

## DATA SET DESCRIPTION

### *Multi-annual grids of soil temperature in 5 cm depth under uncovered soil*

#### Version 0.x

**Cite data set as:** DWD Climate Data Center (CDC): Multi-annual grids of soil temperature in 5 cm depth under uncovered soil, version 0.x, current date.

#### INTENT OF THE DATASET

The grid is interpolated from the soil temperatures derived at a fixed selection of stations. The soil temperature was calculated by the model AMBETI, which was developed at the agrometeorological research centre in Braunschweig. The interpolation method is a regional multiple linear regression with geographical longitude, latitude and height of location as input variables and a subsequent triangulation, covering Germany with a resolution of 1x1 km.

#### POINT OF CONTACT

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#### DATA DESCRIPTION

<b>Spatial coverage</b>	grids over Germany
<b>Temporal coverage</b>	01.01.1991 - 31.12.2010
<b>Spatial resolution</b>	1 x 1 km
<b>Temporal resolution</b>	multi-annual, for each month of the calendar
<b>Projection</b>	Gauss Krüger 3. meridian strip. The PRJ-file can be downloaded here: <a href="ftp://ftp-cdc.dwd.de/pub/CDC/help/gk3.prj">ftp://ftp-cdc.dwd.de/pub/CDC/help/gk3.prj</a> .
<b>Format(s)</b>	The grids are in ascii format. The first six rows describe the grid definition, including the upper left corner, spatial resolution and amount of rows and columns. Grid points outside Germany are marked as missing numbers. The grid can be read with ArcGis.
<b>Parameters</b>	Values in the grid must be divided by 10 to get correct unit of °C.
<b>Uncertainties</b>	The grids contain uncertainties concerning calculation and also from interpolation. From nearly 280 locations 360000 grid points were interpolated. As soil temperature depends on the irradiance and the temperatures, it does not vary too strongly spatially. The resulting grids should be plausible, with larger deviations to be expected in winter with variable snow cover.
<b>Quality information</b>	without quality flags

#### DATA ORIGIN

The calculations at the locations were made by the agrometeorological model AMBETI. All calculations were made for uncovered typical soil at location of weather station. The interpolation was made in two steps. Dividing Germany in 20 different regions by overlapping circles and making a multiple linear regression with all locations in each circle. Regression coefficients are the height, the longitude and latitude of the location. The calculated regression coefficients of the four surrounding circles for a given location were weighted in dependence from the distance to circle centres. In a last step the differences between calculated values and the interpolated values at the calculation locations are distributed by a triangulation into the grid.

## **VALIDATION AND UNCERTAINTY ESTIMATE**

The resulting grids depend strongly on the used interpolation. Plausibility tests showed very good performance.

## **REFERENCES**

Braden, H., 1995: The model AMBETI. - A detailed description of a soil-plant-atmosphere model, Berichte des Deutschen Wetterdienstes, Nr. 195.

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## **REVISION HISTORY**

This document is maintained by DWD unit KU31, last edited on 19.12.2018.