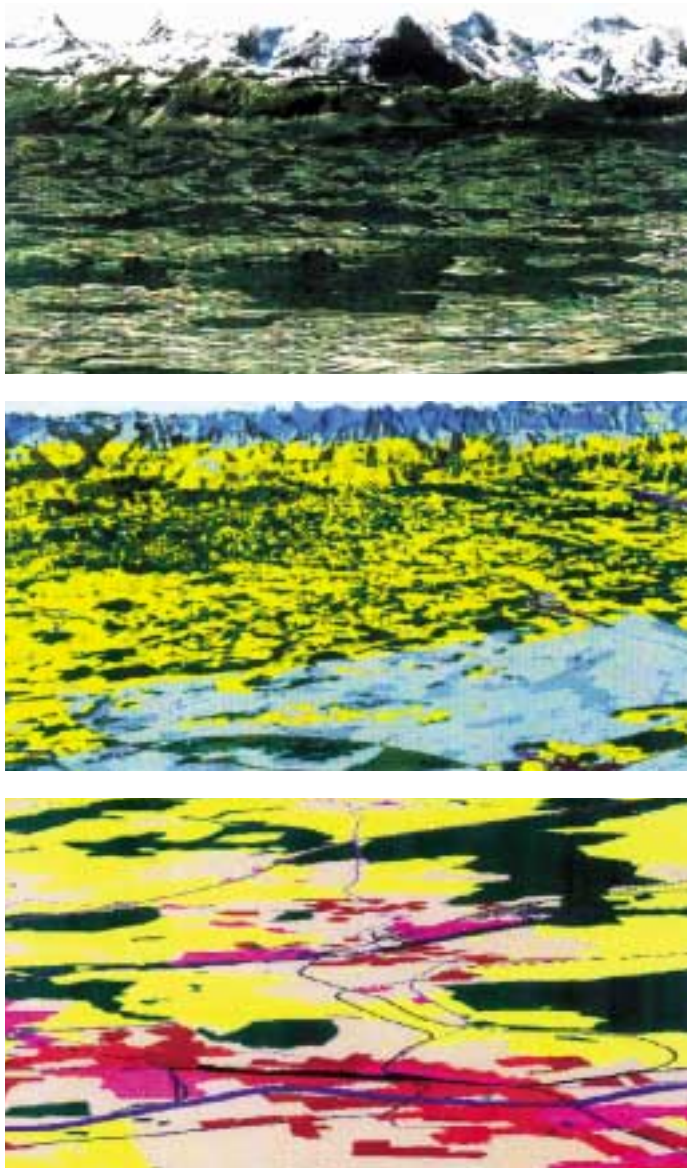
No mobile phone signal dead spots thanks to ERDAS remote sensing and image processing software

Geodata, and in particular remote sensing, play a significant role in the accurate positioning of antenna locations and the modelling of signal reception in mobile phone service planning. Using practically all the geodata available for Switzerland, MFB-Geo-Consulting on behalf of Micatel worked out the principles for the positioning of the antenna locations and modelled the signal reception. The work was carried out with Leica-Geosystems' Erdas image processing software. Erdas™ is the world's leading product in the field of digital image processing and has modules for processing digital raster data (especially satellite data) into 3-D visualisations (3D-GIS), for digital photogrammetry and stereoscopy.

Digital satellite data from SPOT and Landsat-TM was used as the basis for this work. The satellite data was geo- and ortho-rectified using Erdas-Imagine and took into account the DHM25 digital terrain model from the Swiss topography authority. In addition, the panchromatic data from SPOT and the multi-spectral data from Landsat-TM were brought together using image processing techniques (RGB/HIS transformation) to form a 10 metre grid data set. Finally a land use map was created out of the satellite data. Statistical classification processes and automatic pattern recognition were used for extracting the required information. In addition, the information from the pixel maps, the Vector25 national topography data records and the Swiss national statistical office's Geostat records was processed. The land use classifications are user-specific and are intended to achieve improved modelling of signal reception. Take the classification "Woodland" as an example: Woodland absorbs a great deal of energy from the antenna transmissions, which has a detrimental effect on reception.

It was possible to visualise the data with Erdas-VGIS (3D-GIS) and thus successfully optimise antenna positioning. Erdas proved to be an efficient, powerful and user-friendly tool for processing the large quantity of data (approx. 600 Gbytes), for importing and converting data from various sources, and its visualisation. In future, this system is also to be used in micro-cell planning with high resolution satellite data (e.g. from Ikonos and QuickBird at grid sizes of 1 m and 60 cm respectively). This data is obtainable with stereoscopic overlapping and allows 3-D urban models to be generated. ***Michael Baumgartner***



Above: Visualisation of satellite data and DHM25. Centre: Visualisation of land use, satellite data and DHM25. Below: Visualisation of antenna location and effective range, land use, satellite data and DHM25.