

WorldDEM™

WorldDEM portal

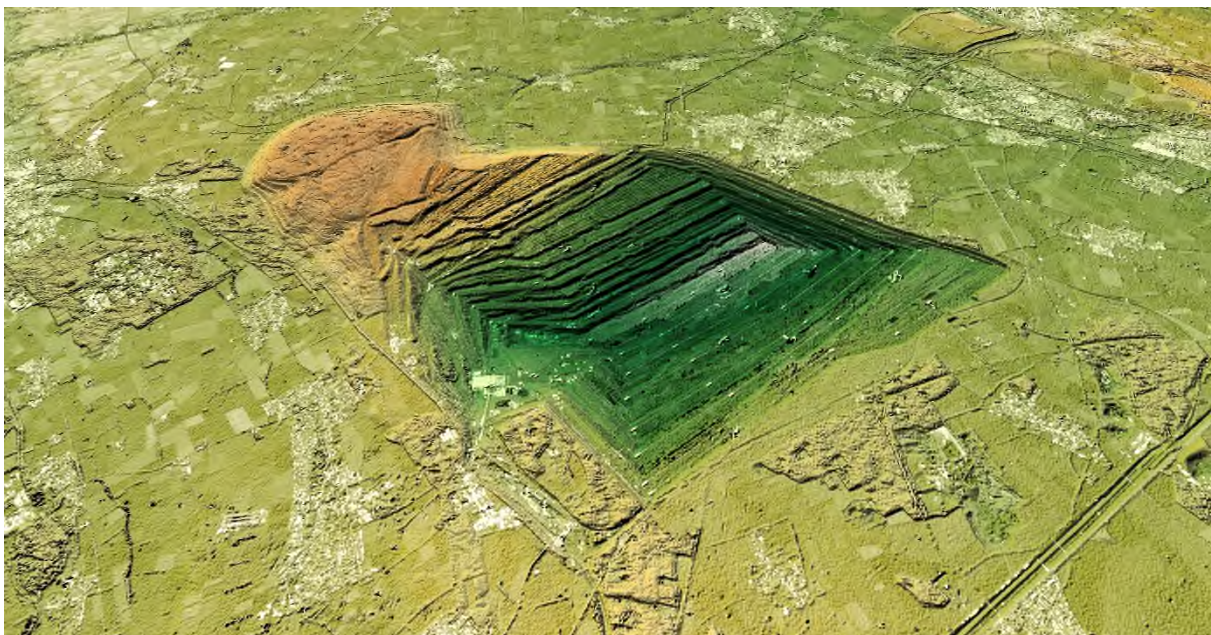
Technical Product Description

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 rawDEM data acquired and processed by the German Space Agency (DLR) and the WorldDEM product.

WorldDEM Neo products built up on satellite imagery and corresponding interferometric elevation data of the continuing TanDEM-X Mission primarily acquired in the years 2017 to 2021. The grid spacing of WorldDEM Neo is 0.15 arcseconds and follows Level4b of the DGED Product Implementation Profile.



WorldDEM Neo Digital Surface Model (example: Germany, Gatzweiler)

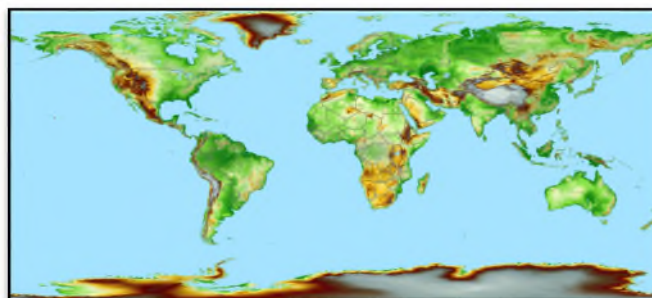
WorldDEM Neo – Fact Sheet

Source

Satellite imagery data of the continuing TanDEM-X Mission primarily acquired in the years 2017 to 2021 and derived auxiliary layers.
 In addition, information of the edited WorldDEM 12m DSM product (2010-2015, 0.4 arcseconds) have been used.

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 meters. 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 1 km² (for WorldDEMportal).

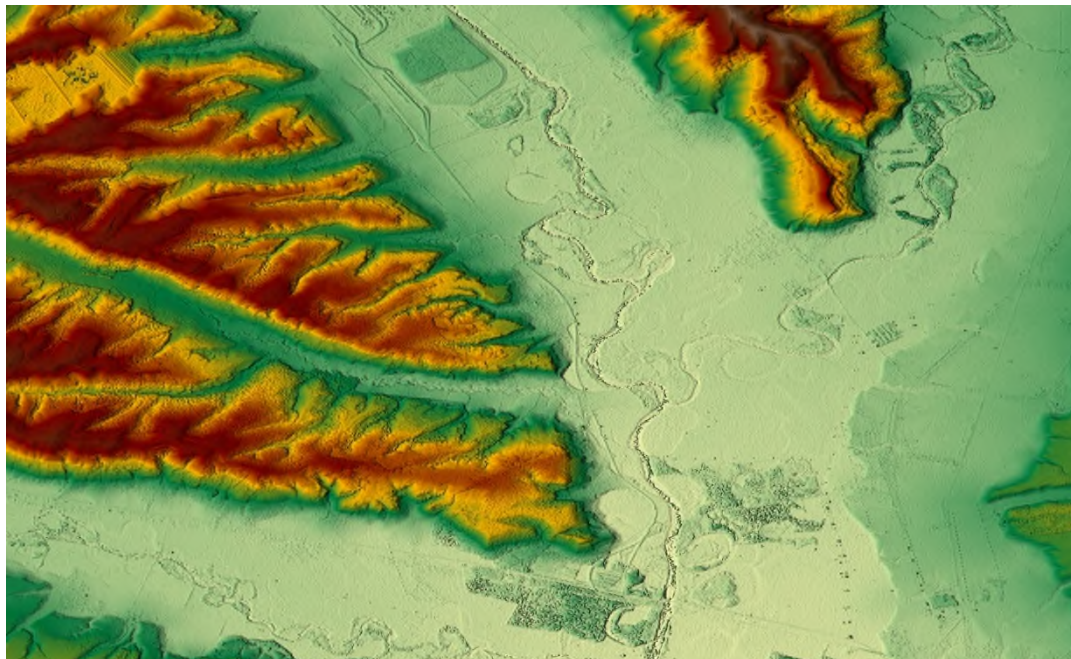
Accuracy

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)

WorldDEM™ – highly accurate elevation data from pole to pole

WorldDEM is a Digital Elevation Model offered by Airbus Defence and Space that covers the entire land surface of the Earth (148.5 million km²). It is the most homogenous and accurate elevation model ever produced on a global scale. Currently available global DEMs are either not completely global, or suffer from severe artefacts and inaccuracies that render them unreliable in many locations.

The WorldDEM products are based on the radar satellite data acquired during the TanDEM-X Mission. The primary goal of the mission was the generation of a worldwide, consistent, and high precision Digital Surface Model (DSM) based on SAR interferometry. The two satellites TerraSAR-X and TanDEM-X operated as a single-pass SAR interferometer (InSAR), using the bi-static InSAR StripMap mode. At least two complete data coverages of the Earth's surface were acquired to generate the DEM product. The data acquisition started in January 2011 and was completed by mid-2015.



WorldDEM Digital Surface Model (example: Romania, Gorj)

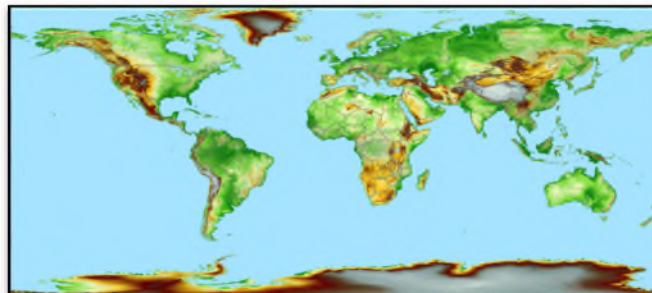
WorldDEM™ – Fact Sheet

Source

Satellite imagery data of the TanDEM-X Mission primarily acquired in the years 2010 to 2015 and derived auxiliary layers.

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 grid spacing is 0.4 arc seconds in latitude, which equals approximately 12m. 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°
0.4"	0.4"	0.6"	0.8"	1.2"	2.0"	2.4"

Other grid spacing levels are possible upon customer request

Coordinate Reference System

Geographic Coordinates with vertical units in meters. 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 1.0°x1.0°.

The identification of a standard tile is according to the lower left coordinate of the dataset.

The minimum order size is 1 km² (for WorldDEMportal).

Accuracy

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

WorldDEM4Ortho – the best way to orthorectify your imagery

WorldDEM4Ortho is an elevation information layer optimized for the orthorectification of high-resolution (HR) and very high resolution (VHR) optical and radar images. It is the most homogenous and accurate elevation model for orthorectification on a global scale.

WorldDEM4Ortho is a digital elevation model based on the WorldDEM™ product offered by Airbus Defence and Space which covers the entire land surface of the Earth.

As a hybrid digital elevation model, superstructures such as urban building areas as well as small objects (e.g. power pylons) and trees, small groups of trees and gallery forests are levelled down to approximate bare ground. In these areas the WorldDEM4Ortho is a Digital Terrain Model (DTM) -like product. Vegetated areas including large forest areas and bare soil are represented as digital surface model with moderate smoothing. Traffic lines, such as railways, major roads and associated bridges are kept and smoothed.



WorldDEM4Ortho Digital Surface Model (example: Germany, Heidelberg)

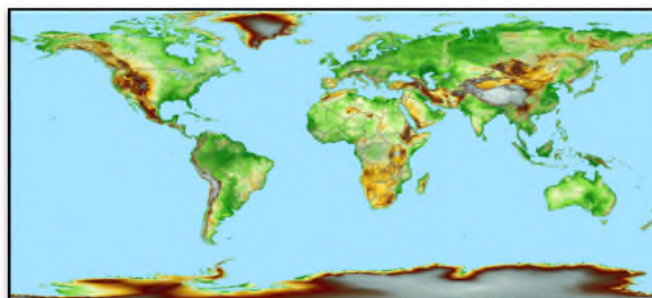
WorldDEM4Ortho – Fact Sheet

Source

Satellite imagery data of the TanDEM-X Mission primarily acquired in the years 2010 to 2015 and derived auxiliary layers.
 Additionally, Forest Map data and Open Street Map data are used in the process.

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

WorldDEM4Ortho grid spacing is 0.4 arc seconds in latitude, which equals approximately 12m.

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°
0.4"	0.4"	0.6"	0.8"	1.2"	2.0"	2.4"

Other grid spacing levels are possible upon customer request

Coordinate Reference System

Geographic Coordinates with vertical units in meters. 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 1.0°x1.0°.

The identification of a standard tile is according to the lower left coordinate of the dataset.

The minimum order size is 1 km² (for WorldDEMportal).

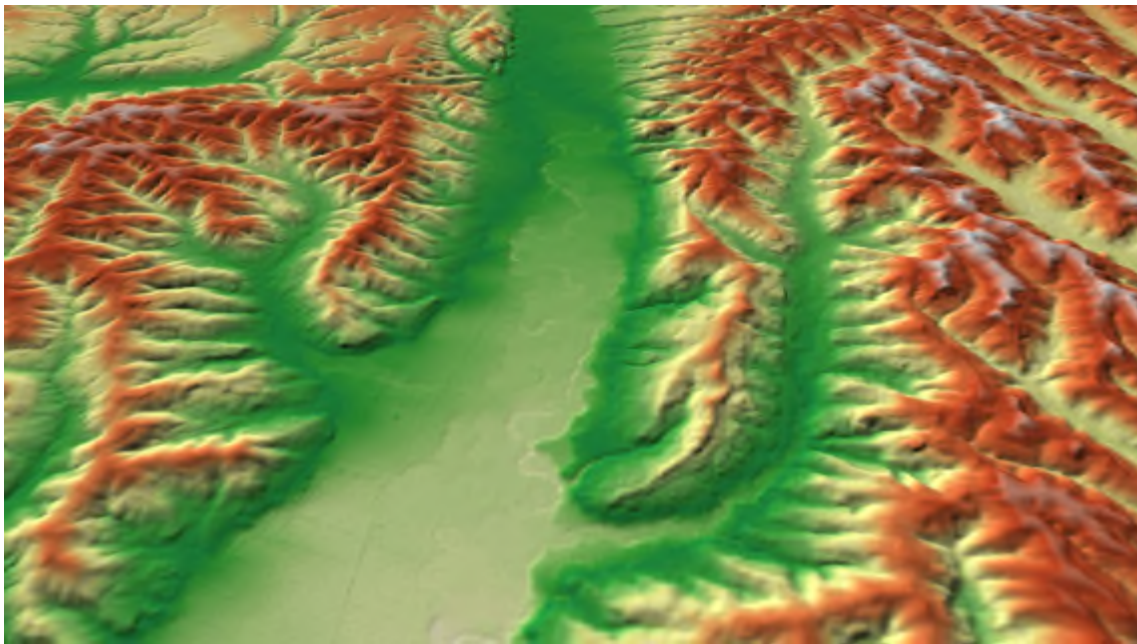
Accuracy

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)

WorldDEM DTMLite – a truly global Digital Terrain Model

WorldDEM DTMLite is an automatically generated global digital terrain model (DTM) derived from the WorldDEM™ product. Surface structures (non-terrain structures) from the DSM such as built-up areas, forests, as well as selected smaller surface elements with a vertical component (e.g. power pylons, small groups of trees) are levelled down to approximate bare Earth elevation while preserving terrain characteristics

WorldDEM DTMLite is the only global digital terrain model covering seamlessly and homogeneously the entire land surface of the Earth at an unrivalled resolution of 24 meters meeting high quality standards.



WorldDEM DTMLite (example: Romania, Gorj)

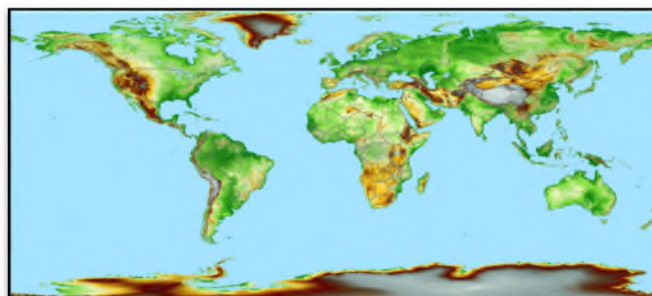
WorldDEM DTM_{lite} – Fact Sheet

Source

Satellite imagery data of the TanDEM-X Mission primarily acquired in the years 2010 to 2015 and derived auxiliary layers.

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 DTM_{lite} grid spacing is 0.4 arc seconds in latitude, which equals approximately 12m.

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°
0.4"	0.4"	0.6"	0.8"	1.2"	2.0"	2.4"

Other grid spacing levels are possible upon customer request

Coordinate Reference System

Geographic Coordinates with vertical units in meters. 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 1.0°x1.0°.

The identification of a standard tile is according to the lower left coordinate of the dataset.

The minimum order size is 1 km² (for WorldDEMportal).

Accuracy

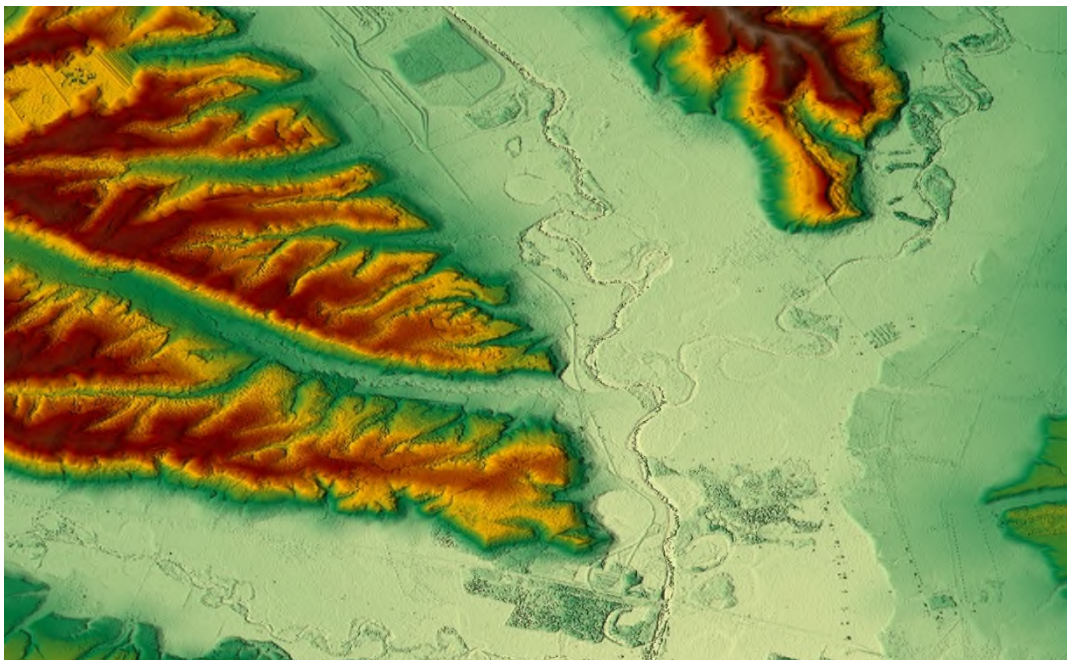
Absolute Vertical Accuracy	< 2.5m (90% linear error, aligned to WorldDEM)
Relative Vertical Accuracy	< 2m (slope ≤ 20%) < 4m (slope > 20%)
Absolute Horizontal Accuracy	< 6m (90% circular error)

WorldDEM30 – highly accurate elevation data from pole to pole

WorldDEM30 is a global DSM directly derived from WorldDEM™ via resampling from 12m to 30m pixel spacing.

WorldDEM is a Digital Elevation Model offered by Airbus Defence and Space that covers the entire land surface of the Earth (148.5 million km²). It is the most homogenous and accurate elevation model ever produced on a global scale. Currently available global DEMs are either not completely global, or suffer from severe artefacts and inaccuracies that render them unreliable in many locations.

The WorldDEM products are based on the radar satellite data acquired during the TanDEM-X Mission. The primary goal of the mission was the generation of a worldwide, consistent, and high precision Digital Surface Model (DSM) based on SAR interferometry. The two satellites TerraSAR-X and TanDEM-X operated as a single-pass SAR interferometer (InSAR), using the bi-static InSAR StripMap mode. At least two complete data coverages of the Earth's surface were acquired to generate the DEM product. The data acquisition started in January 2011 and was completed by mid-2015.



WorldDEM Digital Surface Model (example: Romania, Gorj)

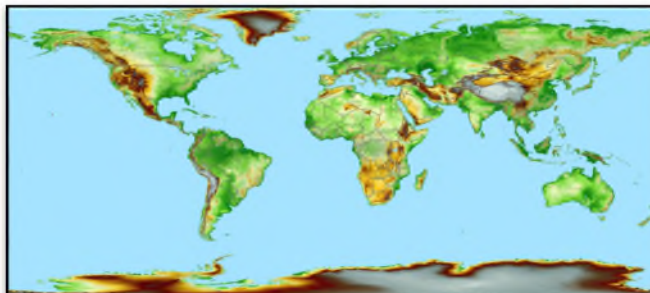
WorldDEM30m – Fact Sheet

Source

Satellite imagery data of the TanDEM-X Mission primarily acquired in the years 2010 to 2015 and derived auxiliary layers.

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 grid spacing is 1.0 arc seconds in latitude, which equals approximately 30m. 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°
1.0"	1.0"	1.5"	2.0"	3.0"	5.0"	10.0"

Other grid spacing levels are possible upon customer request

Coordinate Reference System

Geographic Coordinates with vertical units in meters. 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 1.0°x1.0°.

The identification of a standard tile is according to the lower left coordinate of the dataset.

The minimum order size is 1 km² (for WorldDEMportal).

Accuracy

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

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