Amil T. Aghayev: **Assessment of the 2010 Kura River Flood Using Remote Sensing Data and GIS Tools** • Geomatics and Environmental Engineering 2017, Vol. 11, No. 2

In the Kura River basin floods occur frequently and pose a major threat for the local population. This research aims to test if freely available remotely sensed data may provide valuable information on flood extent in this region. Flood in 2010 was analysed as a flood event example. Various maps illustrating this event were collected and compared to satellite Landsat data. A map of the flooded areas was developed with ArcGIS 10.2.1 software. Attention was paid to the identification of inundated areas. It was found that there were serious faults in the map prepared by the responsible government agencies. On the basis of satellite image interpretation, districts completely and partly damaged by the flood were determined and mapped.

Keywords: natural disasters, flood hazard, the Kura River, inundated areas, remote sensing, GIS

Małgorzata Buśko: **Analysis of Changes in Drafting a Base Map in View of Amendments to the Provisions of Law** • Geomatics and Environmental Engineering 2017, Vol. 11, No. 2

The main subject of the study is comparison to the standards for the preparation of the base map in view of the amendments to the legal provisions, which have been taking place in Poland over the last thirty years. The scope of the changes to the editing of the cartographic content of the base map was analyzed, with particular emphasis on the form and content of the presented descriptions. The map preparation standards were compared [8], based on the Technical Guideline K-1 of 1998, and the amending Regulation of 12 February 2013 on the database of the surveying records of public utilities, the database of topographic objects and the base map (hereinafter referred to as the BDOT Regulation, 2013) [14], as well as the amended Regulation of 2 November 2015 on the database of topographic objects and the base map (hereinafter referred to as the BDOT Regulation, 2015) [15]. These Regulations, in conjunction with the amendment to the Geodetic and Cartographic Law of 2014 [20], have resulted in historic

changes in the approach to the base map, significantly changing the form of its records, the scope of the data to be covered, and the editing, i.e. its visual aspect. The current assumption is that the base map is in fact a report generated from six databases, kept and updated simultaneously [1, 6, 11]. The aforementioned comparison referred primarily to the descriptions, map editing, as well as to the conceptual level.

Keywords: base map, map editing, cartographic editing, spatial database, BDOT (topographic database)

Małgorzata Pietras-Szewczyk: **Generate Real Total Radiation Spatial Distribution of Solar Radiation Using Cloud Mask Algorithm** • Geomatics and Environmental Engineering 2017, Vol. 11, No. 2

This paper describes a method for analysing the spatial distribution of solar energy potential based on calculated solar irradiation using GIS (Geographical Information System). GIS GRASS programme provides an opportunity to create a spatial distribution of solar radiation, taking into account such important elements as terrain, atmosphere, pollutants, water and aerosol in atmosphere, clouds. In this paper one of these elements are taken into account: the impact of the cloud cover on incoming value of solar radiation and the methods available for calculating this impact. The author considers how to calculate the incoming solar radiation under the real-sky conditions.

Keywords: GIS, solar radiation, spatial distribution, cloud mask

Lesław Polny, Ewelina Wójciak: **The Theory of Pseudo-Radiation Local Emitters Value of Properties with a Differential Propagation of Prices Wave** • Geomatics and Environmental Engineering 2017, Vol. 11, No. 2

The level of transaction prices arises from preferences of potential buyers, that is, from the current supply-demand relationship for individual market characteristics that differentiate the property from one another. However, you can take arbitrarily, but with a high probability that the largest share in price or in value property has its allocation in market space. The easiest and the most common price distribution model is the theorem that the highest form in the city center, the lowest observed in the periphery. Realignment of this doctrine was made by building a set of theses remaining in coherence with the author's conception

theory added: on the right-area real estate market, there are at least two emitters price, that means points on which unit prices are rising (emitters progressive) or decrease (emitters regressive) in pseudo-radial progress. By this, we mean intermitted price change relative to allocation real estate in design space with differential propagation of carrier prices wave, i.e. with variable development trends. Analysis of signal transmitted by polarizer pricing, assisted the GIS environment, based in Krakow's housing market as a representative test material, assuming the being of three uncorrelated emitters. This made it possible to demonstrate and sustain the theory of pseudo-radiation (many) local emitters' value property with a differential propagation-pricing wave and provide a vision its development, based on laws mechanics wave propagation on mirror water with a parallel assumption existence invariant prices islands.

Keywords: market analysis, prices distribution, GIS in property valuation, price map

Sylwia Szlapińska, Regina Tokarczyk: **A Comparison of Accuracy between Point Clouds from Convergent Images and Spherical Panoramas** • Geomatics and Environmental Engineering 2017, Vol. 11, No. 2

The work includes the results of a comparison of point clouds made on the basis of convergent images and spherical panoramas from the photos taken in the same center of projection. The results were compared for the group of convergent photos and panoramas in relation to accuracy, cloud density and measurement economics. The research was carried out on the test field inside a large building. The convergent photos and panoramas were taken using the Canon EOS 5D camera. The robotic camera mount GIGA PAN Epic Pro was used to make panoramas. For calculations and building models the Agisoft PhotoScan application was selected, as it has a function of automatic orientation and adjusting photos. The comparison of point cloud accuracy, from which the control point coordinates were taken, has shown that the accuracy of the model made from the photos was 19 mm, and the accuracy of panorama model was 73 mm. As the worse result of panorama cloud accuracy may be caused by much lower density, the effect on their accuracy was also checked by making an analytical determination of control point coordinates at the stage of photo and panorama orientation. The analysis has proven that

the model made of convergent photos is more accurate (20 mm) than the model made of panoramas (36 mm).

Keywords: Agisoft, convergent photos, image-based modeling, point clouds, spherical panoramas

Bogdan Wolski, Cezary Toś: **A Probabilistic Model of Assessment of Level Network Functionality** • Geomatics and Environmental Engineering 2017, Vol. 11, No. 2

The question of stability of elevation points can be described at the phenomenological approach by means of a reliability model. The practical effect of analysis is a prediction of the destruction of the level network in the researched areas. The identification of the degradation process as a function of time enables the rational planning of updating measurements. The neuralgic point of the question is an acquisition of data which fulfills the reliability approach demands. This question as well as the procedure of the reliability analysis method of data is presented in this paper. In the examples of two cases the authors present the results of research on control level network situated in urban areas in compact settlement conditions.

Keywords: levelling network, reliability, functionality assessment, usability of network

Monika Zielińska: **Legal Liability Issues for Mining Damages** • Geomatics and Environmental Engineering 2017, Vol. 11, No. 2

This article focuses on issues related to the legal liability for mining damages resulting from mining areas. Widely discussed legal regulations in relation to the field of mining damages legislation. It was also presented chosen aspects of the scope of damages compensation that have changed over several decades. To summarize the current procedures shown sectional course of action claims for compensation for mining damage. Additionally, pointed to the numerous ties of geological and mining law with other branches of law.

Keywords: mining damage, geological and mining law, legal liability, compensation