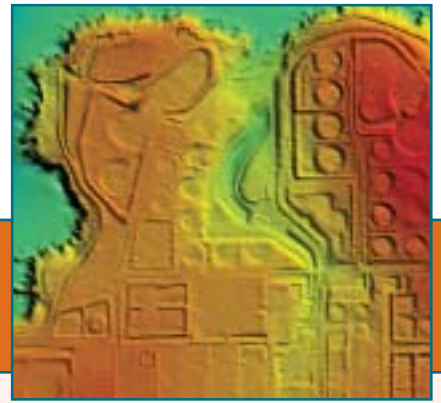


Digital Topographic Data



Geosense offers a complete range of digital topographic data including digital terrain and elevation (surface) models from Aerial Photography, NEXTMap Britain and other Intermap datasets, Lidar, Satellite Imagery and Maps for anywhere in the world.

Geosense is the most comprehensive source for topographic datasets in the UK, including derived topographic products from Getmapping aerial photography and NextMap radar data. The variety of methods used to collect topographic information can be overwhelming. As projects vary in size and requirements, Geosense has set up a service along with this guide to help you decide on the best dataset to fit your project and budget. Please feel free to contact us for our latest prices.

PHOTOGRAMMETRY

In South Africa and the UK, our near to off-the-shelf terrain and elevation models are produced from either new acquisitions (including photography from digital and film based cameras), or from existing and historical stereo aerial photography. Expert photogrammetrists use digital photogrammetric software to capture data, topology, spot heights and breaklines to produce highly accurate digital topographic models

Aerial photography is most cost effective where high accuracies are required over small to medium size areas, and if the photography has already been captured there is no need to wait for a new aerial or Lidar survey.

In the UK, Geosense has developed a unique partnership with Getmapping updating the Millennium Map™ using a Vexcel Ultracam-D digital camera to produce highly accurate, Crown Copyright free, topographic models and orthorectified imagery. Geosense also has access to the 1st layer of the Millennium Map™ which covers all of England and Wales and a large portion of Scotland.

Customised topographic models, where certain features are included or excluded, are produced to our clients specifications. For example, vegetation can be removed from the DEM to show the effect of flooding on man-made structures only; or height values at designated points such as manhole covers can be extracted for hydraulic modelling without the need to create a DTM for your entire area of interest. Please call Geosense for more information.

NEXTMAP

This seamless, off-the-shelf UK dataset was created using data collected by Intermap's Star-3i IFSAR (Interferometric Synthetic Aperture Radar). This system is able to collect large areas of topographic data very quickly and is not affected by clouds or nightfall.

For the UK, postings or resolution for the DSM (digital surface model) and the DTM (digital terrain model) is at 5m. The DSM has a vertical accuracy of 50cm for the South-East England and 1.0m for the remainder of the country.

Post-processing and complex algorithms are used to remove buildings and vegetation to produce DTMs with accuracies of 70cm for the South East and 1.0m for the rest of the country. The DTM can also be bought in 10 and 50m postings.

A by-product of the Nextmap data is a 1.25m orthorectified radar image (ORI) with a horizontal accuracy of 2.0m.

The combination of Nextmap data overlain by aerial photography is a very powerful and cost effective planning and visualisation tool. Geosense has derived off-the-shelf value added products including 5m and 2m contours and building heights from these sources.

Intermap's radar system has been used to collect topographic data for many countries around the world. Please enquire with Geosense to see if your area of interest has been covered.

Applications of topographic data include road design and traffic management, flood mapping, pipeline planning, hydraulic modelling, slope stability, terrain movements, risk and cost assessment, tourism, urban planning, building heights, and 3D visualisations.

Our products are being used by the Engineering and Construction sector; Utilities - Water, Gas and Electricity; Environmental Consultants; Telecommunications; Oil, Gas and Mineral Exploration companies; National and Local Governments; and Research Facilities.

Our topographic and image data is compatible with all GIS software such as Autocad, MapInfo, ESRI, Bentley, Infracore MX, n4ce, StruMap, CadCorp, Erdas and ER Mapper to name a few.

LIDAR

Airborne Laserscanning, otherwise known as Lidar, provides a very accurate and cost effective means of collecting topographic data over medium to large areas. Lidar, as with photogrammetry, requires a GPS survey for ground control. Vertical accuracies start at 15cm, and 40cm in the horizontal. Lidar, similar to Nextmap, uses complex post-processing algorithms to produce DTMs.

SATELLITE

There are several satellites in orbit capable of acquiring stereoscopic images. Many use internal information to generate fairly accurate digital elevation models. However, GPS and advanced processing techniques will improve the overall accuracy. Ikonos, Quickbird, SPOT and ASTER satellites use passive sensors to record the reflected solar radiation from the earth surface

and are therefore, susceptible to cloud cover. Radar satellites such as Radarsat are capable of viewing through cloud and operating at night.

All these satellites have repeat coverage and have been operating for many years building up extensive archives, which are used for change detection studies (flood mapping, coastal change and terrain movements - volcanoes, landslides, earthquakes, subsidence, etc).

MAPS

DTMs are derived from high quality Russian and other non-copyright topographic mapping. The maps are georectified and, if required, reprojected to any coordinate system to form a seamless mosaic. The contours are extracted and heighted to produce a digital terrain model with postings starting at 5m.

OUTPUT FORMATS

Topographic Data

TIN or regular ascii grid, arcgrid, dxf, dgn and a variety of raster formats.

Contours

dxf, dgn, shapefiles

Building Heights

ascii, dxf, dgn, shapefiles

Imagery

Tif with world files (ESRI), GeoTiff, ecw, MrSid, Imagine, ER Mapper, Jpeg

Delivery

Email, CD, DVD, DAT or DLT

Glossary of Terms for Topographic Data

DEM - Digital Elevation Model, contains the heights of the ground, vegetation and man-made structures.

DSM - Digital Surface Model, see DEM.

DTM - Digital Terrain Model or Bald Earth Model contains height information of the ground only. The heights of vegetation and man-made structures (except embankments and cuttings) are not included.

Orthorectified Imagery - an accurate image that has been corrected for terrain displacements by using a DTM or DEM.



Products	Horizontal Accuracy	Vertical Accuracy	Posting	Image Pixel Size
Photogrammetry - digital and film				
GEOS5 1:5000 scale Photography	0.1m	0.15m	1m	0.1m
GEOS10 1:10,000 scale Photography	0.25m	0.3m	2m	0.25m
GEOS20 1:20,000 scale Photography	0.5m	0.6m	2m	0.5m
Nextmap				
DSM	2.5m	0.5m to 1m	5m	1.25m ORI
DTM 5	2.5m	0.7m to 1m	5m	1.25m ORI
DTM 10	2.5m	0.7m to 1m	10m	1.25m ORI
Contours (DTM 5 or DTM 10) & Spot Heights	0.8m*	0.7m to 1m	2m or 4m intervals	n/a
Lidar				
	0.4m	0.15m	1m	n/a
Topographic Maps				
Map10 1:10,000 scale maps	5-10m	2.5m	5m	5m
Map50 1:50,000 scale maps	15-25m	5m	10/15m	10m
Map100 1:100,000 scale maps	30-50m	10m	25m	25m
Map200 1:200,000 scale maps	100m	20m	50/100m	50m
Map500 1:500,000 scale maps	250m	50m	250m	250m
Satellite				
Ikonos (Pan/Multi)	2m	3m	5m	1m/4m
Quickbird (Pan/Multi)	3m	tbc	tbc	0.6m/2.8m
SPOT 5 (Pan/Multi)	6m/10m	6m/10m	10m/20m	2.5m to 5m/ 10m (20m SWIR)
SPOT 1-4 (Pan/Multi)	10m-12m/18-20m	7-11m/12-18m	20m/40m	10m/20m
Aster	10m	10m	30m	15m to 90m
Radarsat fine	8m	25-30m	30-50m	30m
Radarsat standard	25m	30m	50m	50m
Radarsat wide	25m	40m	50m	50m

NB. Ground control maybe required to achieve the accuracies quoted.

*compared to the NEXTMap DTM

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