

# *SESSIONS*

## *EUREF 2014 Symposium*

*Vilnius, Lithuania*

### **Session 1: Multi-GNSS in Real Time and Post-processing**

**(Chair: Rolf Dach Wolfgang Soehne)**

Today, the EUREF Permanent Network (EPN) as well as global and national permanent networks are based on the Global Navigation Satellite Systems (GNSS) of GPS and GLONASS. New GNSS under establishment such as the Chinese BeiDou and the European Galileo are increasing the number of satellites but may induce new or additional problems with respect to, e.g. interoperability. The International GNSS Service (IGS) is continuing an initiative for a Multi GNSS Experiment (MGEX) to track and analyze all available GNSS signals. Several EUREF stations and institutions are joining this project. Beside the enhancement of the space and ground infrastructure, new opportunities to derive relevant parameters such as coordinates and troposphere parameters in real-time have been opened thanks to new applications of Precise Point Positioning (PPP) in real-time. Real-time satellite orbit and clock corrections as available from IGS and EUREF resources are the basis for this.

In the session we welcome contributions. Describing recent developments in the present-day infrastructure with respect to the available and future GNSS; Describing improvements in the software development and in the modeling of the observations; Showing the impact of Multi-GNSS on generated products; Describing new data flow based on new formats (RINEX3/RTCM-MSM); Showing the improvement of orbit and clock corrections; Introducing the derivation of additional corrections, e.g. ambiguity fixing parameters, troposphere, ionosphere etc., especially using the denser regional network resources; Presenting the usage and application of real-time corrections, e.g. from the IGS Real-Time Service (RTS); Demonstrating applications using the ETRS89-related real time corrections.

### **Session 2: GNSS for Earth sciences**

**(Chair: Rosa Pacione Carine Bruyninx)**

Latest improvements in modelling the lower and upper atmosphere proved that GNSS could serve as a valuable and efficient tool for sensing the Earth atmosphere for various purposes: numerical weather prediction, climate study, space weather monitoring etc. This monitoring is today evolving from near-real time to real-time.

In addition, because of its accuracy and ability to provide results in a global reference frame, GNSS is presently the main sensor of the Earth's surface deformation. Consequently, GNSS networks have been installed all over the world and repeated GNSS campaigns are conducted to monitor ground deformations.

The session solicits contributions with new approaches and products in monitoring the solid Earth deformations and the Earth's atmosphere with GNSS, including their validation and exploitation.

### **Session 3: ETRS89: present and future**

**(Chair: Martin Lidberg Elmar Brockmann, Ambrus Kenyeres)**

The preferred geodetic reference system for Europe is ETRS89. It has been implemented in most countries on the continent and it is mandatory for exchange of geo-information within INSPIRE. ETRS89 is also used for highly precise scientific applications as well as for centimeter-level RTK services which cover most of Europe. The expectations and need for a homogenous and highly precise reference frame have developed considerably since it was established more than 20 years ago. Therefore, we also invite presentations of homogeneous reprocessing activities.

We welcome contributions on especially:

theoretical and practical aspects on the definition as well as the realizations of ETRS89; scientific and technical developments related to the improvement of ETRS89; concepts and results of reprocessing activities, work on GNSS station velocities and time series analysis; crustal deformation within Europe and adjacent areas based space geodetic techniques and modeling of crustal deformations where observed GNSS-based velocities are explained.

Presentation of GNSS campaigns as extensions and upgrades of the ETRF; Implementation of ETRS89 in Web services; Technologies for referencing of geo-data; Developments and new implementations of CRS registries.

### **Session 4: Height and Gravity**

**(Chair: Markku Poutanen, Martin Lidberg)**

Gravity-related heights, i.e. heights based on potential differences remain fundamental. Many countries are renewing or updating their height systems.

Simultaneously the realization of heights using GNSS-based 3-D coordinates and geoid models is continuously improving, supported by the gravity satellite missions like GRACE and GOCE. Gravity methods are increasingly contributing to the maintenance of height systems but also to monitor e.g. glacier mass changes due to the global warming.

We solicit papers on:

The definition and realization of height systems at the national, European or global level; Height observations and observing techniques; Gravity-field observations and modeling (satellite and terrestrial); Geoid computations; The use of gravity satellites, leveling or multiple techniques in the maintenance of the height systems.

## **Session 5: National Reports**

**(Chair: Jan Krynski)**

National surveying and mapping authorities of European countries report in this session on all branches of their activities, from geodetic surveying to the establishment of geometric reference systems and positioning, to gravimetric and height related tasks, and to outstanding developments in geo-information systems. The implementation of EUREF results on national level is of particular interest. Due to the limited time, which is typically only a few minutes for each country, the reports must focus on new developments since the last report given at a EUREF symposium.