

## DATA SET DESCRIPTION

### *Phenological observations of crops from sowing to harvest (annual reporters, recent)*

#### Version recent

**Cite data set as:** DWD Climate Data Center (CDC): Phenological observations of crops from sowing to harvest (annual reporters, recent), Version v007, <date>.

**Dataset-ID:** urn:x-wmo:md:de.dwd.cdc::obsgermany-phenology-annual\_reporters-crops-recent

#### INTENT OF THE DATASET

The phenological data provide an overview of plant development in Germany over the year. The data are collected by volunteer observers and reported to DWD.

#### 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** rolling: 500 day before yesterday until - yesterday

**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](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, beet, sugar beet, fodder beet.

Qualitaetsniveau	see	Quality_flags
Stations_id	see	<a href="#">stations annual reporters</a>
Referenzjahr		year corresponding to phase
Objekt_id	see	<a href="#">phase definition</a>

Phase_id	see	<a href="#">phase definition</a>
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 QUALITAETS\_BYTE (QB) denotes whether the value was objected to and/or corrected.

Explanation for QB:

\_\_\_\_\_  
QB = 1 : had no objections;  
QB = 2 : corrected;  
QB = 3 : confirmed with objection rejected;  
QB = 5 : doubtful;  
QB = 8 : incorrect;  
QB = 10 : meadows continuous green, a new greening could not be observed.  
\_\_\_\_\_

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 = 7 : second control done, before correction;  
QN = 10 : quality control finished, all corrections finished.  
\_\_\_\_\_

## 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 (2020: 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

The current year data set is incomplete, naturally only online reported observations up to the current day are included, these stations are not spread evenly across Germany. In the current year, all data of beet are collected under the object-ID 25, see [https://opendata.dwd.de/climate\\_environment/CDC/observations\\_germany/phenology/annual\\_reporters/crops/recent/PH\\_Jahresmelder\\_Landwirtschaft\\_Kulturpflanze\\_Ruebe.txt](https://opendata.dwd.de/climate_environment/CDC/observations_germany/phenology/annual_reporters/crops/recent/PH_Jahresmelder_Landwirtschaft_Kulturpflanze_Ruebe.txt). After the end of the year, the object-ID of the actual beet variety replaces the object-ID 25, see [https://opendata.dwd.de/climate\\_environment/CDC/observations\\_germany/phenology/annual\\_reporters/crops/recent/PH\\_Jahresmelder\\_Landwirtschaft\\_Kulturpflanze\\_Ruebe\\_Spezifizierung.txt](https://opendata.dwd.de/climate_environment/CDC/observations_germany/phenology/annual_reporters/crops/recent/PH_Jahresmelder_Landwirtschaft_Kulturpflanze_Ruebe_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\\_Phaenologie\\_Besonderheiten\\_Zeitriihen.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.

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

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.

## COPYRIGHT

The instructions in [https://opendata.dwd.de/climate\\_environment/CDC/Terms\\_of\\_use.pdf](https://opendata.dwd.de/climate_environment/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 Center (CDC) of DWD, last edited on 2021-06-15.