

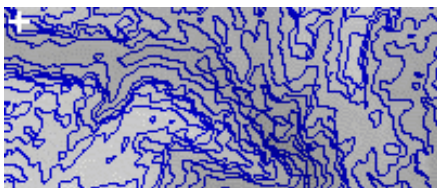
Digital Elevation Modelling above Par

By virtue of innovative, yet fully operational image processing techniques, satellite images are modelled into high-resolution Digital Elevation Models – DEM's - in support of urban and rural management.

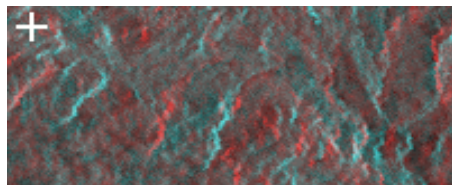
Three-dimensional modelling of satellite image data, either Synthetic Aperture Radar (SAR) images - e.g. *RADARSAT*, *ERS* – or optic - e.g. *SPOT XS*, *IKONOS* – has been developed to a high level, so as to produce (very-) high-resolution DEM's for many a purpose. For urban applications and similarly large-scale exercises, **an accuracy of 2 (two) meters or better** in three directions (x, y, z), i.e. including height, may be produced.

Digital Elevation Models (DEM's), while representing sections of the surface of the earth, ranging in size from many hundreds of km's down to a few hundred meters, are known to have a great many applications. Often change detection is involved. Some examples:

- urban developments, settlements
- coastal and land erosion
- pipe line construction, networks
- river sandbank monitoring
- calamities, vulcanism
- DEM's are geo-referenced and geocoded, and fully GPS-compatible. At one's request, they can be made to comply with any current Geodetic Reference Spheroid – e.g. *WGS-84* – Map Projection – e.g. *transverse Mercator* - and grid system - e.g. *UTM*.
- With digital DEM's come elevation contour maps, anaglyphs and three-dimensional representations.



An elevation contour map of Gedeo, Ethiopia, modelled from Radarsat data, showing contour lines. Grey tones indicate altitude. Scale 1: 2 million.



An anaglyph of the same area: stereo image to be viewed with red (left eye) – green (right eye) glasses.

- An **accuracy of 2 (two) meters or better** may be gained when using very high resolution satellite images, to accommodate flat areas and high precision applications.



Three-dimensional representation of a DEM as processed from SPOT and LANDSAT data. Mongolia.

References

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