Deutscher Wetterdienst
Wetter und Klima aus einer Hand

DATA SET DESCRIPTION

Hourly station observations of precipitation amount in mm for Germany

Version v18.3 & recent

Cite data set as: DWD Climate Data Center (CDC): Hourly station observations of precipitation amount in mm for Germany, version v18.3 & recent, last accessed: <date>.

INTENT OF THE DATASET

This data are from DWD stations operated for climatological and climate related applications (partner stations not included). Comprehensive station metadata (station relocation, instrument change, time zones, change of algorithms) are included. The most recent data have not completed the full quality control as applied to the versioned period.

POINT OF CONTACT

Deutscher Wetterdienst
CDC - Vertrieb Klima und Umwelt
Frankfurter Straße 135
63067 Offenbach
Tel.: + 49 (0) 69 8062-4400
Fax.: + 49 (0) 69 8062-4499
Mail: klima.vertrieb@dwd.de

DATA DESCRIPTION

Spatial coverage Germany

Temporal coverage 1995-09-01 until - yesterday

Temporal resolution hourly

Units

PRODUKT_CODE	shorname of the product	R1_MN008
STATION_ID	DWD station identifier	
ZEITSTEMPEL	reference datetime of the value	yyyymmddhh
WERT	hourly precipitation height	mm
QN	quality level	see paragraph 'Quality information'
QB	quality byte	see paragraph 'Quality information'

The measurements have an hourly time stamp (in UTC).
The hourly precipitation heights are calculated from the six 10min measurement intervals of the preceding hour (e.g., for UTC11 the sum of precipitation UTC10-UTC11 is given).

Uncertainties The stations are nowadays selected and operated according to WMO guidelines. Though these guidelines aim at minimizing possible local effects, still some applications of certain parameters may require the consideration of local and regional effects. Note that when going back to historical times, such guidelines might not have been in place. Depending on the application, local, regional and influences changing with time should be considered, which can be location- and parameter specific. Sources of long-term uncertainty are (1) changes in station height when station was re-located, information on this is within the station's Metadata; (2) changes in the observation times and (3) changes in the averaging interval. Details on (2) and (3) can be found in the stationwise metadata. Uncertainties are also expected from (4) changes in instrumentation, see instrument metadata; and possibly also from (5) varying quality control procedures (Behrendt et al., 2011). Further, uncertainties are known to come from (6) errors during data transfer or errors in the software, (7) change of observing personnel, and (8) others, see Freydank, 2014.

Qualityflag

The QUALITAETS_BYTE (QB) denotes whether the value was objected to and/or corrected. The QUALITAETS_NIVEAU (QN) shows the quality control procedure applied for a data report (of several parameters) for a certain reporting time. Explanation for QB:
QB=0 denotes not flagged,
QB=1 had no objections (either checked and not objected, or not checked and not objected, this can be interpreted only when considering QN);
QB=2 corrected;
QB=3 confirmed with objection rejected;
QB=4 added or calculated;
QB=5 objected;
QB=6 only formally checked;
QB=7 formal objection;
QB=-999 quality flag does not exist.
Explanation for QN:
QN=1 only formal control;
QN=2 controlled with individually defined criteria;
QN=3 automatic control and correction;
QN=5 historic, subjective procedures;
QN=7 second control done, before correction;
QN=8 quality control outside ROUTINE;
QN=9 not all parameters corrected;
QN=10 quality control finished, all corrections finished.
Data before and including 1980 can reach as best quality check level QN=5. Data after 1980 can reach QN=10 as best quality check level.

DATA ORIGIN

These climate data are from the station networks of Deutschen Wetterdienst which are regularly updated with recent data, and with recovered historical data. From 1997 onwards, the data are operationally collected in the central MIRAKEL data base and archived, see Behrendt et al., 2011, and Kaspar et al., 2013. For details on current measurement and observation procedures see VuB 3 Beobachterhandbuch (DWD, 2014a), VuB 3 Technikerhandbuch (DWD, 2014b) and VuB 2 Wetterschlüsselhandbuch (DWD, 2013). Note that when going back to historical times, guidelines on observation procedure, instruments and observation times were issued by the authority in charge (see, e.g., Freydank, 2014), and might be incompletely recorded in the metadata.
As explained in Kaspar et al., 2013 in the early years numerous meteorological agencies were active in the area of todays Germany. After establishment of the der International Meteorological Organization (IMO) in 1873, the various standards were gradually harmonized, resulting in a single standard 1936. After 1945, the standards in East and West Germany developed differently, and were harmonized again after re-unification in 1990. Between the end of the nineties and 2009 many stations were changed from manual to automated.

VALIDATION AND UNCERTAINTY ESTIMATE

Quality control of the more recent data is not completed yet. Several steps of operational quality control are applied (see Kaspar et al., 2013). Procedures completed depend on age of data. Automatic tests include tests for completeness, temporal and internal consistency, and against statistical thresholds (based on the software QualiMet, Spengler, 2002).

CONSIDERATIONS FOR APPLICATIONS

When investigating long term changes or trends, consider changes in station location, changes in instrumentation, measurement procedures and observation intervals - see the various metadata information provided. Starting in the nineties, the metadata are electronically recorded and provided together with the station measurements. For the time before, efforts are continuing to digitize the most relevant metadata based on the paper records however, many gaps are still remaining. For detailed studies, DWD can grant access to the station records.

ADDITIONAL INFORMATION

For the most recent data the quality control is not completed yet. There are still issues to be discovered in the historical data. We welcome any hints to improve the data basis (see contact).

COPYRIGHT

The instructions in ftp://ftp-cdc.dwd.de/pub/CDC/Terms_of_use.pdf should be followed. The DWD website provides comprehensive copyright information.

REVISION HISTORY

This document is maintained by the Climate Data Centre of the DWD, last edited at 01.10.18.