DATA SET DESCRIPTION

10-minute values of station observations of air temperature 2 m above ground in °C for Germany

Version v21.3 & recent

Cite data set as: DWD Climate Data Center (CDC): 10-minute values of station observations of air temperature 2 m above ground in °C for Germany, version v21.3, last accessed: <date>

Dataset-ID: urn:x-wmo:md:de.dwd.cdc::OBS_DEU_PT10M_T2M
alias: urn:x-wmo:md:de.dwd.cdc::VGSL_TT_10_MN320

INTENT OF THE DATASET

These data come from DWD stations (partner networks not included). Extensive station metadata (station relocations, instrument changes, change of reference time, changes in algorithms) are provided with the download via the CDC portal. The measurements are assigned a time stamp which marks the end of the 10-minute interval. As of 1.1.2000 the time stamp is given in UTC, for the period before that in CET. The values are average values over the minute, which ends at the time stamp.

POINT OF CONTACT

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DATA DESCRIPTION

Spatial coverage Germany

Temporal coverage 2020-01-01 until - yesterday

Temporal resolution 10 minutes

Projection EPSG:4326

Units

GUID	CDC system wide unique identifier of the observation record	String (PRODUCT_CODE.NUMBER)
SDO_GEOM	the geometry of the spatial data object	String (OGC WK)T
SDO_TYPE	type of the spatial data object, like Station, Region, Cell, ...	String (OGC WK)T
SDO_GUID	CDC system wide unique identifier of the spatial data object (SDO)	

SDO_CODE	ID of the spatial data object (SDO), as it is defined in the domain of the DWD	String
SDO_NAME	name of the spatial data object (SDO), as it is defined in the domain of the DWD	String
ZEITSTEMPEL	reference datetime for the value (! = measurement time)	datetime (YYYY-MM-DD hh:mi:ss)
ZEITINTERVALL	length of the reference interval	String (ISO_8601#time_intervals)
WERT	10-minute values of station observations of air temperature 2 m above ground in °C	Number
EINHEIT	Unit of measure of the value	String
QUALITAET_BYTE	QUALITAET_BYTE (QB) denotes whether the value was objected to and/or corrected (see quality flag)	Number
QUALITAET_NIVEAU	QUALITAET_NIVEAU (QN) describes the procedure of quality control and refers to a complete set of parameters at a specific date.(see quality flag)	Number
BEOBACHTER_GUID	::TO-DEPRECATE@cdc2.1-next:: CDC system wide unique identifier of the spatial data object (SDO)	Number
STATION_ID	::TO-DEPRECATE@cdc2.1-next:: ID of the spatial data object (SDO), as it is defined in the domain of the DWD	String
STATION_NAME	::TO-DEPRECATE@cdc2.1-next:: name of the spatial data object (SDO), as it is defined in the domain of the DWD	String
GEOM	::TO-DEPRECATE@cdc2.1-next:: the geometry of the spatial data object	String (OGC WKT)

Uncertainties

The stations are selected and operated according to WMO guidelines.

Quality information

The QUALITAETS_BYTE (QB) denotes whether the value was objected to and/or corrected.

Explanation for QB:

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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.

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The QUALITAETS_NIVEAU (QN) shows the quality control procedure applied for a data report (of several parameters) for a certain reporting time.

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.

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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.

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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.

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).

REFERENCES

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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.

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REVISION HISTORY

This document is maintained by the Climate Data Centre of the DWD, last edited at 2021-08-02.