

SUMMARIES

Anna Barańska, Anna Łuczak: Comparing the Results of Function Model Estimation for the Prediction of Real Estate Market Values in Additive and Multiplicative Form • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

The work deals with the estimation of the parameters of linear and non-linear models for the prediction of real estate market values. The problem is interesting and important. The attractiveness of the real estate as an investment of capital encourages searching the best methods to estimate its value. The subject of investigation is a database of real estates including functional premises situated in Cracow, in the administration unit Śródmieście. The models selected for estimation of real estate market values have been presented. The analyses aimed to check if the market value should be determined by summation or by multiplication of the attributes shares. Furthermore, the effect of considering the non-linear character of the relation between an attribute and the price on modelling quality was examined as well as the answer to the question, if it is possible to reduce attributes without deterioration of modelling results.

To choose the general estimation model, the following forms of functions modelling a local market of functional real estates were analysed:

- additive function; a particular case of this function is the model multiple linear regression; the model is created by summation of the attributes shares, taking into account the non-linear relation between the price and the attribute;
- multiplicative function; a model created by the product of shares of particular attributes, expressed as exponential variation, considered in two forms:
 - 1) simple form, where the estimated coefficients are raised to the power corresponding to the values of particular attributes;
 - 2) complex form, where the estimated coefficients are raised to the power corresponding to the value of non-linear function, determined for particular attributes and estimating the relation between the price and the attribute.

Estimated models were verified by many statistical tests examining their quality as well as comparing models between each other. Models were also assessed on the basis of values of defined invariant parameters.

Keywords: additive function, multiplicative function, modelling of real estate market

Paweł Chełpa, Tomasz Lipecki: Laboratory Testing of an IGTS Device Supporting GPS-RTK Systems • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

This study explores the applications of a data transmission technology GPRS to real-time GPS geodetic surveys (RT and RTK systems). Various

configurations of the equipment were considered, with the particular focus on the IGTS device, manufactured by INS Ltd. Tests were run in laboratory conditions, utilising the testing facilities available at the Faculty of Mining Surveying and Environment Protection AGH-UST.

Keywords: DGPS, GPS, GPRS, RTK correction, IGTS

Paweł Hanus: Application of Transformation with Conditions within Process of Boundaries Determination • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

One of the method of application cadastral map for real estate boundary determination depends on scanning the map, and then using suitable transformation, which fits-in map to field reference system. Scanning, depends on processing traditional paper map to digital shape – raster. Yet, raster itself being not processed later, is only specific “picture” having neither coordinates of points in any reference system, nor geometric features necessary for its application, in various surveying works, connected with parcels boundaries. In order to use such raster properly, one should made vectorization process. Vectorization process is performed after raster transformation to coordinates field reference system, on the base of control points. One should mention, that suitable taken transformation and properly chosen control points, makes it possible minimization or even rejection almost all errors, influenced the map. Nevertheless, one should also mention, that wrongly performed transformation may lead, in turn, to enlarging all these errors. For boundary determination, on the base of cadastral map, it proves that especially useful is transformation with conditions, given on control points, especially in case, when real estate boundary is located along with rivers, streams or forests or timberlands. In the paper have been presented three examples, which confirm taken assumes, concerning application transformation with conditions. One of them shows the element of court case, in which on the base of this method, real estate boundary has been determined with the error accepted by two parties.

Keywords: cadastre, transformation with conditions, real estate boundary, delimitation, subdivision

Elżbieta Jasińska, Joanna Klajn: The Principles of Property Purchasing by Foreigners in Poland • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

The article presents the ways of property purchasing by foreigners with taking special conditions for European Economic Area's citizens under consideration. In the article is showed the aspect of property purchasing which obligate getting permission from the Minister of Interior and Administration, and also the situations when such a permission is not required. In the next step, the attention was pay on inheritance problem by foreigners and the role of Administrative Courts as a body determining in complaints on administrative decisions. Finally it's presented statistical indexes of foreigner's interest of properties in Poland.

Keywords: real estate purchase, foreigners, European Union, EEA

Tomasz Lipecki: The Modern Technologies of DGPS and RTK Corrections Transfer • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

New methods of RTK and DGPS corrections transfer are aimed to extend their accessibility range, from one base station. The Internet proves to be an excellent corrections carrier, allowing differential corrections to be received from accessible servers. In RTK land surveys, the easiest reception of corrections is via GPRS transmission, provided by mobile phone operators. DGPS surveys might utilise satellite transmission, supported by NAVSTAR system. The paper reviews the current methods of differential corrections transfer.

Keywords: DGPS, RTK correction, GPS, GPRS

Małgorzata Buśko, Piotr Dukielski, Robert Krzyżek: Key Issues and Details of the Controls of Farms Related to Their Eligibility for IACS Direct Payments, Based on the Examples from Selected Voivodships • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

This article describes issues related to the farm control for agricultural direct payments under IACS program. It also discusses the structure of the Agency for Restructuring and Modernisation of Agriculture and the procedure for submitting applications by beneficiaries. Finally, it presents the methods of typifying agricultural producers for on-the-spot checks and the methods for territorial controls. Based on the data from selected voivodships, we included tabular representation of information including the number of registered agricultural producers, the number of submitted applications for payments, the level and number of examinations performed and the level of irregularities on the country scale. The tables contain data from 2004–2006.

Keywords: geodesy, agricultural direct payments, territorial controls, IACS

Urszula Cisło: Standardization for 3D Geoinformation • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

The main goal of this publication is to present concept of standards which lately attend to storage and exchange spatial information, with particular consideration of three-dimensional objects. First of all, it is very important in urban planning, telecommunications, tourism, real-estate market, environmental monitoring or disaster management. In this article all advantages and disadvantages of particular solutions and numerous requirements of 3D geoinformation standard, which have to be fulfilled, were discussed. The necessity of creating Geography Markup Language 3 (GML3) – an software and hardware independent standard for writing geographic data, was accounted for. The author of this article also referred

to standards for real-time 3D computer graphics: VRML and X3D pointing out their limitations. This standards are good for visualization purposes and distribution over the Internet but not, in most cases, for thematic queries, analytical tasks or spatial data mining. The alternative is CityGML as a open standard for the representation, storage and exchange of virtual 3D city and regional models. CityGML defines the classes and relations for the most relevant topographic objects in cities and regional models with respect to their geometrical, topological, semantical and appearance properties.

Keywords: XML, GML, VRML, X3D, CityGML

Janusz Dąbrowski: Crisis in the Real Estate Property Market in Poland in the Context of Mortgage Credits • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

The objective of the paper is to show the connection between crisis in the real estate property market and the bank crisis related to granting mortgage credits. Activities of the banking supervision and commercial banks can stimulate economy to development, but it also may be cause of various types of crises. The magnitude and weight of problems considerably exceeds value of theoretical considerations and has major impact on further economic growth of Poland. Ill-considered actions or not making decisions may be the base of collapsing good market conditions for the Polish economy. The paper explains the issues at hand and indicates their complexity. There is enough time to undertake actions appropriate for maintaining the rate of growth. All this will mostly depend on separating economic decisions from emotions and politics.

Keywords: real estate property market, mortgage credits

Teresa Eckes, Tadeusz Gołda: Basic Differences between the Content of the Existing Soil Documentation and Actual Situation • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

The paper contains the comparison of the content of soil maps with the actual state, revealed based on the description of 66 soil profiles. At the selection of comparable aspects, the most important was the possibility of quick and easy assessment of the state of a given soil characteristics, as well as its role at the assessment of agricultural usability of the soil. The following characteristics were studied: thickness of the humus level, depth of the ground water level and the type of soil. The results of studies indicate significant differences between the description of soil presented in soil maps and *The Commentary to the Table of Ground Classes...*, and the results of field studies in case of the examined characteristics of soil. This indicates the necessity of the correction of the way of describing some soil characteristics, in particular water situation and humus level as well as verification of soil maps.

Keywords: soil map, soil valuation, soil profile

Stanisław Gruszczyński, Joanna Urbańska: **Methodical Aspects of the Reclaimed Areas Pedological Classification** • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

Possible approaches to the problem of the quality assessment of reclaimed areas have been examined. The main difficulty in the assessment of soil quality class in these areas is lack of qualitative and quantitative attributes of soil-formation processes and unlike in case of soil which evolved in natural lithologic and climatic conditions, there are no factors which determine the use.

Long experience in monitoring reclaimed areas shows that different lithologic formations give a different starting points and lies in development soil-formation process. Reclaimed soils should not always be treated as wasteland. Other algorithms of soil quality assessment than the currently in use have been examined.

Keywords: land reclamation, soil valuation, soil areas, fuzzy interference

Anita Kwartnik-Pruc, Anna Przewięźlikowska: **Comparison of Physical Planning Functions in Poland and Germany** • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

The article is targeted at the readers from land surveying community and describes the physical planning rules and regulations in Germany with stress on similarities and differences to Poland. Such comparison results from the accession of Poland to European Union and the need to determine how much the Polish system is similar to the European system. Because of the complexity of the subject, the article drafts the fundamentals of physical planning on the country, regional and local levels. Although the functioning of the system of physical planning in both countries appears to be similar, significant differences can be spotted in the rules of organization and creation of plans in Poland and Germany.

Keywords: physical planning, development project, building land

Michał Strach: **The Usage of Reflectorless Total Stations in Measurement of Loose Materials' Slag Heaps** • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

The article presents the various possibilities of usage of TCR 407 power-total station (reflectorless) in a measurement of slag heaps of loose materials. The reader will find here description of the series of terrain's tests performed on dozen kinds of materials stored most often on slag heaps. Achieved results of these undertaking led to the detailed verification of capabilities of Total Station on the existing objects. Additionally double measurement and determination of the capacity of the sample ground heap were performed.

Keywords: Reflectorless Total Station Tacheometer, loose materials' slag heaps

Andrzej Uznański: **Data Transmission in RTK GPS Surveys Using the Leica System 500 Receivers** • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

The paper deals with the transmission of data necessary for position determination in the real-time kinematic (RTK) GPS surveys. The problems pertaining to the type of transmitted data and transmission protocols are presented, with particular attention given to the popular RTCM format in different actually used versions. Receiver configuration, in particular of the SR 530, for communication with an external modem, cellular phone and a laser distancer, which allows positioning of points inaccessible for GPS antenna, is discussed. Though the details of the presented problems pertain to the solutions used in the Leica System 500 GPS receivers, the general outline is valid for GPS receivers of any manufacturer.

Keywords: RTK GPS surveys, RTCM, RS232, AT commands

Anna Warda: **The Assessment of the Effects of the Reclamation in the Mine "Staszic" in Rudki Near Kielce** • Geomatics and Environmental Engineering 2007, Vol. 1, No. 3

The article presents the characteristic of the deposit of pyrite and iron ores in Rudki near Kielce, conditions of its exploitation in 1933–1974 and mining-caused pollution of the region, in particular in the area of the post-flotation decantation ponds and repository "Serwis". The way of carrying out reclamation of this area in 1970–1973 was described. Taken in 2005 samples of soil from the repository "Serwis" allowed the analysis of the efficiency of reclamation. In the framework of the analysis the granulation of samples was made, proper density and volume density were determined, as well as the porosity and the loss while roasting, content of heavy metals, pH of soil, proper electrolytic conductivity (as the measure of salinity) and the content of total sulphur and coal, due to which it was possible to estimate the content of organic matter. Based on this the conclusions referring to extremely acid reaction of soils and their salinity were made, indicating an incomplete efficiency of reclamation.

Keywords: pyrite deposit, Rudki near Kielce, reclamation, toxicity