

Very High Resolution Imagery Orthorectification for Land Parcel Identification System Using PHOTOMOD

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The paper presents photogrammetric activities within PHOTOMOD software, in an important project for Bulgarian Ministry of Agriculture and Food. The project's aim is creation of digital ortophotomaps for a part of Bulgarian territory on the base of very high resolution (VHR) satellite images. The products are used for updating local Land Parcel Identification System.

From the 1st of January 2007 Bulgaria became part of European Union. To carry out the obligation like country member of EU, Bulgaria have to create and update Land parcel Identification System (LPIS). This system is one of the component of Integrated Administration of Agricultural Land in EU. The importance of the LPIS comes from the requirement the system to fulfill two explicit functions:

- to find the exact location of all claimed agricultural parcels by farmer,

- and

- quantification of all eligible area for crosschecks during the administrative controls by the paying agency.

LPIS is the single GIS for Integrated Administration and Control System (IACS).

Remote sensing may be used for the effective control of the above mentioned statement. One of the main layers of this GIS is digital ortophotomaps.

The processed satellite images (digital ortophotomaps) in the frame of the project are the base for extracting/digitalization of physical blocs of the agriculture land. The ortophotomaps are also used for the control of farmers which apply for EU financing.

In the paper is given a short description of the project and the workflow for ortorectification of satellite imagery, creation of final ortophotomaps and accuracy control are described.

The processed imagery cover 10 zones with total area of 45 192.80 sq.km, which is 40.85% of contry territory. The imagery are from GeoEye, IKONOS and QuickBird and they are acquired in 2008-2009. They have to fit all requirements of JRC, as well as the final product. The most important for the final ortophotomaps are:

- Spatial resolution $\leq 1m$;

Radiometric resolution ≥ 8 bits/channel;

Spectral resolution – color;

Cloud cover 5-10 %;

Histogram peak $\pm 15\%$ of middle value;

The geometric accuracy have to be $RMSE_x \leq 2,5$, $RMSE_y \leq 2,5$ m.

The requested ortophotomaps are created using PHOTOMOD software. In the process of ortorectification are used internal DEM with 3m pixel size. The ortophotomaps was delivered in sheets with size 4X4 km. Mosaic sheet borders were set by the customer.

The works was accomplished in a very short time of 3 months, by the following partners: Geokad 93 Ltd., Geodetect Ltd. and GIS-Sofia Ltd.