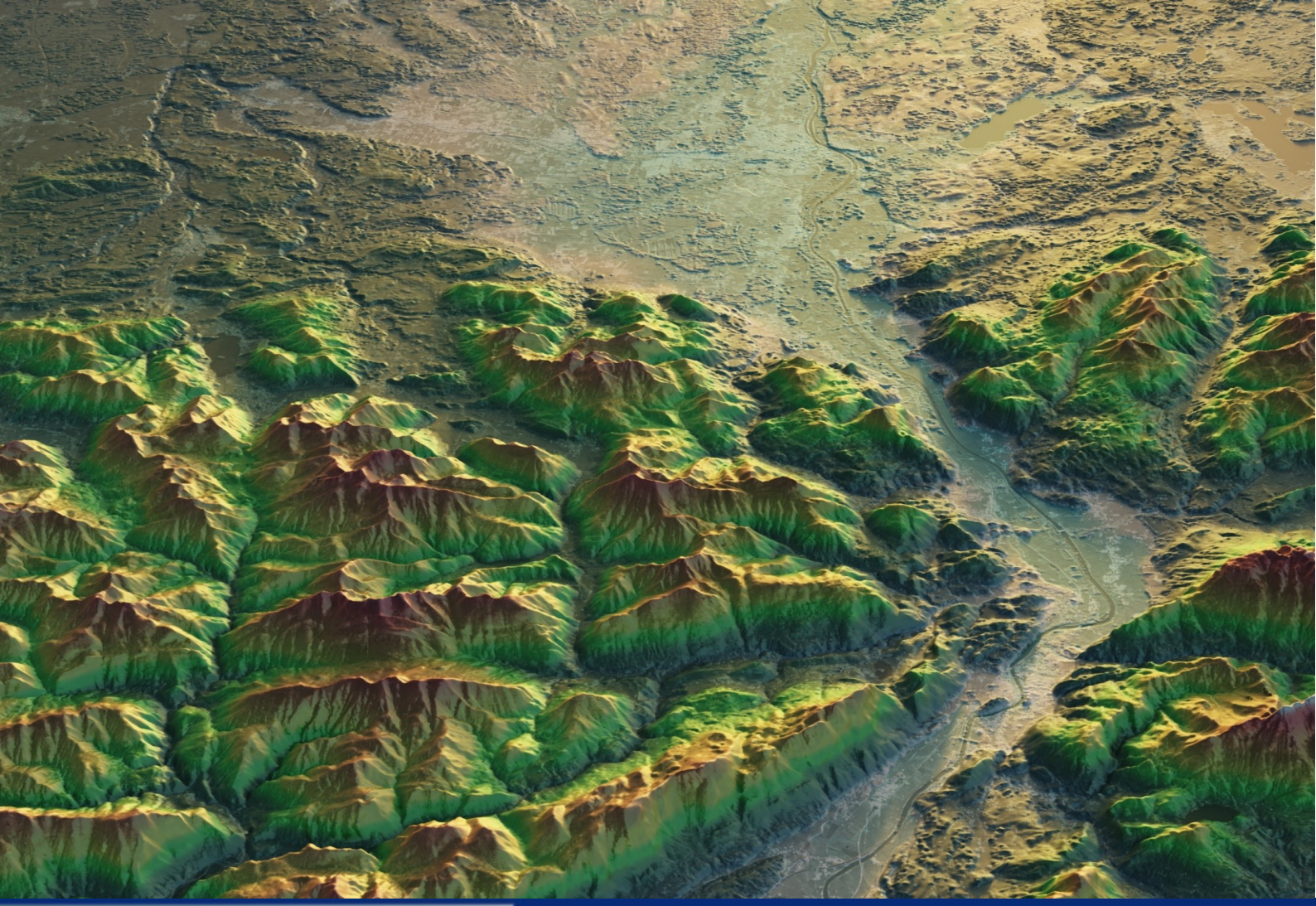


WorldDEM™

WorldDEM Neo DSM

Technical Product Description

Version 2.1

AIRBUS DEFENCE AND SPACE
Intelligence

AIRBUS

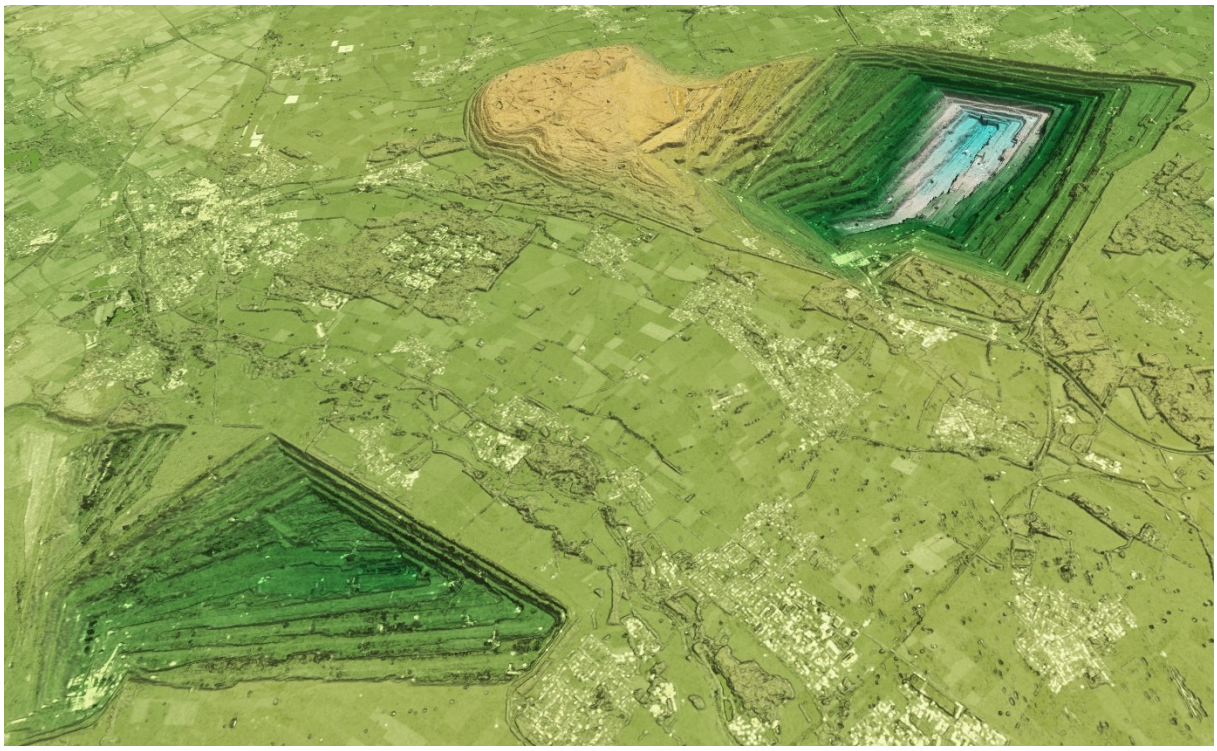
WorldDEM Neo DSM – the next level of up-to-date global elevation models with 5m pixel spacing

The WorldDEM Neo DSM product is an edited Digital Surface Model 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.

An adaptive, weighted combination algorithm to merge the mosaic of Change rawDEM scenes (2017-2021, grid spacing: 0.2 arcseconds) with the edited WorldDEM coverage (2010-2015; grid spacing: 0.4 arcseconds) has been developed. A fully automated detection and flattening of hydrological features and airports is applied.

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 Level 4b of the DGED Product Implementation Profile. This allows for a DGED-compliant grid spacing closest to the original Change rawDEM scenes in combination with the best possible preservation of the level of detail provided by the new data.



WorldDEM Neo Digital Surface Model (example)

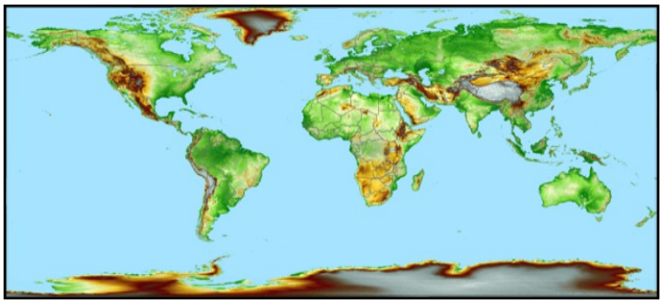
WorldDEM Neo DSM – Fact Sheet

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.

Accuracy

Absolute Vertical Accuracy	< 1.4m (90% linear error, aligned to WorldDEM)
Relative Vertical Accuracy	< 2m (slope ≤ 20%) < 4m (slope > 20%)
Absolute Horizontal Accuracy	< 6m (90% circular error)

*) Based on validation results using ICESat 2 ATL08 terrain reference points (with no presence of canopy height), excluding parts with permanent snow/ice cover of Antarctica and Greenland (physical reflection properties differ between WorldDEM Neo and reference data).
**) Based on TanDEM-X coherence analysis, excluding parts with permanent snow/ice cover of Antarctica and Greenland (microstructure of regions with permanent snow/ice cover and signal penetration would lead to an overestimation of relative height error and are therefore excluded).
***) Due to the global coverage of the WorldDEM Neo, all accuracy statistics and values stated in this document are calculated as an arithmetic mean on global level. Local deviations occur

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