

DATA SET DESCRIPTION

Historical 10-minute station observations of max/min temperature at 5cm and 2m height above ground for Germany

Version V1

Cite data set as: DWD Climate Data Center (CDC): Historical 10-minute station observations of max/min temperature at 5cm and 2m height above ground for Germany, version V1, 2019.

INTENT OF THE DATASET

These high time resolution data are from automatic weather stations of DWD and legally and qualitatively equivalent partner stations.

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 stations in Germany

Temporal coverage 01.01.1991 - 31.12.2017

Temporal resolution 10 minutes sampling interval

Format(s) The station observations (produkt_*.txt) are zipped for each station in several files: produkt_zehn_min_tx_[from]_[to]_hist.txt., each of which spanning a decade (or less). An overview over all stations with start and end dates is given in the station list: https://opendata.dwd.de/climate_environment/CDC/help/zehn_min_tx_Beschreibung_Stationen.txt. Note that for convenience, the list comprises not only stations given here, but also stations with more complicated copyright regulations which may be obtained for certain applications, requiring discussion with the point of contact.

Parameters The file produkt*.txt comprises following parameters:

STATIONS_ID	station identification number	
MESS_DATUM	time stamp	yyyymmddhhmi
QN	quality level of next columns	coding see paragraph "Quality information"
TX_10	maximum of air temperature at 2m height during the last 10 minutes	°C
TX5_10	maximum of air temperature at 5cm height during the last 10 minutes	°C
TN_10	minimum of air temperature at 2m height during the last 10 minutes	°C

TN5_10 minimum of air °C
 temperature at 5cm height
 during the last 10 minutes
eor end of record can be ignored
Missing values are marked as -999. The measurements relate to a time stamp, which denotes the end of the 10 minutes interval. The time stamp before the year 2000 is given in MEZ, the time stamp after the year 2000 is given in UTC.

Uncertainties The stations are selected and operated according to WMO guidelines.

Quality information The quality level "Qualitätsniveau" (QN) given here applies for the following columns. QN and describes the method of quality control applied to a complete set of parameters, reported at a common time. the individual parameters of the set are connected with individual quality bytes in the DWD data base, which are not given here. Values marked as wrong are not given here. Different quality control procedures (and at different levels) have been applied to detect which values are identified as erroneous or suspicious. Over time, these procedures have changed.
quality level (column header: QN)
1- only formal control during decoding and import
2- controlled with individually defined criteria
3- ROUTINE automatic control and correction with QUALIMET

DATA ORIGIN

These data are from the station networks of Deutschen Wetterdienst. For details the measurement procedures VuB 3 Beobachterhandbuch (DWD, 2014a), VuB 3 Technikerhandbuch (DWD, 2014b) and VuB 2 Wetterschlüsselhandbuch (DWD, 2013).

VALIDATION AND UNCERTAINTY ESTIMATE

Procedures of quality assurance are explained in Kaspar et al., 2013: several steps of quality control, automated quality control based on the software QualiMET (see Spengler, 2002) for completeness, temporal and spatial consistency, and against statistical thresholds have been applied from 2003 onwards. Corrections in the high resolution recordings are routinely passed on to aggregated values (i.e., the hourly and daily values). Some doubtful values might still exist, especially in data before 2009. No homogenization has been carried out.

CONSIDERATIONS FOR APPLICATIONS

Data sets with quality level QN=1 may contain significant errors. Users have to decide whether for their particular application the more error prone 10-minute data should be used or rather the higher quality data (hourly or daily values). When investigating long term changes or trends, consider the station specific metadata provided in Metadaten_Parameter*, Metadaten_Geraete* and Metadaten_Geographie*, which are stored according to parameter in the subdirectories ../meta_data/. When considering trends in temperature, note especially changes in station height (see ../meta_data/).

ADDITIONAL INFORMATION

More recent data (where quality control is not completed yet) are stored in subdirectory ../recent/. The most recent data are getting updated in subdirectory /now/.

REFERENCES

Becker, R. and Behrens, K.: Quality assessment of heterogeneous surface radiation network data, Adv. Sci. Res., 8, 93-97, doi:10.5194/asr-8-93-2012, 2012.

Behrendt, J., et al.: Beschreibung der Datenbasis des NKDZ. Version 3.5, Offenbach, 15.02.2011.

DWD Vorschriften und Betriebsunterlagen Nr. 3 (VuB 3), Beobachterhandbuch (BHB) für Wettermeldestellen des synoptisch-klimatologischen Mess- und Beobachtungsnetzes, März 2014a.

DWD Vorschriften und Betriebsunterlagen Nr. 3 (VuB 3), Technikerhandbuch (THB) für Wettermeldestellen des synoptisch-klimatologischen Mess- und Beobachtungsnetzes, März 2014b.

DWD Vorschriften und Betriebsunterlagen Nr. 2 (VuB 2), Wetterschlüsselhandbuch Band D, Nov 2013.

Kaspar, F., et al.: Monitoring of climate change in Germany – data, products and services of Germany's National Climate Data Centre. Adv. Sci. Res., 10, doi:10.5194/asr-10-99-2013, 99–106, 2013.

Long, C. and Dutton, E.: BSRN Global Network recommended QC tests, V2.0, Tech. rep., available as PDF at: <http://www.bsrn.awi.de>, 2002.

Spengler, R.: The new Quality Control- and Monitoring System of the Deutscher Wetterdienst. Proceedings of the WMO Technical Conference on Meteorological and Environmental Instruments and Methods of Observation, Bratislava, 2002.

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

The data in the directories */historical/ are extended each year. The older data are not expected to change. For archived data sets which are required not to change, use hourly or daily values (subdirectories /historical/) instead. This document is maintained by the National Climate Data Centre (NKDZ) of DWD, last edited 21.01.2019.