COMPARATIVE STUDY ON THE DETERMINATION OF SURFACES FROM THE DIGITAL ORTHOPHOTOMAPS AND FIELD MEASUREMENTS WITH PRECISION GPS RECEPTORS

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Abstract
In the period between 2003-2007, digital and analog ortophotomaps at a scale 1:10 000 were designed for a series of territorial administrative units in Romania, based on aerial photography methods. The use of the digital support of the ortophotomaps facilitates the retrieval in real time of **the position, configuration and size of the agricultural and nonagricultural physical blocks surfaces,** which represent the primary technical database for the general cadastre.
In the case study of Bilca territorial unit from Suceava County, **315 physical blocks** were identified, out of which: **189 agricultural physical blocks** in the area outside the township, with a surface of **1853.81 ha** and **126 nonagricultural physical blocks**, within the built-up area, with a surface of **146.62 ha.** For the testing of the retrieval method of surfaces on digital support and from field measurements with GPS receptors, **six agricultural physical blocks from the unincorporated area** have been considered, with the numbers: 225, 243, 254, 275, 231 and 255, with areas comprised between **10.38 ha** (block 275) and **23.23 ha** (block 225).
The field measurements were carried out with the help of a GPS receptor (*Global Position System*), of a **GNSS South S82T type**, which ensured advanced technologies of satellite GNSS (*Global Navigation Satellite System* – GPS and GLONASS) measuring. Field observations were conducted with the kinematic positioning method in real time, which is also known as the RTK method ((*Real-Time Kinematic*). In the case of the carried out measurements the ROMPOS –RTK (*Romanian Position Determination System*) was used, which is based on the national network of GNSS Stations. By using the ROMPOS – RTK service for precise kinematic applications in real time, a horizontally positioning precision of up to ± 2 cm was acquired. With the help of **SurvCE** field software were determined the plane rectangular coordinates of the points from the outline of the physical blocks, directly into the national projection system STEREO-70. The absolute positioning precision of the considered points allowed for a thorough calculation of the physical blocks' surfaces.

Key words: digital ortophotomaps, GPS (*Global Position System),* kinematic positioning method in real time

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