

EARTH OBSERVATION SYMPOSIUM (B1)
Earth Observation Applications and Economic Benefits (5)

Author: Dr. Gertrud Riegler
Airbus Defence and Space, Germany

Mr. Marek Tinz
Airbus Defence and Space, Germany
Mr. Alexander Kaptein
Airbus Defence and Space, Germany

WORLDDDEM™ - THE NEW STANDARD OF GLOBAL ELEVATION MODELS

Abstract

Airbus Defence and Space's WorldDEM™ provides a global Digital Elevation Model of unprecedented quality, accuracy, and coverage. The accuracy will surpass that of any global satellite-based elevation model available. WorldDEM™ is a game-changing disruptive technology and will define a new standard in global elevation models. The product will feature a vertical accuracy of 2m (relative) and better than 10m (absolute) in a 12m x 12m raster.

The German radar satellites TerraSAR-X and TanDEM-X form a high-precision radar interferometer in space and acquire the data basis for the WorldDEM™. This mission is performed jointly with the German Aerospace Center (DLR). Airbus DS holds the exclusive commercial marketing rights for the data and is responsible for the adaptation of the elevation model to the needs of commercial users. The worldwide homogeneous acquisition guarantees a DEM with no break lines at regional or national borders and no heterogeneities caused by differing measurement procedures or data collection campaigns staggered in time.

Airbus DS refines the Digital Surface Model (e.g. editing of acquisition and processing artifacts as well as water surfaces) or generates a Digital Terrain Model. Three product levels are offered: • WorldDEMcore: output of the processing, no editing is applied, voids and acquisition/processing artifacts are included. • WorldDEM™: guarantees a void-free terrain description and hydrological consistency, e.g. rivers, lakes and ocean are edited. • WorldDEM DTM represents bare Earth elevation, man-made objects and vegetation are removed.

Building on this core WorldDEM™ offering, Airbus DS plans to provide an expanded portfolio including derived products as Global Ocean Shoreline, Waterbody Map, Global Airport and Harbour Map.

Precise elevation data is the initial foundation of any accurate geospatial product, particularly when the integration of multi-source imagery and data is performed based upon it. Fused data provides for improved reliability, increased confidence and reduced ambiguity. Thanks to WorldDEM™, operators of civil and military Earth observation satellites will have a standardized elevation model for high quality image orthorectification no matter where their acquisition area is located. By providing improved input data for collision avoidance systems, ground proximity warning and flight management systems WorldDEM™ can also make a valuable contribution to aviation safety.