



Documentation

Digital Orthophotos DOP20

product as of 07/2025



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1 Overview of the dataset

Product:	Digital Orthophotos (DOP20)
Content:	georeferenced digital orthophotos of Germany as <ul style="list-style-type: none">• color image (RGB)• infrared image (IR)• false-color image (CIR)
Area:	Bundesrepublik Deutschland (Federal Republic of Germany)
Spatial structure*:	tiles of the size 1 x 1 km (about 400 000 tiles for Germany)
Spatial reference*:	UTM-projection in zone 32 ETRS89, Ellipsoid GRS80 (EPSG:25832)
Optional Position accuracy:	the standard deviation is <ul style="list-style-type: none">• DOP20 = $\pm 0,4$ m
Currentness:	The currentness depends on the location. Depending on the flight cycle, the DOPs are 0 to 4 years old at the most. Information about the flight date of each image is provided by the web application currentness overview DOP and the web service wms_info
Optional Resolution:	Ground resolution of 20 cm
Data formats:	GeoTiff, jpeg compressed
Data supply*:	<ul style="list-style-type: none">• Web Map Service (WMS)• Web Map Tile Service (WMTS)• data set via download or storage device
Historical data:	Available from 2002 in location-dependent flight cycles of mostly 5 and later 3 years
Data volume:	<ul style="list-style-type: none">• 3-5 MB pro Kachel RGB, CIR• 1,5 TB entire dataset RGB, CIR• 6-12 MB per tile IR• 2,9 TB entire dataset IR
Data source:	Surveying Authorities of the Laender

* Please note that not all forms of delivery can be provided with each georeferencing and data format. If you have any questions, feel free contact the Service Centre (DLZ).

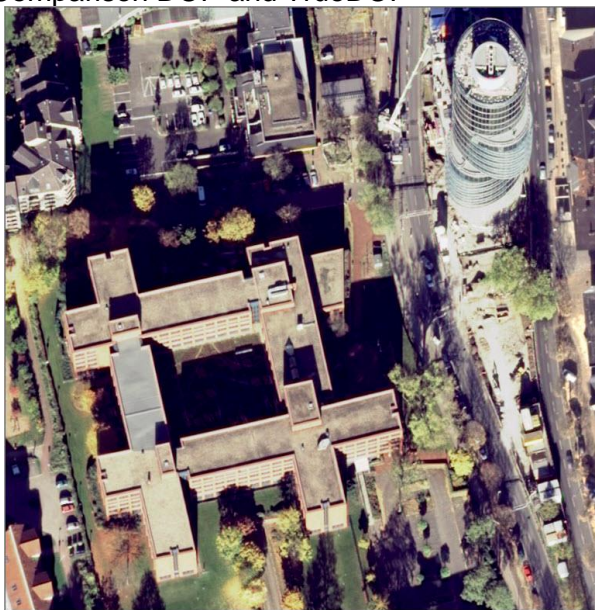
2 Description of the dataset

2.1 content and format

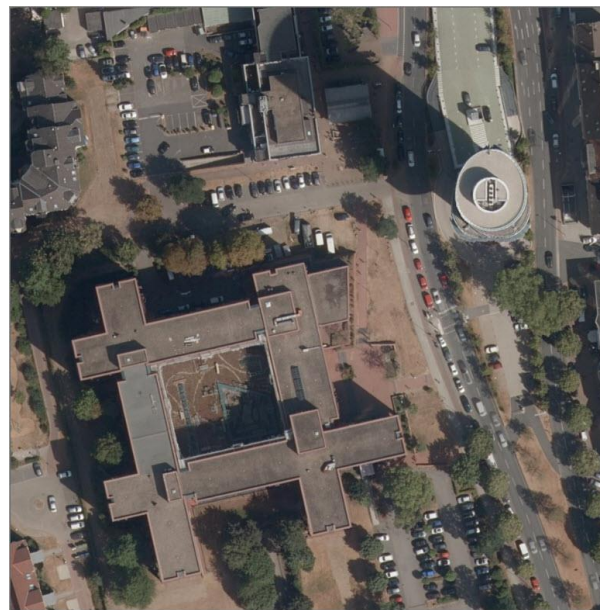
The dataset contains the Digital Orthophotos (DOP) of all federal states for the territory of the Federal Republic of Germany. The orthophotos are cropped at the state borders and put together to a mosaic without overlapping.

Digital orthophotos (DOP) are distortion-free and true-to-scale raster data of photographic images of the earth's surface. They are derived from oriented aerial photographs and a Digital Elevation Model. The Digital Terrain Model is used for the classical orthophotos. Since 2019, true orthophotos (TrueDOP) have increasingly been provided by the federal states whose rectification is based on a digital surface model, which means that fold-over effects and blind spots can be avoided as far as possible. The spatial availability of TrueDOP can be seen from the corresponding graphic overview on the DLZ website under the heading „Information about data and services“ → „Currentness overview“.

Comparison DOP and TrueDOP



DOP



TrueDOP

Advantages TrueDOP

- position-correct representation of objects
- increase of information content
- improved comparability over several recording years

Disadvantages TrueDOP

- no height information due to perspective display
- possibly jagged object edges
- unusual display of very small objects

2.2 radiometric and spectral properties

following spectral band combinations are available:

- RGB - 3 Band natural colour (Rot – Grün – Blau), 8 Bit
- CIR - 3 Band false colour (NIR – Rot – Grün), 8 Bit
- IR - 1 Band infrared (NIR), 8 Bit

2.3 file properties

The DOP are offered as tiles in GeoTiff format with a 1km x 1km ground coverage. The names of the tiles are formed according to their position in the selected geo-reference system using the coordinate (given in whole kilometers) of their lower left corner:

dop20_<spectral band combination>_<UTM zone>_<easting>_<northing>_<size>

Examples:

dop20_rgb_32_292_5626_1 - RGB-DOP in UTM projection, zone 32
dop20_cir_32_292_5626_1 - CIR-DOP in UTM projection, Zone 32

2 files are provided for each tile:

<tile name>.tif - image data in GeoTIFF format
<tile name>.csv - meta information

In order to limit the number of files within a directory, all tiles with the same easting value are grouped together in common subdirectories *s<easting value in km including UTM zone number>*.

Please note for DOP in the UTM system:

In the filename the easting coordinate contains the zone number, but the images are georeferenced according to the EPSG:28532 without zone number.

In addition, the meta information of all single tiles of the entire dataset are condensed in a single file. The file name contains the product description as well as the date of production of this file:

dop20_<spectral band combination>_<date of production>.csv

file structure:

<product name>
├── s<Easting>
│ ├── <tile name>.tif
│ └── <tile name>.csv
└── <metadatafile>.csv

2.4 compression

RGB, CIR: compressed JPEG YCbCr factor 20
IR: compressed JPEG factor 5

2.5 metadata

The schema of the metadata is based on the specifications defined by the Working Committee of the Surveying Authorities of the Laender of the Federal Republic of Germany (AdV) in the latest version of the document *Produkt- und Qualitätsstandard für Digitale Orthophotos*. The values of the attributes were taken from the oldest segment of the underlying original data.

3 Further Information

Further information concerning the product are available at gdz.bkg.bund.de. In case of any questions, you are welcome to contact our service centre at dlz@bkg.bund.de.

General information regarding the Federal Agency for Cartography and Geodesy can be found on our homepage www.bkg.bund.de.