Deutscher Wetterdienst
Wetter und Klima aus einer Hand

DATA SET DESCRIPTION

Hourly station observations of wind velocity 10 m above ground in m/s for Germany

Version v19.3 & recent

Cite data set as: DWD Climate Data Center (CDC): Hourly station observations of wind velocity 10 m above ground in m/s for Germany, version v19.3, 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

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DATA DESCRIPTION

Spatial coverage stations in Germany

Temporal coverage 1949-01-01 until - yesterday

Temporal resolution hourly

Units

GEOM	the geometry of the spatial data object	String (OGC WKT)
STATION_ID	ID of the spatial data object (SDO), as it is defined in the domain of the DWD	String
STATION_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) usually denoting the begin of the reference interval	Datetime (YYYY-MM-DD hh:mi:ss)
ZEITINTERVALL	length of the reference interval	String (ISO_8601#time_intervals)
WERT	Hourly station observations of wind velocity 10 m above ground in m/s	Number
EINHEIT	unit of the values	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	Number

set of parameters at a specific date.(see quality flag)

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. Uncertainties are also expected from (2) changes in instrumentation, see instrument metadata; and possibly also from (3) varying quality control procedures (Behrendt et al., 2011). Further, uncertainties are known to come from (4) errors during data transfer or errors in the software, (5) change of observing personnel, and (6) others, see Freydank, 2014.

Quality information

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

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.

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.

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 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

Several steps of operational automatic 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

For the long term stability, refer to the relevant aspects of discussed in the section uncertainty.

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

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

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

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.

Freydank, E.: 150 Jahre staatliche Wetter- und Klimabeobachtungen in Sachsen. Tharandter Klimaprotokolle Band 21, 2014.

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.

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.

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REVISION HISTORY

This document is maintained by the Climate Data Centre of the DWD, last edited at 2019-09-30.