

Report Interexpo-GeoSiberia 2016 from April 20 to 23 in Novosibirsk, Russian Federation

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1. Introduction

The 12th Interexpo-Geo Siberia was organized from April 20 to 22, 2016 by the Siberian State University of Geosystems and Technology SSUGT in Novosibirsk, Russian Federation. The Fair consisted of a geospatial industry exhibit and a scientific and technical forum. The event was well attended by Russian participants, mainly from Siberia, including SSUGT students.

However, the usual large foreign participation was rather modest this year. There were 5 participants from Germany, 4 from Czechia, 3 from China, 2 from the Netherlands, 1 from Hungary, 1 from Romania and 1 from Brazil. Responsible for this small international participation were most likely the global political differences. But those who came from abroad were happy to enjoy the cordial reception by our Russian and Siberian colleagues and even to receive letters of gratitude for coming to the event.

2. Opening

The opening of the Interexpo-GeoSiberia was made for the Fair on April 20, 2016 at 10:00 hrs by the Governor of the Novosibirsk Region, Vladimir Gorodetsky and Prof. Alexander P. Karpik, President of SSUGT. Statements were made by Prof. Guo Huadong, President of the International Society of Digital Earth (China), Pro. Laszlo Zentai, Secretary General of ICA (Hungary) and Axel Pohlmann, DVW President of the State of Saxony (Germany). This was followed by an official visit of the exhibits.

With the exception of Digital Globe, the DVW and KIT Karlsruhe all other exhibitors came from the Russian Federation. Noteworthy was the exhibit of the Russian photogrammetric software company RACURS, which is globally active. Also, there were several UAV producers from Russia in the exhibit.

3. Scientific and Technical Forum

The scientific and technical program was initiated by a Plenary Session on April 20, 2016 at 11:00 hrs.

Dr. Gennady Pobedinsky, Director of the Federal Research and Development Center for Geodesy, Cartography and Spatial Data Infrastructure, Moscow spoke on new laws to establish NSDI and on standards developed by Tsniigaik released for the Russian Federation.

Dr. Laszlo Zentai, ICA General Secretary (Hungary) described the NSDI development in Hungary modelled according to the European INSPIRE directive.

Sovzond, Moscow, reported on the industrial development in Russia to create a Russian equivalent to Google Earth and Google Maps. „Smart Cities“ cannot be developed without first having geospatial information.

Gottfried Konecny, Hannover, Germany, noted, that SSUGT together with MIIGAiK is one of the most important geospatial information technology educational centers in the world. Interexpo-GeoSiberia, the largest geospatial fair in Russia has successfully networked with NGO's of the geospatial disciplines: FIG, ISPRS, ICA and others organizing successful international workshops with them.

Igor A. Musikhin, Vice President SSUGT, presented a well documented study by SSUGT on the current trends in geoinformation technology, expressed by publications originating in different countries. Germany followed by China reached the highest number. The biggest markets are expected in remote sensing, real time sensor fusion and BIM. Regarding industrial developments not only scientific literature, but also grey literature, such as Geomatics journals should be included in surveys.

Volker Schwieger, FIG Commission President, Stuttgart, Germany compared PPP GNSS solutions with conventional GNSS technology. The Canadian CRRS-PPP system indeed offered the highest accuracy of +/- 0.02m in position and +/- 0.05 m in height. PPP includes satellite orbit modelling, ionospheric and tropospheric correction capabilities.

Günter Schmitt, KIT Karlsruhe, Germany spoke on dam deformation measurements by GNSS made in Brazil with +/- 0.4 mm σ^2 accuracy.

Prof. H.K.Yambaev, MIIGAiK reported about an automated deformation monitoring system using digital inclinometry and Leica tacheometers for the monitoring of locks.

E.M. Mazurova, SSUGT, presented the potential improvements of accuracy by 2 orders of magnitude using relativistic geodesy.

V.I. Obiedenko, SSUGT explained the problems in establishing a common real estate cadastre database GSK 2011 in the Russian Federation, in which 30 000 local coordinate systems have to be transferred into a common coordinate system, for which ROSREESTR is responsible. This will enable the establishment of an NSDI.

Ben Gorte, TU Delft, Netherlands, presented the ongoing effort by TU Delft to build a 2 kg mass Cube Sat to orbit at 600 km height and to carry a hyperspectral scanner of 80m GSD with a 10 nm spectral resolution hypercube, using onboard processing and data compression transmission. For this he suggested to replace pixels with voxels using the center of the hyperbox for classification.

In the afternoon of April 20, on April 21 and on April 22 in the morning a number of workshops were scheduled:

„Digital Earth’s Role in Sustainable Development under global climate change“, organized by the International Society of Digital Earth

„Early Warning in the Big Data Era“, organized by ICA

„Open Source GIS“, organized by SSUGT

„Real Estate Cadastral development“, organized by SSUGT with a contribution by Dr. Otmar Schuster, Mülheim

and:

„**Global Geospatial Information and High Resolution Global Land Cover**“, organized by ISPRS. This workshop, the third at SSUGT (2013, 2015, 2016) was chaired by WG chair IV/2 Vladimir Seredovich and Gottfried Konecny with the following presentations:

1) Gottfried Konecny : „The Status of Topographic Mapping in the World – a UNGGIM- ISPRS Project 2012-2014“

The study based on questionnaires distributed by UNGGIM and supplemented by other sources, established, that the land areas of the globe are covered by 33.5% at scale 1:25 000, 81.4% at scale 1:50 000. 67.5% at scale 1:100 000 and 98.4% at scale 1:250 000. The age of the map content is 22.4 to 37.0 years. These authoritative maps are supplemented by private attempts, such as Google Maps, Bingmaps, Here and TomTom to extract selected features at more frequent intervals. Locally also Openstreetmap provides such an opportunity.

2) Aleksander Prusakov: „Trends in National Mapping Development in the Russian Federation“

Topo map coverage currently exists to 100% for the Russian Federation at scales 1:100 000 and 1:50 000. 35% of the Russian Federation is covered by 1:25 000 maps with an update cycle between 5 and 20 years. These maps are produced from digitized analog maps. New cadastral real estate maps are being created by the Ministry of Economic Development with an update cycle of 5 to 7 years. These maps are the product of new aerial surveys. These maps are referenced to the new geodetic network and tied to space images.

3) Gottfried Konecny, Leibniz University Hannover: „Unresolved Issues of Map Updating“

While map updates are possible by classical remapping at 5 to 20 year intervals, an update information is desirable at least every year. To achieve this new tools are

required, such as high resolution satellite imaging on a global level and GNSS controlled mobile van and smartphone data acquisition on a local level. Obstacles are not only the data acquisition itself, but also the use of object oriented data bases in supplementation to the relational data base structure of GIS systems.

4) Sissy Zlatanova, T.U.Delft: „A 3D Raster GIS“

Pixel based raster systems have been used for data analysis in GIS systems since years. A 3D approach with voxels is the 3D equivalent. Voxels may be used for 3D scenes for digital terrain models, harbour construction, roads, buildings, water bodies, texture and geological bodies in City GML. Vectors in 3D and voxels may be converted in both directions. A Monet db example was presented in a BIM application.

5) Maxim Alyntsev, SSUGT: „Fusion of Laser Scanning and UAV data“

For a 5km highway stretch in the Novosibirsk region mobile van laser scans and UAV Supercam S250 optical images were fused with half meter accuracy for map updating.

6) Ksenia A. Troshko, Lomonosov University, Moscow: „Mapping Agricultural Lands in the Volga Delta“

From 1965 to 1987 the Volga delta had 134 Mha of arable land. After the agrarian reform of 1990 this agricultural land was transformed to fallow land and is now being reforested. Abandoned land is now subject to desertification. The process was monitored by Landsat images at critical periods of the year in 1986, 2002 and 2014.

7) Aleksey V. Dubrovsky, SSUGT: „Land Use as Factor of National Soil Cover Conservation“

For part of the Novosibirsk Region nuclear power plant environments were investigated by soil surveys.

SSUGT published the proceedings of this workshop under ISBN 978-5-87693-900-5 and ISBN 978-80-01-05936-4. Gottfried Konecny thanked Vladimir Seredovic (chair) and Argina Novitskaya (Secretary) for their significant support in hosting the Working Group and in completing the UNGGIM-ISPRS collaboration.

After the conclusion of Interexpo-GeoSiberia at noon of April 22, 2016 a farewell dinner has been hosted at SSUGT.

SSUGT will participate at international events in 2016, such as the ISPRS Congress in Prague in July 2016 and at the Intergeo in Hamburg in October 2016.

