

DATA SET DESCRIPTION

Phenological observations of crops from sowing to harvest (annual reporters, historical)

Version v006

Cite data set as: DWD Climate Data Center (CDC): Phenological observations of crops from sowing to harvest (annual reporters, historical), Version v006, 2019.

INTENT OF THE DATASET

This describes the freely available data of the DWD Climate Data Center (CDC). The phenological data are quality controlled, flagged with a quality byte and partly corrected.

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 1951-01-01 until 2017-12-31

Temporal resolution annual

Format(s) Ascii. Each file PH_Jahresmelder* contains the observation of a certain species (e.g., oat), with fixed object_id (e.g., 208). The rows are sorted according to Stations_id, reference year, phase_id. Each row corresponds to one observation. The list with all phenological stations and corresponding meta-data can be found here:
https://opendata.dwd.de/climate_environment/CDC/help/PH_Beschreibung_Phaenologie_Stationen_Jahresmelder.txt .

Units meadows, winter wheat, winter rye, winter barley, winter oilseed rape, summer wheat, spring barley, oat, sunflower, maize, potato, early potato (pregerminated), early potato (non pregerminated), late potato, green bean, green pea, tomato, white cabbage, alfalfa, red clover, beet, sugar beet, fodder beet.

Qualitaetsniveau	see	Quality_flags
Stations_id	see	stations annual reporters
Referenzjahr		year corresponding to phase
Objekt_id	see	phase definition
Phase_id	see	phase definition
Eintrittsdatum	date of observation	yyyymmdd
Eintrittsdatum_QB	see	Quality_flags
Jultag	date of observation	day of the year

Uncertainties Factors for uncertainties include:
(1) change of observer (2) change of plants.

Quality information	The Qualitätsniveau describes the data control. The individual dates are flagged with a quality byte (Eintrittsdatum_QB).	
	Qualitätsniveau:	
	1	only formal control
	7	systematically controlled and flagged but not corrected
	10	quality control and routine corrections finished (individual corrections later still possible)
	Eintrittsdatum_QB	
	0	unchecked
	1	correct
	2	corrected
	3	ratified
	5	uncertain
	7	invalid date, e.g. 31. April, corrected automatically to 30. April
	8	incorrect
	10	meadows continuous green, anew beginning of turning green not detectable

DATA ORIGIN

A fixed observation area is assigned to every phenological observer. Each observation area has a station-id assigned by the network administration. The observer registers the beginning of determined growth stages (pheno phases) and notes the date in the phenological observation journal, as soon as it occurred. Crops are observed from sowing to harvest on the same field. At the end of the year, the observer send the completed observation sheet to the network operator for data recording. In the long run, this system will be replaced by online data transmission (2018: about 50 % of the observers).

VALIDATION AND UNCERTAINTY ESTIMATE

During the operational handling of phenological data each year a gross error check and an additional spatial quality control has been performed. Each year 1 - 2 % of the data are flagged to be wrong. Causes could be confusion of months and phases.

CONSIDERATIONS FOR APPLICATIONS

Remarks from the observer about the report (such as K.n.A.d.Ph. = abnormal occurrence of phase) see https://opendata.dwd.de/climate_environment/CDC/observations_germany/phenology/annual_reporters/crops/historical/PH_Jahresmelder_Landwirtschaft_Kulturpflanze_Notiz.txt. Maize - variety and method of harvest see https://opendata.dwd.de/climate_environment/CDC/observations_germany/phenology/annual_reporters/crops/historical/PH_Jahresmelder_Landwirtschaft_Kulturpflanze_Mais_Spezifizierung.txt. BBCH code see [phase definition](#).

ADDITIONAL INFORMATION

English and Latin names of plants are listed in [PH_Beschreibung_Pflanze.txt](#). For the English name of the phase see [PH_Beschreibung_Phase.txt](#). According to experience, at some sites a few plant species are not, not continually or only partly observed. From 1991 (West Germany)/ 1992 (East Germany) a modified observation programme was introduced, see [PH_Beschreibung_Besonderheiten_Zeitreihen_Jahresmelder.txt](#). When using phenological data, it is advisable to use several stations characteristically of a natural area or natural area group. In this way, the data have less gaps and the specifics of a single station are less prominently influencing the results. The classification of natural areas and natural area groups used by Deutscher Wetterdienst (DWD) for phenological data is based on the map *Naturräumliche Gliederung und Waldverbreitung* (Meynen und Schmithüsen, 1953-1962), see also [Handbuch der naturräumlichen Gliederung Deutschlands](#). Observation criteria for current pheno phases are defined in the [instructions for observers](#).

REFERENCES

Bruns, E., van Vliet, A.J.H.: Standardisation of phenological monitoring in Europe. Wageningen University, Deutscher Wetterdienst, 2003.

Emil Meynen, Josef Schmithüsen (Herausgeber): Handbuch der naturräumlichen Gliederung Deutschlands. Bundesanstalt für Landeskunde, Remagen/Bad Godesberg, 1953–1962.

Kaspar, F., K. Zimmermann, and C. Polte-Rudolf: An overview of the phenological observation network and the phenological database of Germany's national meteorological service (Deutscher Wetterdienst). Adv. Sci. Res., 11, 93-99, doi:10.5194/asr-11-93-2014, 2014.

DWD, Anleitung für die phänologischen Beobachter des Deutschen Wetterdienstes, Vorschriften und Betriebsunterlagen Nr. 17, Deutscher Wetterdienst Offenbach 1991, überarbeitet 2014.

COPYRIGHT

The instructions in https://opendata.dwd.de/climate_environment/CDC/Terms_of_use.pdf should be followed. The DWD website provides comprehensive copyright information.

REVISION HISTORY

The data are provided in approximately annual intervals as versioned data sets to take into account the historical data rescued in the meantime and with improved flagging of known data quality issues.

This document is maintained by DWD National Climate Data Center (NKDZ), last edited on 2019-04-25.