

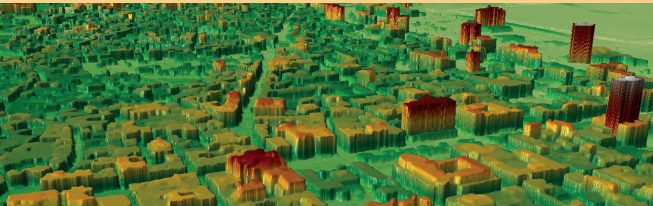
Multi-Stereo DSM Products

DSM 0.3 Fulfilling the highest requirements in terms of accuracy and reliability



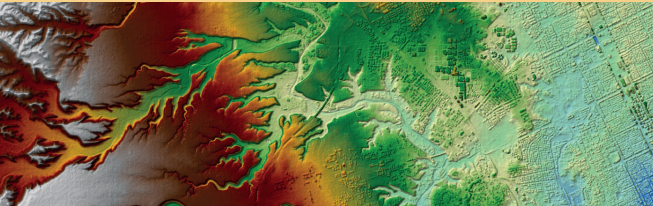
Resolution 30cm | LE90 < 3.5 m | CE90 < 2.5 m

DSM 0.5 Ideal combination of high accuracy and good data availability



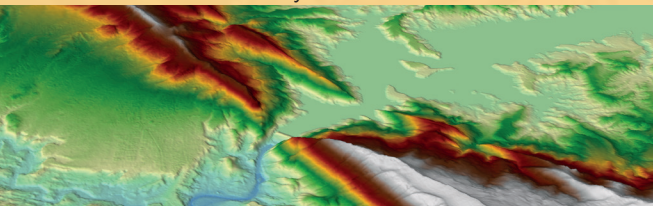
Resolution 50cm | LE90 < 3.5 m | CE90 < 2.5 m

DSM 2.0 Optimal solution for cost-efficient regional coverage with up-to-date data



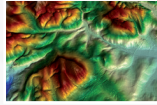
Resolution 2.0 m | LE90 < 5 m | CE90 < 5 m

DSM 5.0 Good balance between detailed surface structures, coverage of transnational areas and cost-efficiency
Euro-Maps 3D



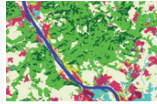
Resolution 5.0 m | LE90 5 - 10 m | CE90 5 - 10 m

Services offered by GAF



Geo-Data Store and Data Reception

- One-stop-shop for Earth observation data
- Land cover and land use data
- Digital elevation and surface models
- Bathymetry



Data Processing

- Digital image processing
- Mapping and monitoring
- Digital cartography and map production
- Virtual reality 3D/4D



Spatial Information Systems

- System analysis, integration and migration
- GIS/DB-Design and implementation
- Application development
- Spatial data structure concepts



Integrated Satellite Services

- Combination of space & non-space technologies
- Integration of satellite communication, navigation and earth observation



Geo-Software

- Development of customized spatial software
- Desktop-, Web- and Mobile-GIS
- Geo-webservices, SDI-development
- 3D and Virtual Reality



Management Consulting and Training

- Project requirements analysis, definition, supervision and management
- Sector and process analysis
- Professional and institutional consulting
- Training and knowledge transfer



GAF headquarters is compliant with international standards (OGC, ISO, INSPIRE) and quality control procedures (ISO 9001:2008) are a key element of our software development process.



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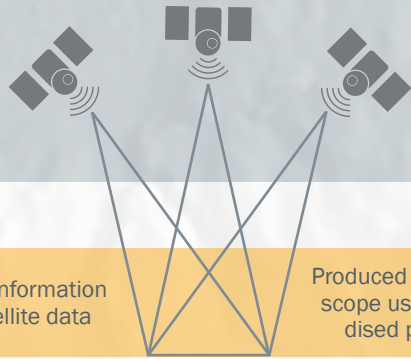
GAF Multi-Stereo Elevation Suite

Unique high-end digital elevation models for large regions, countries and urban areas



Elevation information from satellite data

GAF Multi-Stereo Elevation Suite



Elevation information from satellite data

Produced with a global scope using standardised processes

Unique high-end digital elevation models for large regions, countries and urban areas

Multi-Stereo Data

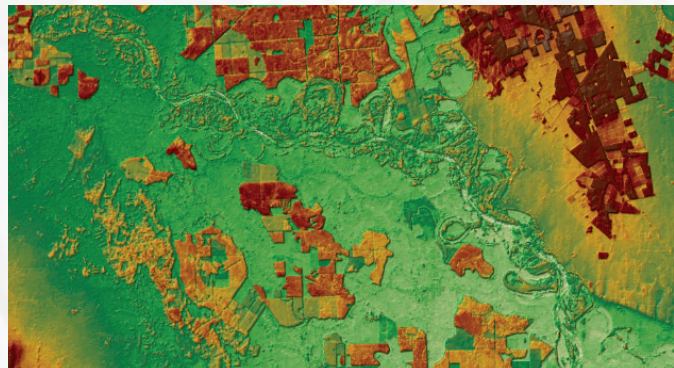
Very high resolution (VHR) and high resolution (HR) optical stereo satellite imagery with global coverage is available from a range of systems.

This data is well-suited to the creation of DSMs as a result of the latest developments in the data resolution quality and collection capabilities of today's optical satellite systems, as well as advances in computing technology and visualisation.



DSM Processing

A **production chain** for highly automated and operational DSM generation based on multi-source VHR and HR satellite imagery has been developed within the context of a longstanding and close cooperation between DLR-IMF (Institute for Remote Sensing Methodology at the German Aerospace Center) and GAF.



This processing system uses a customised and specialised matching algorithm called **semi-global matching (SGM)**.

The algorithm uses a pixel-based matching approach and thus utilises the **full geometric resolution** of the input imagery.

The GAF method is very flexible and offers DSM generation based on the **most recently available data** or other, specific time frames.

Areas of Use and Related Products

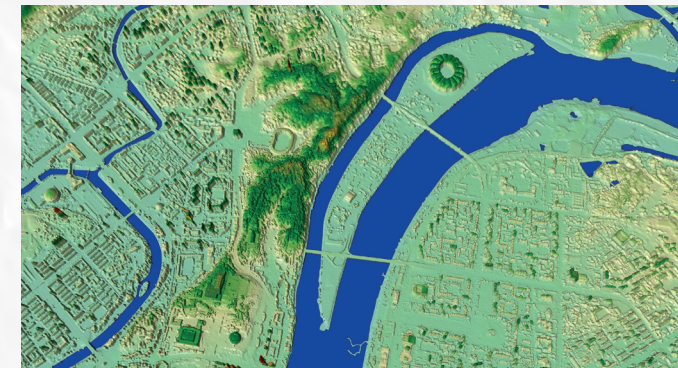
- **Variations** Resolution, age of data and level of control
- **Derivations** Terrain models, block models and contour lines
- **Specials** Textures*, bathymetry data, stereo bundles and point clouds
- **Areas of use** Telecommunication network planning, vulnerability analysis, oil and gas exploration, hydrological applications, 3D visualisation

* Visualisation with GAF's GIS Software GAFmap® 

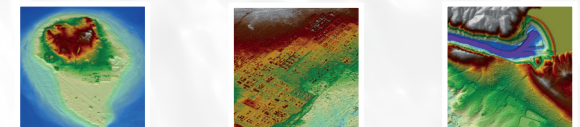
Finishing

The finishing process involves quality controlling all the data using semi-automatic processes for

- **filling**
- **editing and**
- **hydro-enforcement**



The product reliability can be checked using the ortho-image and pixel-level quality and traceability layers.



Data source: images © GAF AG, contain material from Airbus, Antrix, Digital Globe/EUSI, 2015