



"Teeverpackung 2009" by Benedikt Terwiel © 2009 Berlin Senate Department

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**Arts meets geodesy**

Dear Madam, dear Sir,

This time I would like to introduce to you the Berlin artist Mr. Benedikt Terwiel (30). He visited my office last summer, and he asked for some sketches of geodetic reference points to use them for his new work of art "Teeverpackung 2009" (Tea package 2009). We exchanged knowledge of both geodesy and art. It was an interesting experience to behold the own work from really different positions.

On 24<sup>th</sup> September 2009 the exhibition "Access All Areas" was opened by the Gallery Max Hetzler. In front of the artwork a box with descriptions of the work was placed, created by Mr. Terwiel:

*"The wall drawing "Teeverpackung 2009" indicates the position of a 4 x 6 cm<sup>2</sup>, crumbled paper package on a table in my studio in Kreuzberg. Each crossing of the gridded package on the table was measured in a direct line to its corresponding point of the drawn grid on the gallery wall. The results of the measurements, specified in kilometres, were transferred to the grid on the wall. A small nail at each crossing represents the angle that points out the direction of the measurement and the location of the package in Kreuzberg."*

His works relate to our comprehension and our conceivability of space, and his attention is directed to everyday utensils' forms, such as packages, bags, tables, chairs, maps, etc. Mr. Terwiel analyses these forms by several methods with the aim to transfer their appearance into the area of terms and definitions. The methods and analyses are mostly simple geometrical, arithmetical or mechanical procedures, e.g. to size, to map, to count, to scan or to categorise. Thus changes and abstracts the object because their three-dimensional form becomes transferred into a row of numbers, graphical symbols or markings. In principle the creation of this artist's works are similar with conventional surveying, but the scales are different.

Mr. Terwiel creates several artworks from 2006 to 2008 which focus cognate themes. One work is "Stadtplan 2008". The artist displays a street-map with different scales that correspond with the accuracy of details and with the density of information. Especially in the city centre the density grows extremely. Trying to transfer the enlargements of scales into each other, a bulge will be created. The expansion of space as result of increasing density creates a shape similar a black hole, independent of the basic raw material. If you are interested, I to recommend you to have a look within the website of the gallery Pitrowski Berlin ([http://www.pitrowski-berlin.de/artists.php?art\\_id=15&pic\\_id=0](http://www.pitrowski-berlin.de/artists.php?art_id=15&pic_id=0)).

**Gerd Rosenthal**

### Anette Blaser leaves the EUPOS ISCO

I would like to inform you that Anette Blaser, Secretary of the EUPOS Steering Committee, will leave the EUPOS Office on 1st February 2010. Anette took part in the EUPOS from the beginnings in 2002 when the Workshop on Multifunctional GNSS Reference Station Systems for Europe was held in Berlin and EUPOS became founded. We worked close together in the field of EUPOS during the last eight years and she became also my deputy. It was a fine collaboration with her, and several times she was bubbling over with ideas. Now she seizes the chance to become head of the section Geo-basis Information Systems in our Geo-information division.

With mixed feelings I see her disembark, but I compliment her on the career advancement and with all my heart I wish her good luck and success in her new business segment.

**Gerd Rosenthal**

### International Symposium on Global Navigation Satellite Systems, Ground-Based and Space-Based Augmentation Systems and Applications 2009, Berlin, Germany

The Berlin GNSS Symposium 2009 is one of a number of high-level events which started with the Berlin GNSS Symposium in November 2008, and that was followed by the UN/Azerbaijan/USA/ESA Workshop on the Applications of Global Navigation Satellite Systems, Baku, Azerbaijan, 11–15 May 2009, all dealing with the promotion of the peaceful uses of modern GNSS technology. The Berlin GNSS Symposium 2009 was specially dedicated to the information exchange between the EUPOS countries and their neighbours as well as to spread the experiences of the EUPOS community to countries of the Eurasian region as recommended by the participants of the Baku-Workshop. This time the focus laid on ground-based GNSS infrastructures and applications. The participants came from EUPOS countries but also from Azerbaijan, Belarus, Georgia and Uzbekistan. Representatives of companies producing GNSS equipment were welcome also. The 60 GNSS experts from 27 countries adopted some recommendations, among others the following is recommended:

- Use the reference frame ITRFxx and for special applications ETRS89 aligned to ITRS.
- Taking into account the progress made by EUREF and EUPOS in Central and Eastern Europe, and the willingness to follow this experience by other Eurasian countries, the Symposium encouraged countries to join EUPOS and EUREF activities in an appropriate way.
- To include in the programme of the upcoming EUPOS/... Symposia in the field of Global Navigation Satellite Systems, supported by the UN, some brief tutorials intended to provide the participants with the basic concepts related to Terrestrial Reference System definition, Terrestrial Reference System realisations, and network infrastructures for providing access to the Terrestrial Reference Frames. Tutorials should be understandable even for those participants not fully familiar with geodetic theory.
- The Symposium recognised the need to continue organising, in cooperation with UNOOSA, training courses and workshops on themes of Reference Networks establishment and exploitation of the existing (GPS, GLONASS) and prospective (Galileo, Compass) GNSS as well.

The Symposium's Proceedings will be available in February, please contact the EUPOS ISC Office in Berlin. The powerpoint presentations and the recommendations of the Symposium can be read on the EUPOS webpage.

[http://www.eupos.org/index.php?option=com\\_content&task=view&id=89&Itemid=160](http://www.eupos.org/index.php?option=com_content&task=view&id=89&Itemid=160)

### 3<sup>rd</sup> Meeting of the EUPOS Working Group on Technical Cooperation with the Industry

On 3 December 2009 EUPOS experts met again with representatives of GNSS companies in Berlin. It was a fruitful meeting where EUPOS took the chance to explain wishes the NSCs have for further developments of GNSS receivers. The companies' representatives noted ideas like a standardised network RTK residual error map generation and access to rover receiver's serial number.

### Montenegro becomes the 18<sup>th</sup> EUPOS member

At the 16th conference, that was held in Berlin, Germany on 30 December 2009, the *EUPOS* ISC agreed unanimously that Montenegro, represented by the Real Estate Administration of Montenegro, becomes a member of the *EUPOS*.

The Real Estate Administration operates MontePOS which follows already almost all *EUPOS* standards. The establishment of the nine MontePOS stations was done by own funds in 2005. Since 2008 the data have to be paid by private users. About 35 users come from the surveying sector only. The stations were upgraded to the GPS and GLONASS use, in 2007. As new development a Leica software for quality control was bought in 2009. Two Croatian stations are already included in MontePOS, others are welcome. (<http://www.nekretnine.co.me/>)

### SIGNAL stand for Slovenia-Geodesy-Navigation-Location

SIGNAL, that stands for Slovenia-Geodesy-Navigation-Location, is owned by the Surveying and Mapping Authority but operated by the Geodetic Institute of Slovenia. SIGNAL is fully operational with 15 stations, where five of them are GPS/GLONASS stations, and others only GPS. Leica und Trimble receivers are used. The data exchange with Austria and Hungary is realised, the official agreement with Croatia is also signed and under preparation. Last year the discussion with the Italian network in Friuli region has started.

At the moment the use is free of charge, but as from March 2010 clients will have to pay for real-time data. The data distribution will be done by a mobile operator however the origin of all data is still the national GNSS service centre at the Geodetic Institute of Slovenia. SIGNAL has 550 registered users, about 200 are active per day. (<http://www.gu-signal.si/>)

### Macedonian MAKPOS can be tested

The Macedonian service MAKPOS is fully established with 14 stations and currently is working in test period that means users are using the system for free. Commercial use is planned to start from March 2010. (<http://makpos.katastar.gov.mk>)

### Number of CZEPOS users in Czech Republic still increasing

The number of the CZEPOS clients has increased from 650 to 820 within half a year. CZEPOS is connected with 11 foreign stations, five from Germany, four from Poland, three from the Slovak Republic and three from Austria. The data are charged. New coordinates in ETRS 89 were calculated. (<http://czepos.cuzk.cz/>)

### More foreign stations included in Hungarian GNSSnet.hu

In addition to the 35 GNSSnet.hu reference stations four Austrian, one Slovenian, three Croatian, three Romanian, three Serbian and six Slovakian reference station are processed. 720 users are registered. It is remarkable that the ratio of RTK and network RTK usage is increasing rapidly, while post processing is stagnant or decreasing and DGNS is negligible. (<http://www.gnssnet.hu/>)

### Data exchange between BULiPos and ROMPOS realised quickly

The Bulgarian *EUPOS* segment BULiPOS is fully operational since May 2009 with 12 stations. It will become denser in the future, but since the processing software has improved a distance between the stations of 100 km is acceptable. One of the benefits of *EUPOS* is the close connection to the neighbouring countries. Data exchange with Romania's ROMPOS network could be realised in only ten days. (<http://www.bulipos.eu/en/>)

### Polish ASG-EUPOS becomes a normal operation

All stations of the ASG-EUPOS Network in Poland operate properly. The number of users has increased from 2820 to 4.590 users during the last six month. The Polish Head Office will organise in October 2010 in timely connection with the 18<sup>th</sup> EUPOS ISC conference a workshop a official end of the ASG-EUPOS project, since the data provision is now a normal operation. (<http://www.asg-eupos.gov.pl/>)

### New concept in Russian Federation

The concept of geodesy and cartography development in the Russian Federation up to 2010 is being developed. Upon its completion the document is to be approved by the Russian Government. This concept will play a significant role in the development of geodetics networks in Russia. The current draft is available in Russian at

[http://www.economy.gov.ru/wps/wcm/connect/economylib4/mer/resources/e75bd5804db796bbfb9bfc8cc8c99f3/project\\_concept.doc](http://www.economy.gov.ru/wps/wcm/connect/economylib4/mer/resources/e75bd5804db796bbfb9bfc8cc8c99f3/project_concept.doc)

### Modernisation of six ROMPOS stations and TransDatRo software ready

The Romanian EUPOS segment ROMPOS is in operation since September 2008 with 58 stations. In December 2009, six GPS stations (installed in 2001 and 2003) were modernised with new equipments including Leica GRX1200+ receivers and Leica AR24 antennas. Data exchange with Hungary and Bulgaria it is realised and in near future with Ukraine. *TransDatRo* software was realised and it is free of charge for coordinate transformation from old reference system (Krasovski ellipsoid) to the ETRS89 system or opposite. This software is available from ROMPOS in postprocessing and was implemented by GNSS manufacturers for real time applications. (<http://www.rompos.ro>)

### National EUPOS Service Centres

The cooperation website <http://www.eupos.org> provides the contact details for all National Service Centres.

### Events

15-21 May 2010	United Nations/Moldova/European Space Agency/United States of America Workshop on the applications of global navigation satellite systems, Chisinau, Moldova
27-28 May 2010	17 <sup>th</sup> Conference of the International EUPOS Steering Committee and 9 <sup>th</sup> Meeting of the EUPOS Working Group on System Quality, Integrity and Interference Monitoring, Novi Sad, Serbia
2-5 June 2010	EUREF-Symposium 2010, Gävle, Sweden
18-22 October 2010	5th Meeting of the International Committee on Global Navigation Satellite Systems (ICG-5), Turin, Italy
26-27 October 2010	18 <sup>th</sup> International EUPOS Steering Committee Conference and 10 <sup>th</sup> Meeting of the EUPOS Working Group on System Quality, Integrity and Interference Monitoring, Warsaw, Poland
October 2010	4 <sup>th</sup> Meeting of the EUPOS Working Group on Technical Cooperation with the Industry, Warsaw, Poland
November/December 2010	International Symposium on Global Navigation Satellite Systems, Space-Based and Ground-Based Augmentation Systems and Applications 2010, Brussels, Belgium

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