

WorldDEM™

WorldDEM™ Neo

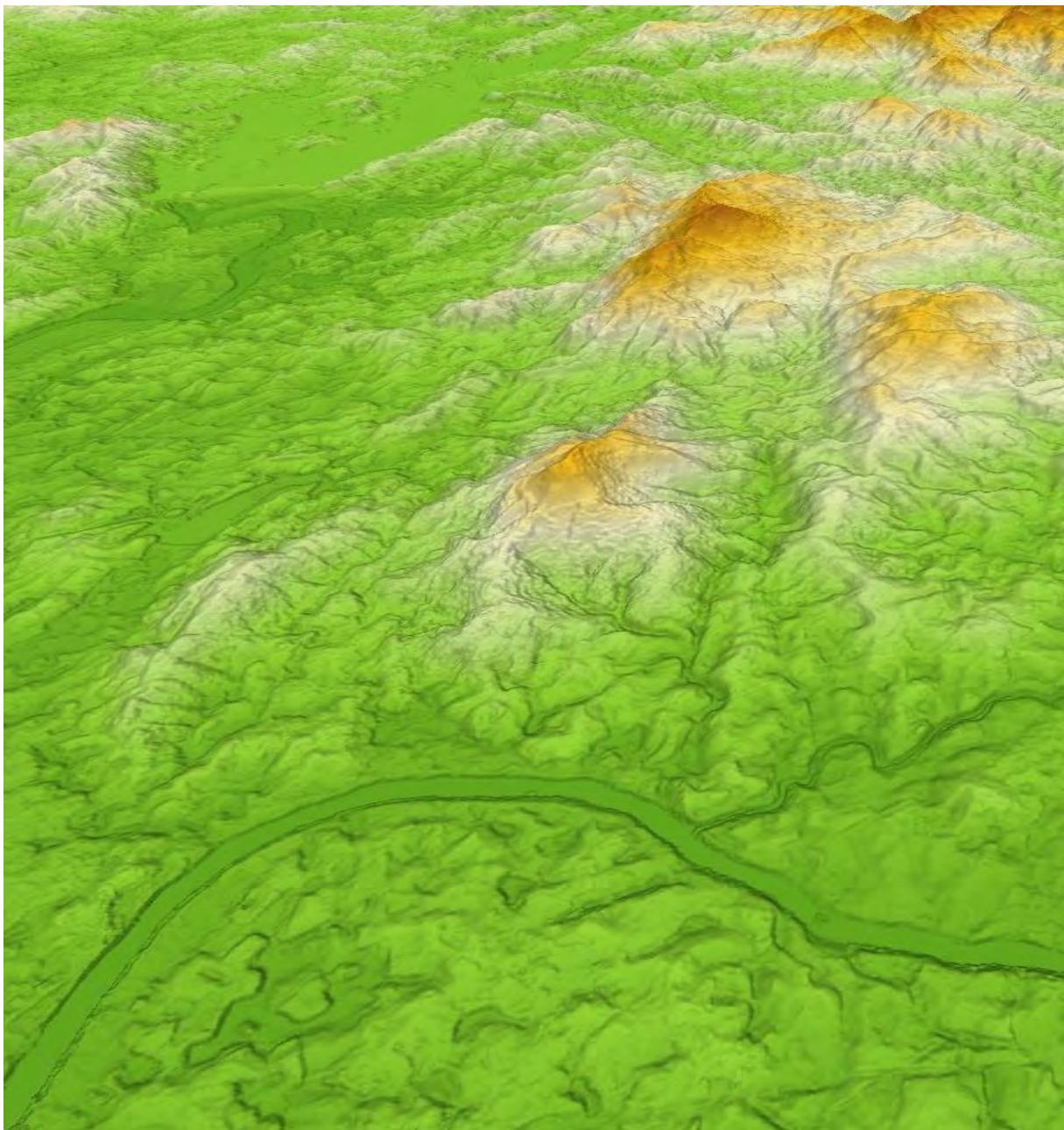
Technical Product Description

Version 1.0

WorldDEM™ Neo – the next level of global elevation models

The WorldDEM™ Neo product is an edited Digital Surface Model (DSM) based on the combination of the TanDEM-X Change raw DEM data acquired and processed by the German Space Agency (DLR) and the WorldDEM™ product.

Airbus has developed an adaptive, weighted algorithm combination to merge the mosaic of Change raw DEM scenes (2017-2021, grid spacing: 0.2 arcseconds) with the edited WorldDEM coverage (2010-2015; grid spacing: 0.4 arcseconds). A new global DEM grid with ~5m grid spacing, hence called WorldDEM Neo is created. The grid spacing of WorldDEM™ Neo is 0.15 arcseconds and follows Level4b of the DGED Product Implementation Profile. This allows for a DGED-compliant grid spacing closest to the original Change raw DEM scenes in combination with the best possible preservation of the level of detail provided by the new data.



WorldDEM Neo Digital Surface Model (example)

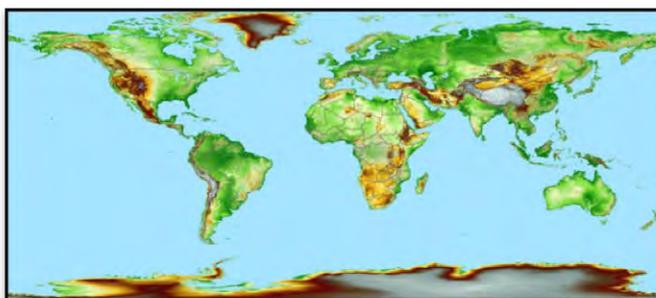
WorldDEM™ Neo – Fact Sheet

Source

Satellite imagery data of continuing TanDEM-X mission primarily acquired from 2017-2021 and its derived auxiliary layers.
 WorldDEM™ Neo is based on information from the edited WorldDEM™ product (2010-2015, 0.4 arcseconds)

Coverage

Global (pole-to-pole); i.e. whole landmass of the Earth (~ 148.5 Mkm²)



File Format

32-bit floating-point raster data, GeoTIFF

Grid Spacing

WorldDEM™ Neo grid spacing is 0.15" (~5m, DGED Level 4b).
 The longitude convergence is addressed with a variable grid spacing dep. on latitude:

Latitude pixel spacing	Longitude pixel spacing					
	0°-50°	50°-60°	60°-70°	70°-80°	80°-85°	85°-90°
0.15"	0.15"	0.225"	0.3"	0.45"	0.75"	1.5"

Other grid spacing levels are possible upon customer request

Coordinate Reference System

Geographic coordinates with vertical units in metres. The horizontal reference datum is the World Geodetic System (WGS84-G1150) and the vertical reference datum is the Earth Gravitational Model 2008 (EGM2008).

Delivery Unit and Dataset Identification

The standard tile size is 0.5°x0.5° (according to DGED Product Implementation Profile).
 The identification of a standard tile is according to the lower left coordinate of the dataset.
 The minimum order size is 100 km².

Accuracy

Absolute Vertical Accuracy	< 2.5m (90% linear error, aligned to WorldDEM™)
Relative Vertical Accuracy	< 2m (slope ≤ 20%) < 4m (slope > 20%)
Absolute Horizontal Accuracy	< 6m (90% circular error)

Content

The WorldDEM™ Neo delivery package contains the following auxiliary information:

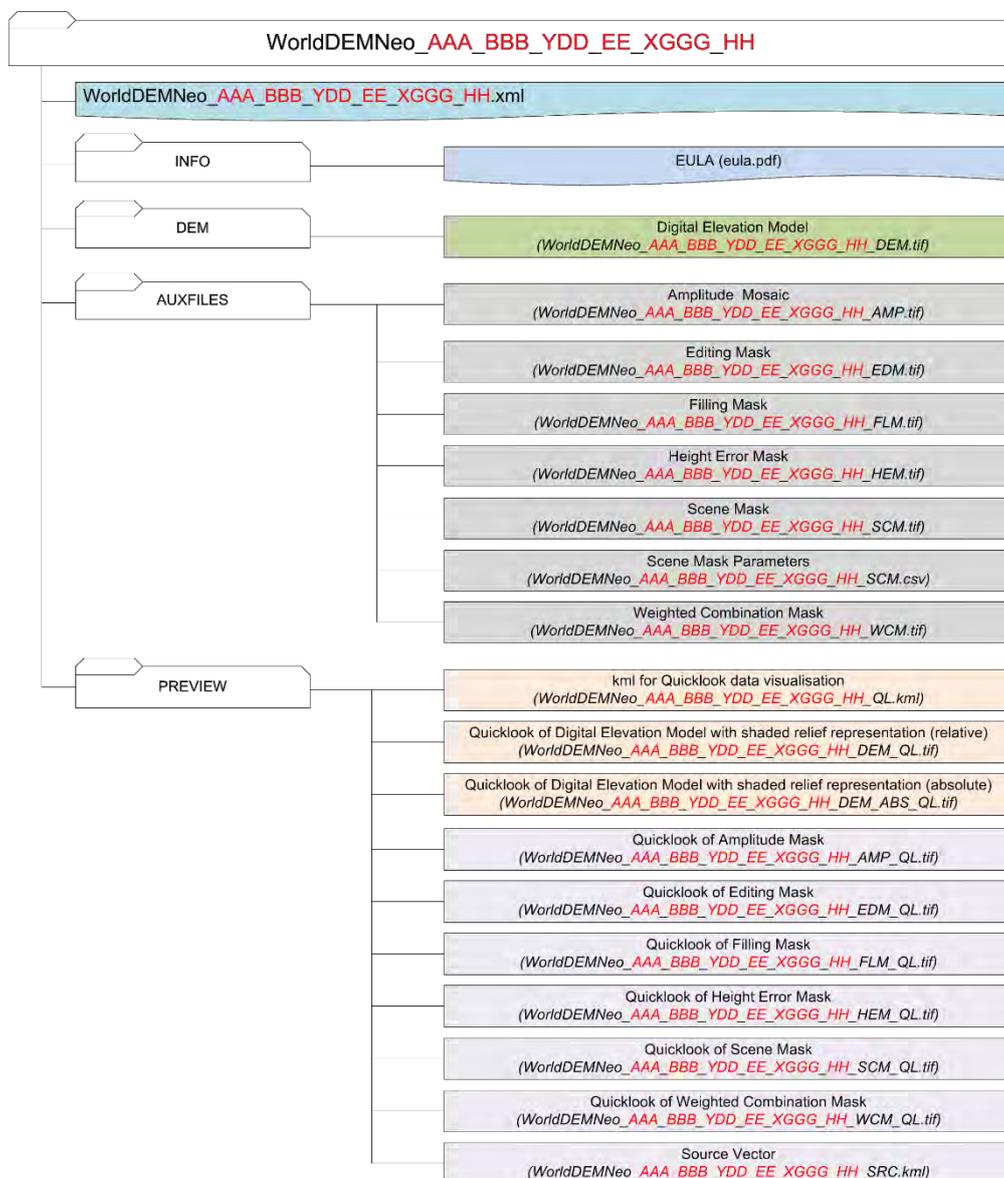
Auxiliary File		Data Format	Description
Amplitude Mosaic	AMP	16 bit unsigned integer, GeoTIFF	The Amplitude Mosaic (AMP) consists of the calibrated amplitude values of all contributing Change DEM scenes. Pixel value 0 corresponds to no data, i.e. the Change DEM data is not available or process able.
Editing Mask	EDM	8 bit unsigned integer, GeoTIFF	The Editing Mask provides a summary of all changes applied to the DEM pixels. This mask indicates all DEM pixels that were modified during the terrain and hydro editing process. The final Editing Mask represents the last editing process that was applied to a pixel.
Filling Mask	FLM	8 bit unsigned integer, GeoTIFF	A Filling Mask is created during the WorldDEM™ terrain editing process. It includes the required information of the terrain editing process. All edited and filled pixels are flagged in this mask.
Height Error Mask	HEM	32 bit floating point, GeoTIFF	The Height Error Mask represents the corresponding height error for each DEM pixel in the form of the standard deviation derived from the interferometric coherence and geometrical consideration. The mask is processed by combining the individual height error information of the TanDEM-X Change raw DEM and WorldDEM™. Areas that have been flattened during the production process have been masked out.
Scene Mask	SCM	8 bit unsigned integer, GeoTIFF	The Scene Mask provides a unique coding for the Change raw DEM scenes used. The respective time stamp as well as dedicated acquisition parameters for all pixel values are described in the corresponding CSV file.
Source Vector	SRC	KML	The Source Vector (SRC) is a vector file (kml) containing the information of the TanDEM-X Change DEM data scenes used for WorldDEM™ Neo processing. This file includes additional information about the acquisition ID, data scene number, data acquisition date etc.
Weighted Combination Mask	WCM	8 bit unsigned integer, GeoTIFF	A Weighted Combination Mask (WCM) provides the weighting information from the adaptive combination process of TanDEM-X Change DEM information and WorldDEM™.
Metadata		XML	The Metadata contains information on the input products, editing process, statistical parameters and general information for all delivered product components. The Metadata is ISO-19115-1 compliant.

WorldDEM™ Neo Product Structure

All product files are structured under the delivery folder as follows:

- XML metadata file
- INFO folder containing the applicable contract / licence terms document (end user licence agreement, PDF)
- DEM folder containing elevation data (GeoTIFF)
- AUXFILES folder containing all optional auxiliary data layers (GeoTIFF, CSV, KML)
- PREVIEW folder containing all quicklooks (GeoTIFF) as well as all kml-files for visualisation in Google Earth including the Source Vector (SRC).

WorldDEM Neo – Product Structure



Naming convention:

AAA = DEM Product Level

BBB = Spacing, 015: 0.15-arcsecond grid

YDD_EE_XGGG_HH= Geolocation of LL corner in decimal deg. (eg. N20_00_W120_00)

Y = N (North) or S (South); DD = Latitude in Degree (Range: 0 – 90); EE = Decimal Latitude Degree (Range: 0 – 99); X = W (West) or E (East)

GGG = Longitude in Degree (Range: 0 – 180); HH = Decimal Longitude Degree (Range: 0 – 99)

DEM Product Level Naming: DSM = Digital Surface Model

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