http://joyce.cloud

Laser distrometer Thies-01

Instrument name: Thies-01
Instrument type: 5.411.xx.x00
Manufacturer: ADOLF THIES GmbH & Co. KG
Location: University of Bonn, Bonn
Coordinates: Lat: 50.731233° N, Lon: 7.070733° E, Alt: 72 m asl

The **Thies** laser distrometer is a laser-based optical system for complete and reliable precipitation detection and classification. The sensor is able to distinguish between drizzle, rain, hail, snow and mixed phases. The sensor also captures the features of the precipitation such as intensity, visibility, radar reflectivity and the spectrum width.
The Thies-1 is mounted on a 2 m high mast on the top roof of the Institute for Geoscience and Meteorology at the University of Bonn in the city of Bonn.

Instrument specifications

Parameter	**Specification**
Wavelength	785 nm
Output power (peak)	0.5 mW
Laser class	1M (EN 60825-1:1994 A2: 2001)
Light strip surface (W x D)	20 x 1 mm
Measuring surface (W x D)	20 x 228 mm
Measuring range Particle size (liquid and solid) Particle speed	 0.16 … >8 mm 0.2 ... 20 m/s
Design	22 size classes 20 speed classes
Radar reflectivity Z	-9.9 … 99.9 dBZ
Rain rate Minimum intensity Maximum intensity Accuracy	 < 0.001 mm/h > 250 mm/h <15% (liquid) / <30% (solid)
Weight	4.8 kg
Temperature range	-40 … +70 °C
Size (H x W x D)	270 x 170 x 54 mm

Instrument time-line

07/08/2007 - today Institute of Geoscience and Meteorology, University of Bonn, Bonn

Available measurement modes

- 1 min measurement of full spectrum, speed, diameter, and precipitation type (for complete and detailed data description take a look into the specific instrument manual provided by ADOLF THIES GmbH & Co. KG)
- Additional locations can be requested by ‘Installation request’ sheet

JOYCE-CF Standard Operation Procedures

- 1 min repetition of standard Thies observation procedure
- Full observation of spectrum, speed, diameter, precipitation type, etc.

Data quality assurance procedures

- Raw data provided by processing standard from ADOLF THIES GmbH & Co. KG. No additional calibration

Available datasets

The data can be requested via the ‘Messdatenportal‘ (https://www.meteo.uni-bonn.de/messdaten/messdatenportal) from the Institute of Geoscience and Meteorology, or via the ‘JOYCE-CF Data Request’ sheet.

Level 1

- Data: 5 min averaged, and 1 min weather code (Table 4677, Table 4680), 5 min averaged and 1 min meta data (Table 4678), 5 min intensity, 1 min total intensity, liquid intensity, solid intensity, accumulated precipitation, visibility in precipitation, radar reflectivity, maximum hail diameter, number of particles, number of minimum speed particles, number of maximum speed particles, number of min diameter particles, number of particles per diameter and speed class
- File size per day: approx. 7 MB

Contact

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