

## Direct and diffuse solar radiation

Instrument name: Solar radiation

Instrument type: Radiation sensors

Manufacturer: Middleton

Location: Institute for Geoscience, Section Meteorology, Bonn

Coordinates: Lat: 50.731233° N, Lon: 7.070733° E, Alt: 76 m asl

The Middleton solar radiation sensors in Bonn are able to capture specific radiation parts in the atmosphere. The measured radiation is split into red and yellow filtered radiation, diffuse radiation, direct radiation, and global radiation.

The sensors are mounted on the top roof of the Section Meteorology, Institute for Geoscience, University of Bonn, Bonn since 2011.

### Instrument specifications

Parameter	Specification
Manufacturer	Middleton
Data Logger	Campbell Scientific CR3000
Temporal resolution	1 min
Radiation Sensors	Red filter Yellow filter Direct solar radiation Shaded/diffuse radiation Total solar radiation

### Instrument time-line

11/08/2011 – today                      top roof at Section Meteorology, Institute for Geoscience,  
University of Bonn, Bonn

### Available measurement modes

- Continuous measurements of IR radiance in 1 min intervals

### JOYCE-CF Standard Operation Procedures

- Fixed location in Bonn
- Continuous operation with 1 min temporal resolution

## Data quality assurance procedures

- Raw data provided by the instrument. Quality control by operator.

## Available datasets

Data can be requested via the 'Messdatenportal' (<https://www.ifgeo.uni-bonn.de/abteilungen/meteorologie/messdaten/messdatenportal>).

Additional data or measurement time can be requested via the JOYCE-CF request sheets.

### Level 0

- Available data:
  - Electric potential from red filter (1 min average and standard deviation)
  - Electric potential from yellow filter (1 min average and standard deviation)
  - Electric potential from diffuse sensor (1 min average and standard deviation)
  - Electric potential from direct solar radiation sensor (1 min average and standard deviation)
  - Electric potential from global radiation sensor (1 min average and standard deviation)

### Level 1

- Available data:
  - Red filtered radiation in Watt (1 min average, minimum, maximum)
  - yellow filtered radiation in Watt (1 min average, minimum, maximum)
  - diffuse radiation in Watt (1 min average, minimum, maximum)
  - direct solar radiation in Watt (1 min average, minimum, maximum)
  - global radiation in Watt (1 min average, minimum, maximum)
- File format:
  - Temporal resolution 1 min
  - ASCII table including header, 1 file per 5 min
  - File size per day: approx. 720 kB

## Contact

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