

Klaus Aichhorn, Bernhard Hofmann-Wellenhof, Wolfgang Böheim, Franz Weimann, Johannes Vallant: **GNSS-Based Vehicle Terminal for Mechanized Forestry Operations** • Geomatics and Environmental Engineering 2007, Vol. 1, No. 1

The field of application for navigation tasks within forest work can mainly be divided into two sub-areas. Thus, two different mobile navigation terminals have been developed by TeleConsult Austria GmbH:

- a pedestrian terminal for the use within forest inventory and in the field of manual wood harvesting,
- a vehicle terminal for the optimisation of the forest logistic chain.

This paper focuses on the presentation of the GNSS-based vehicle terminal for mechanized forestry operations to support and improve the forest logistic chain management. The mobile terminal is used as navigation aid and communication device mainly. The position determination of the navigation module is based on an integration of GPS and EGNOS. Due to the usage of a high sensitive GPS/EGNOS receiver with excellent satellite tracking capabilities, a continuous and reliable position determination is also possible in forest environments with limited view to the sky and weak satellite signals under dense canopy. For communication and data transfer between the vehicles and a forest office, the GSM/GPRS infrastructure is used. The display of the mobile terminal visualizes the navigation destination, general information, and the position of the own vehicle. Thus, the user is supported efficiently in guidance and navigational tasks.

**Keywords:** GPS, GNSS, pedestrian terminal, vehicle terminal, navigation, visualization

Natalia Florencka, Marek Tarnawski: **Changeability of Heavy Metal Concentration in Bottom Sediment Profiles in a Chosen Fish Pond** • Geomatics and Environmental Engineering, 2007, Vol. 1, No. 1

Investigation results of chemical properties (especially heavy metal concentration) in bottom sediment depth profile were shown. Higher metal concentrations occur in places of organic sediment deposition; this evidences the role of organic matter in accumulation of pollutants. A determined level of metal trace concentration in the sediment do not indicate at its contamination and none of the values was higher than the threshold values given in the Regulation of the of Environment concerning standards Minister of ground quality.

**Keywords:** fish ponds, bottom sediments, heavy metals

Stanisław Gruszczynski, Krzysztof Urbański: **Applying the Adaptive Applications in Assessment of the Environment Soil State** • Geomatics and Environmental Engineering, 2007, Vol. 1, No. 1

The paper presents the results of application two data mining coming from the chemical soils state observations, within the unorganized heavy metals emission. Soil pollution concentration standards classification with the use FSM networks, and also classifications committees (in this case: FSM + IncNet + decision trees, and FSM networks Committee which consists of elements differing by transfer function) show a considerable predominance of single FSM classifier. Additionally it has the possibility to extract the classification rules from the data basis which might be in future applied as macroinstruction for preparing the soil digital maps, and actively participate in SIP construction. In both cases the main restriction and also the algorithm application effectivity was a very little amount of data used in the analyses. This brought to the decision of using the cross validation method, during creating the classification model, and thereby imposes to treat very carefully, even very optimistic results obtained by this model.

**Keywords:** environment management, data mining algorithms, neuro-fuzzy systems, FSM (Feature Space Mapping), classifiers committees

Katarzyna Grzesik: **The Range of Regulations in Waste Management in the Integrated Permission for Metallurgic Trade** • Geomatics and Environmental Engineering, 2007, Vol. 1, No. 1

The integrated permission is a modern legal instrument, which regulates the principles of introducing pollution to the environment. The permission includes all the significant aspects of environmental impact among others waste management. The principles of specifying the terms of waste generating and treatment are defined in the Act on waste and they are coherent with the principles for waste permission. Integrated permissions are required for the special type of installations called IPPC (Integrated Pollution Prevention and Control) installations. This kind of installations have to fulfill the requirement of Best Available Technique (BAT), and their operating must not cause neither the worsening of environment quality nor exceeding the liminary quantities of emission. The installations of iron and steel industry are reckoned to be the IPPC installations. The metallurgic processes generate the huge quantities of waste. It is material consuming industry, in which approximately the half of input materials, after the processes are finished, are wastes. That is why the proper waste management in steel works is so important. The frame of the content as well as the range of information on waste management for the purpose of the integrated permission for Mittal Steel Company in Cracow, was proposed in this paper.

**Keywords:** waste management, integrated permission, steel industry

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**Anna Hajduk: Verification of Regression Based on the Grodek nad Dunajcem and Łososina Dolna Community • Geomatics and Environmental Engineering 2007, Vol. 1, No. 1**

Statistical analysis with using of programs such as Statistica and Excel, allows affirming the importance of features and factors which shape recreational properties market. Both econometric model and examination procedure have essential impact on separating the most crucial features which influence on value of recreational properties. The created model can be forecasting future value of property.

**Keywords:** property, mathematical model, statistic analysis

**Joanna Klajn, Marek Kulczycki: The Real Estate Appraisal Methods Analysis by Income Approach • Geomatics and Environmental Engineering 2007, Vol. 1, No. 1**

This article presents two methods of real estate appraisal by income approach: investment method and profits method in technic of straight capitalization. In the investment method, the market unit value of the objective property is determined as a result of multiplication of predicted united net income  $\bar{d}$  and capitalization's factor  $w_k$ , which is calculated based upon market analysis, the level of buying-selling market prices and rental rates. The capitalization's factor is equal the quotient of mean price of property per unit  $\bar{c}$  and mean net income per unit  $\bar{d}$  for analysed property. The net income for valuated property is predicted upon the data base of rental rates for similar properties. The profits method is used in case of lack of market information of buying-selling prices and rental rates. The capitalization's factor in this method is determined from capital market, as published index for corporations price/profit ( $C/Z$ ). The analysis include companies with similar activity as valuated, for which we define value of capital index  $C/Z$ . Their mean value determined the most probable worth of capitalization's factor  $w_k$ . The part of net income (profit) is defined upon the analysis of incomes and expenditures of corporation. There are used various variants to determine the part of valuated property in net income generated by all economical subject: first one is set on book value, second one is set on market value of land and reproduction value of buildings and last variant is set on market capital indexes which define the structure of part of particular properties in net income. In the article are placed two examples, refer to investment and profits methods in valuation of properties.

**Keywords:** the income approach, investment method, profits method, capitalization's factor, net income

**Ewa Krzywicka-Blum: The Map Language and the Rank of a Discipline • Geomatics and Environmental Engineering, 2007, Vol. 1, No. 1**

The conversion of the forms of maps and the popularisation of making computer maps during the technological and information revolution

caused the extension of the range of the usefulness of the maps on one hand, but on the other hand cartography lost the adequate rank in the hierarchy of sciences. In the article the extreme usefulness of the image models of reality is shown. They are not only useful in operational aspect, but also in abstract synthetic induction.

**Keywords:** map, cartography

Robert Oleniacz, Lidia Rusztowicz: **Impact of a Large Industrial and Hazardous Waste Incinerator on Air Quality** • Geomatics and Environmental Engineering 2007, Vol. 1, No. 1

Waste incineration causes unavoidable pollutant emissions to atmosphere and thus negative impact on air quality, but scale of the influence is often exaggerated. In the paper computation results of the atmospheric dispersion of pollutants were presented for one of the largest industrial waste incineration plant existing in Poland (incinerator capacity: 3 ton per hour) where hazardous wastes are thermal treated in significant amount. The results confirm the fact that the waste incineration plant meeting best available techniques (BAT) requirements determined for hazardous waste incineration influence on air quality to a small extent. This effect is caused mainly by high efficiency of the flue gas treatment and very low air pollutant emissions (far less than the forced emission limits).

**Keywords:** waste incineration, industrial and hazardous wastes, air pollutant emissions, environmental impact

Zofia Śmiałkowska-Uberman: **Creation and Enforcing of the EU Law** • Geomatics and Environmental Engineering, 2007, Vol. 1, No. 1

The paper explains an institutional system of the European Union which are involved in creating the European Law, types of legal regulations issued, processes and players involved and rules of implementation (absorption) to internal legal system of Member States.

**Keywords:** primer and secondary law of the UE, decision, directive, recommendation, opinion