate Estimation by Dual Polarization Techniques. 30th International Conference on Radar Meteorology, Munich, 19-24 July 2001, 30th International Conference on Radar Meteorology, Munich, S. 644-645, (2001)

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This handout, and cross-references to related measurement techniques and facilities are available at: <http://messtec.dlr.de/link-86-en>.

Radarantenna on top of the Institute Building

