



International Association  
of Geodesy

# Newsletter

## May 2017

Editor: Gyula Tóth

*IAG Communication and Outreach Branch*  
Department of Geodesy and Surveying  
Budapest University of Technology and Economics  
H-1521 Budapest, Hungary

Information Service of the International Association of Geodesy

<http://www.iag-aig.org>

[newsletter@iag-aig.org](mailto:newsletter@iag-aig.org)

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The *IAG Newsletter* is under the editorial responsibility of the *Communication and Outreach Branch* (COB) of the IAG.

It is an open forum and contributors are welcome to send material (preferably in electronic form) to the IAG COB ([newsletter@iag-aig.org](mailto:newsletter@iag-aig.org)). These contributions should complement information sent by IAG officials or by IAG symposia organizers (reports and announcements). The *IAG Newsletter* is published monthly. It is available in different formats from the IAG new internet site: <http://www.iag-aig.org>

Each *IAG Newsletter* includes several of the following topics:

- I. news from the Bureau Members
- II. general information
- III. reports of IAG symposia
- IV. reports by commissions, special commissions or study groups
- V. symposia announcements
- VI. book reviews
- VII. fast bibliography

## General Announcements

### *Inauguration of the Onsala Twin Telescopes*

The Onsala Space Observatory, Chalmers University of Technology, and the International VLBI Service for Geodesy and Astrometry (IVS) are proud to announce the ceremonial inauguration of a new pair of Twin Telescopes for geodetic and astrometric VLBI. More than 200 international and national guests, including veterans of the first transatlantic VLBI observations in 1968 as well as the regional governors and representatives of Chalmers, participated in the festivity on Thursday, 18 May 2017.

The two new telescopes are equipped with main reflectors of 13.2 m diameter, following the design for the VLBI Global Observing System (VGOS), which is the next generation of the geodetic VLBI network with ultra-fast telescopes and wide recording bandwidth. The twin telescopes will allow continuous observations with at least one of them, but will also permit to exploit innovative observing scenarios with other stations where more than one telescope is available in a compatible observing mode. This offers new possibilities for geodetic and astrometric VLBI research but also investigations of the turbulent behavior of the atmosphere above the observatory.

The new twins join a multitude of co-located instruments at Onsala. Together with the 25 m and 20 m radio telescopes they are part of the Onsala telescope cluster. The Onsala 25 m radio telescope was installed in 1964 and is the first European telescope ever to be involved in VLBI, with first observations in 1968. The radome enclosed 20 m radio telescope was installed in 1976 and has been used with the MarkIII geodetic VLBI system since 1979. Today it has one of the longest time series in the IVS database.

Furthermore, there are a number of co-located instruments for geodetic and geophysical research at Onsala. The GNSS station ONSA was established already 1987 in the CIGNET network, several years before the International GNSS Service (IGS) was founded. ONSA had a pioneering role in the early days of GNSS, and has the longest continuous time series in the IGS network. There is also a gravimeter laboratory with a superconducting gravimeter and a tide gauge site with several independent sensors. The observatory is one of the unique fundamental space geodetic sites that have a direct access to the sea level and co-locate VLBI, GNSS, and gravimetry. It is thus a very important co-location site for IAG's Global Geodetic Observing System (GGOS).



Fig. 1 The inauguration of the Onsala Twin Telescopes on 18 May 2017. The twins are shown in the center and on the right. The telescope on the left is the 25 m radio telescope installed in 1964, which is the first European telescope ever to be involved in VLBI. (Photo: Chalmers / Anita Fors)

RÜDIGER HAAS  
AXEL NOTHNAGEL

## Meeting Announcements

### *Technical Seminar on Reference Frame in Practice (RFIP)*

Technical Seminar on Reference Frame in Practice (RFIP) will take place 29-30 July 2017 in Kobe, Japan. This seminar will be of benefit to operational geodesists or surveyors who are dealing with reference frame issues and crustal deformation, either in a government or commercial environment. It is also open to academics or postgraduate students in a surveying or related discipline.

The seminar is being organised by the IAG, FIG, UN Global Geospatial Information Management for Asia and the Pacific (UN-GGIM-AP), ICG (International Committee on GNSS), GSI (Geospatial Information Authority of Japan) and JFS (Japan Federation of Surveyors). The draft technical program of the seminar is available from [www.jsurvey.jp/jfs/kobe-seminar-draft-program.pdf](http://www.jsurvey.jp/jfs/kobe-seminar-draft-program.pdf).

For general seminar enquiries as well as registration and seminar program enquiries please contact Basara Miyahara ([miyahara-b96ip@mlit.go.jp](mailto:miyahara-b96ip@mlit.go.jp)) and Rob Sarib ([robert.sarib@nt.gov.au](mailto:robert.sarib@nt.gov.au)).

JOHN DAWSON  
Chair IAG SC 1.3e: Asia-Pacific

### *Workshop on the inter-comparison of gravity and geometric measurements*

The Strasbourg University and the Institut de Physique du Globe de Strasbourg are pleased to announce that an "International workshop on the inter-comparison of space and ground gravity and geometric spatial measurements" will take place from 16 to 18 October 2017 at the University of Strasbourg, France.

Three main themes will be discussed during this workshop:

1. Comparing gravity with geometrical space technique (like VLBI, LLR, SLR, DORIS or GNSS) to determine more precisely the surface deformation
2. Transfer function of the Earth at various time-scales related to the elastic and visco-elastic properties of the Earth
3. From the modeling of geophysical layers to the realization of a terrestrial reference frame: geocenter motions, modeling accuracy, ... State of the art and next step towards the millimeter accuracy?

Registrations are free but compulsory at <https://geodesy.sciencesconf.org/>

This web site provides also more detailed information.

SOURCE: IERS MESSAGE NO. 331

### *Workshop "Satellite Geodesy for Climate Studies"*

Dear colleagues,

The abstract submission for the workshop on "Satellite Geodesy for Climate Studies" to be held September 19-21 in Bonn, Germany, <http://geodesy-for-climate.org/> is now open and the **deadline for abstract submission is May 31**.

More information on the program, housing, etc. can be found in the attachment and on the workshop's webpage.

We are looking forward to seeing you in Bonn!

Annette Eicker and Jürgen Kusche  
(on behalf of the organizing committee)

## Meetings Calendar

### FIG Working Week 2017

May 29 – June 2, 2017, Helsinki, Finland

URL: <http://www.fig.net/fig2017/>

### TransNav 2017

June 21 – 23, 2017, Gdynia, Poland

URL: <http://transnav2017.am.gdynia.pl>

### Baltic Geodetic Congress 2017

June 22 – 25, 2017, Gdańsk, Poland

URL: <http://www.bgc.geomatyka.eu/2017/>

### ICC 2017

July 2 – 7, 2017, Washington, DC, USA

URL: <http://icc2017.org/>

### IGS Workshop 2017

July 3 – 7, 2017, Paris, France

URL: <http://kb.igs.org/hc/en-us/articles/216574478-IGS-Workshop-2017>

### 1st IUGG Symposium on Planetary Science (IUGG-PS2017)

July 3 – 5, 2017, Berlin, Germany

URL: <http://www.dlr.de/iugg-ps2017>

### IAG/GGOS/IERS Unified Analysis Workshop (UAW)

July 10 – 12, 2017, Paris, France

URL: <http://ggosdays.com/en/conferences/unified-analysis-workshop/>

### WCRP/IOC Conference 2017: Regional Sea Level Changes and Coastal Impacts

July 10 – 14, 2017, New York, USA

URL: <http://www.sealevel2017.org>

### Technical Seminar on Reference Frame in Practice (RFIP)

July 29 – 30, 2017, Kobe, Japan

URL: <http://ggim.un.org/events/2017/July.html>

### IAG and IASPEI Joint Scientific Assembly

July 30 – August 4, 2017, Kobe, Japan

URL: <http://iag.dgfi.tum.de/index.php?id=291>

### AOGS 14<sup>th</sup> Annual Meeting

August 6-11, 2017, Singapore, Singapore

URL: <http://www.asiaoceania.org/aogs2017/>

### Fifth International School on "Least Squares Approach to Modelling the Geoid"

August 21-25, 2017, KTH, Stockholm

URL: <https://www.kth.se/en/abe/inst/som/avdelningar/geo/geodesi/handelser-1.78120>

### EUGEO 2017

September 4-6, 2017, Brussels, Belgium

URL: <https://eugeo2017.sciencesconf.org/>

ESA/JRC International Summerschool on GNSS 2017

September 4-15, 2017, Longyearbyen, Svalbard-Spitzbergen, Norway

URL: <http://www.esa-jrc-summerschool.org>

Workshop on Glacial Isostatic Adjustment and Elastic Deformation

September 5-7, 2017, Reykjavik, Iceland

URL: <http://www.polar.dtu.dk/english/Workshop-on-Glacial-isostatic-adjustment-and-elastic-deformation-2017>

EGSIEM Autumn School for Satellite Gravimetry Applications

September 11-15, 2017, Potsdam, Germany

URL: <http://www.egsiem.eu/autumn-school>

WMESS 2017

September 11-15, 2017, Prague, Czech Republic

URL: <http://www.mess-earth.org>

COSPAR 2017

September 18-22, 2017, Jeju Island, South Korea

3rd Symposium of the Committee on Space Research (COSPAR): Small Satellites for Space Research

URL: <http://cospar.kasi.re.kr/cospar-symposium-2017/>

IAG Workshop: Satellite Geodesy for Climate Studies

September 19-21, 2017, Bonn, Germany

URL: <http://www.igg.uni-bonn.de/apmg/index.php?id=ws2017>

Journees 2017

September 25-27, 2017, University of Alicante, Spain

URL: <http://web.ua.es/journees2017/>

ION GNSS+ 2017

September 25-29, 2017, Portland, Oregon, USA

URL: <http://www.ion.org/gnss/index.cfm>

Geodätische Woche / INTERGEO 2017

September 26-28, 2017, Berlin, Germany

URL: <http://www.intergeo.de/>

ILRS Technical Workshop 2017

October 4-7, 2017, Riga, Latvia

URL: <http://www.ilrstw2017.lu.lv>

9<sup>th</sup> ABLOS Conference

October 10-11, 2017, IHB, Monaco

URL: <http://www.ablosconference.com/>

International Workshop on the inter-comparison of space and ground gravity and geometric spatial measurements

October 16-18, 2017, Strasbourg, France

URL: <http://geodesy.sciencesconf.org>

OSTST 2017

October 23-27, 2017, Miami, FL, USA

URL: <https://sealevel.jpl.nasa.gov/science/ostscienceteam/scienceteammeetings/>

6<sup>th</sup> International Colloquium on Scientific and Fundamental Aspects of GNSS / Galileo

October 25-27, 2017, Valencia, Spain,

URL: <http://esaconferencebureau.com/2017-events/17a08>

LAPIS 2017 School

October 29 – November 4, 2017, La Plata, Argentina

URL: <http://www.maggia.unlp.edu.ar/lapis2017>

AGU 2017 Fall Meeting

December 11-15, 2017, New Orleans, LA, USA

URL: <https://meetings.agu.org/>

LBS 2018

January 15-17, 2018, Zurich, Switzerland

URL: <http://lbsconference.org>

EGU General Assembly 2018

April 8-13, 2018, Vienna, Austria

URL: <http://www.egu2018.eu/>

AOGS 15<sup>th</sup> Annual Meeting

June 3-8, 2018, Hawaii, USA

URL: [http://www.asiaoceania.org/society/public.asp?view=up\\_coming](http://www.asiaoceania.org/society/public.asp?view=up_coming)

10<sup>th</sup> IVS General Meeting

June 3-8, 2018, Longyearbyen, Spitsbergen, Norway

URL: <http://www.iers.org/IERS/EN/NewsMeetings/ForthcomingMeetings/forthcoming.html>

42<sup>nd</sup> COSPAR Scientific Assembly

July 14-22, 2018, Pasadena, CA, USA

URL: <http://cospar2018.org/>

IAU XXX<sup>th</sup> General Assembly

August 20-31, 2018, Vienna, Austria

URL: <http://astronomy2018.univie.ac.at/>

21<sup>st</sup> International Workshop on Laser Ranging

October 27-31, 2018, Canberra, Australia

URL: <http://www.iers.org/IERS/EN/NewsMeetings/ForthcomingMeetings/forthcoming.html>

AGU 2018 Fall Meeting

December 10-14, 2018, Washington, D.C., USA

URL: <https://meetings.agu.org/>

EGU General Assembly 2019

April 7-12, 2019, Vienna, Austria

URL: <http://www.egu2019.eu/>

27<sup>th</sup> IUGG General Assembly

July 8 – 17, 2019, Montreal, Canada

URL: <http://www.iugg.org/assemblies/>

AOGS 16<sup>th</sup> Annual Meeting

July 28 – August 2, 2019, Singapore, Singapore

URL: [http://www.asiaoceania.org/society/public.asp?view=up\\_coming](http://www.asiaoceania.org/society/public.asp?view=up_coming)

## Reports

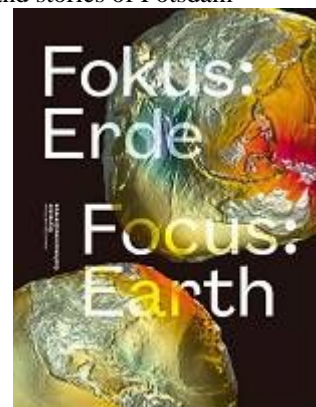
### *Anniversary celebrations of Helmert and the Potsdam Geodetic Institute*

Through the whole year 2017, scientific institutions and organizations throughout Germany commemorate – with lectures, colloquia, or exhibitions – the 100th anniversary of Friedrich Robert Helmert's (1843-1917) death. In this short report, we summarize activities in Potsdam and at GFZ connected to this anniversary, the 125th anniversary of the moving of Helmert's institute from Berlin to Potsdam, and, on the sidelines, certainly also the 25th anniversary of GFZ.



History of geosciences on Telegrafenberg and stories of Potsdam

scientists are presented in the splendid exhibition “Focus: Earth – About the measuring of our world” that is presently shown the House of Brandenburg-Prussian History in Potsdam. The exhibition, organized on occasion of the 25th anniversary of the founding of the Helmholtz-Centre Potsdam - GFZ German Research Centre for Geosciences, can be visited until 9 July 2017 ([www.hpbg.de](http://www.hpbg.de)). The exhibition poster on the left shows Erich von Drygalski taking midday height with a small theodolite during the first German expedition to Antarctica (1901-02).



More background information on this topic provides the superb accompanying German-English book “Fokus: Erde. Focus: Earth” (above picture: book cover), ed. by GFZ, Deutscher Kunstverlag 2017, ISBN 978-3-422-07395-1 available in bookshops (25 Euro) or in the museum (22 Euro).

A true highlight in the broad supporting programme of the exhibition was the colloquium on the “Promotion of Scientific Geodesy since Helmert” on 7 April 2017, organized by the Leibniz-Sozietät der Wissenschaften zu Berlin e.V. together with GFZ, DVW, and TU Berlin.

The GFZ, specifically our Department 1 “Geodesy”, celebrated the moving of the Royal Prussian Geodetic Institute (founded in 1870) with its second director Helmert from Berlin to Telegrafenberg hill near Potsdam 125 years ago with a worthy and entertaining festivity on 6 April 2017 (the “department stamp” on the right was designed just for this jubilee). About 250 guests followed a colorful and dynamic programme. The great achievements made in the field of geodesy that began here on this campus with the work of Helmert were recalled and honoured with great respect but also with a healthy sense of humour. First, there was a stage programme with – following the official addresses – non-stop surprises: Potato medals bestowed by a potato king, historical play scenes reviving the founding days of our institute, sculpture awards showing a geodesist bravely balancing on a potato-Earth, or music performances with ballads on the history and today's topics of Department 1.







Friedrich Robert Helmert, Wilhelm Foerster and Herrmann von Helmholtz talked about the reorganization of the Royal Prussian Geodetical Institute and the establishment of the Telegraphenberg location. Johannes Ihde and Andreas Reinhold (BKG) had rolled up their sleeves and provided the noteworthy libretto of the discourse. The actors are professionally made-up colleagues of department 1. During the whole afternoon, you could have encounters with the three celebrities, promenading and chatting along their way...



A top-ranking delegation of the potato club „Societas ad usum potatonis“ in Lohr in Bavaria, with potato king, viceroy, and lord steward, delivered a memorable address sketching the facts leading to this historical visit of the potato king traveling to GFZ in the heartland of Prussia to pay tributes to the GFZ scientists Frank Flechtner and Christoph Förste and their team for their unwavering efforts for the exploration of the true Figure of the Earth, the Potsdam Potato. Frank Flechtner shows the golden “Fridericus Magnus Primus Rex Potatonis” medal he was awarded by his high-ness Eduard I. in recognition of his merits for the Potsdam Potato.



Harald Schuh congratulates Wolfgang Torge, one of the recipients of the sculpture award „The Earth is a Potato“, endowed by Department 1. The other recipients are Christoph Reigber, Ludwig Grunwaldt, and Johannes Leicht (curator of the Focus:Earth exhibition). The original sculpture by the artist Axel Gundrum was copied with a 3D printer. The prizes were then coloured by the artist and put on a substantial pedestal.



After the official programme, there was a manifold supply of things to see or try or investigate in and around our building. Here is a selection: The building's astonishing functionality for geodetic measurements around 1900 was explained in guided tours through pendulum room, old library, attic, and deep cellar. Many old handwritten (i.e. illegible for the modern individual) documents from the institute archive were transcribed and could be studied in the library. Oh, what an insight they give into the careful performance of the fathers of modern geodesy, and also into Prussian bureaucracy! Historical photos and construction plans were on display throughout the building. All office doors in all four stories of building A 17 were "suddenly" labelled with historical name plates according to the old plans. So, some colleagues found themselves working in the institute's laundry, or Helmert's dining room, or, worst: a professor had to realize he is residing in the office of a "Hilfsarbeiter". Using an invar-wire measurement, the question was solved "how well Department 1 is connected to Prof. Hüttl's office" (the scientific director of GFZ). At a motion picture station, short films out of the past and present were shown. Measurements of people by tachymeter were performed ("But hey, I'm used to be much taller - what did that guy say about a 4 cm bias?"). In the library, there was a fanciful exhibition of doctoral hats of Department 1. Some of the offers like geocaching or the painting station (for adults) were just beyond the scope of a single afternoon... As one can see in the pictures, we were blessed with bright sunshine, after a long spell of wet and gray weather. Actually, it was an extremely and very chilly day! Fortunately, the geoid soup you could get at the caterer provided some basic heating.





Altogether, it was a fabulous party that will be fondly remembered by the guests, and by the people organizing this event: the colleagues of Department 1!



all pictures: GFZ

SIBYLLE ITZEROTT, KATRIN GUNDRUM AND HARALD SCHUH

## *Report of EUREF symposium 2017 in Wrocław, Poland*

The 2017 EUREF Symposium was held in Wrocław, Poland, May 17 – 19. It was preceded by a half-day tutorial May, 16, on “Real-Time Infrastructure and Applications in Europe”. The number of participants in the Symposium was 106, and in the Tutorial 52. The local organizer was the Institute of Geodesy and Geoinformatics of Wrocław University of Environmental and Life Sciences.



The scope of the symposium covered different aspects of the definition, realization and maintenance of the European Reference Frame, with five sessions on:

1. Systems: ETRS89, EVRS (Conveners: Zuheir Altamimi and Markku Poutanen);
2. Networks: EPN, UELN, Densification (Conveners: Elmar Brockmann and Ambrus Kenyeres);
3. Techniques: GNSS, Levelling, Combination (Conveners: Rolf Dach and Martina Sacher);
4. Applications: Earth Sciences, Geo-information (Conveners: Alessandro Caporali and Rosa Pacione); and
5. National Reports (Conveners: Jan Krynski and Guenter Stangl).

A total of 35 oral presentations and 18 posters were given in the Symposium. Reflecting the large number of poster presentations, a poster introduction session was included in the first day's programme. Additionally, a 1-hour discussion forum was organised on the ETRF2014 related topic.

One of the major themes in the Symposium was the Future of Reference Frames. A questionnaire was sent to all European countries in March 2017, the main goal being to find out needs and opinions on the new ETRS89 realization in Europe, ETRF2014. The questionnaire was induced by the resolution no. 3 of 2016 Symposium. Based on the results of the questionnaire, a presentation was given, there was the discussion forum with a very lively and active participation, and further, a resolution was accepted on the topic. The main outcome of the questionnaire was that there are different needs in countries, different practices and a lot of variable opinions; as well there exist also practical restrictions to adopt a new reference frame in the near future. This fact is reflected in the 2017 resolution no. 1 where the currently recommended realisation ETRF2000 is retained as well.

Another future reference frame related item was dynamic (kinematic) reference frame and its impact on European reference frames. As an example, the project of the Nordic Geodetic Commission was introduced, with goal to study possibilities and conditions to establish a dynamic reference frame in Iceland. New reference frame approach will be topical in coming years and subject of next Symposia.

Discussion on crustal deformation and deformation models, methods and applications led to the establishment of a new working group on dense velocity fields. Additionally, the development and performance of the EUREF Permanent GNSS Network (EPN) was presented, as well relations to EPOS (European Plate Observing System), gravity related heights, and environmental effects of GNSS signals. As usual, the presentations will be uploaded on the EUREF web page. This year, there will be the opportunity of peer-reviewed publication of presentations in a special issue in Geodesy and Cartography.

Also, as a result of 2016 Symposium resolutions, the Terms of References (ToR) were renewed and the new ToR were accepted. Mostly there were only updates of existing ToR, with changes in membership definition and voting. Earlier, Nations were divided into two categories, A (IAG member Nations) and B (others). This division was removed, and all European countries participating the work of EUREF are equal. Clarification of voting in

the Plenary was given, as well tasks of the National representatives as the contact points between EUREF and Nations. The name of the Technical Working Group was changed to Governing Board to better reflect its tasks and position.

Many thanks to the Wroclaw University of Environmental and Life Sciences, namely the Institute of Geodesy and Geoinformatics, and especially to the Local Organizing Committee, chaired by Jan Kaplan, for their excellent work to organize the Symposium.

Report compiled by MARKKU POUTANEN and WOLFGANG SÖHNE

## EUREF 2017 Resolutions

### **Resolution No. 1.**

The IAG Reference Frame Sub-commission for Europe (EUREF)

*expresses* its sincere thanks to the EUREF community for the valuable information contained in the responses to the ETRS89 questionnaire

*and considering* that the questionnaire results show the diverse requirements regarding national implementations of ETRS89 respects the different countries' decisions on adopting their preferred ETRS89 realisations including the recommended ETRF2000

*however noting* the improved accuracy and stability of the origin and scale parameters of the ITRF2014 and the significance of an improved ETRS89 realisation based on the ITRF2014

*urges* the TWG to make available all the defining parameters of the ETRF2014 with an origin coinciding with that of ITRF2014 and to provide the full series of transformation parameters between ITRF and ETRF versions in an updated technical memo.

### **Resolution No. 2.**

The IAG Reference Frame Sub-commission for Europe (EUREF)

*recognising* that national, dense velocity fields are now available in several areas of Europe

*and considering* the demand to derive a dense European velocity field which is compatible with nationally implemented velocity fields

*encourages* the continued submission of SINEX files to the EPN Densification Working Group and, from institutions computing velocity fields, to deliver these to the Dense Velocities Working Group.

### **Resolution No. 3.**

The IAG Reference Frame Sub-commission for Europe (EUREF)

*recognising* the importance of having consistent and relevant EUREF Terms of Reference

*and considering* the updated EUREF Terms of Reference produced by the EUREF Technical Working Group in response to resolution 2 from the EUREF 2016 Symposium

*approves and adopts* the updated 2017 version of the EUREF Terms of Reference

### **Resolution No. 4.**

The IAG Reference Frame Sub-commission for Europe (EUREF)

*recognising* the important work carried out by members of the Technical Working Group and Data Flow Coordinators

*expresses* its heartfelt thanks to the former Reference Frame Coordinator Ambrus Kenyeres and the former Data Flow Coordinator Guenter Stangl for their hard work over many years

*and welcomes* to the Technical Working Group Juliette Legrand as Reference Frame Coordinator and Martina Sacher in charge of UELN and EVRS maintenance.

**Resolution No. 5.**

The IAG Reference Frame Sub-commission for Europe (EUREF) which held its twenty seventh symposium in Wrocław from May 17-19, 2017

*Expresses* its heartfelt thanks to the Local Organising Committee: Jan Kapłon, Jan Sierny, Wojciech Dach, Grzegorz Bury, Adrian Kaczmarek, Krzysztof Sośnica, Mateusz Drożdżewski, Joanna Najder, Małgorzata Petryniak and Radosław Zajdel for organising the symposium and for the excellent arrangements resulting in a very successful meeting and for the support given by Institute of Geodesy and Geoinformatics, Wrocław University of Environmental and Life Sciences and the Surveyor General of Poland and also the sponsors Septentrio, and Geotronics.

