



International Association  
of Geodesy

# Newsletter

## October 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

### *Summary of the Fifth Meeting of the IAG EC 2015-2019*

**Place:** Kobe, Japan, Kobe International Conference Center, Room 402

**Time:** Sunday, July 30, 2017, 10:00 – 18:00

**Attendees (voting):** H. Schuh (IAG President), Z. Altamimi (IAG Vice President), H. Drewes (Secretary General), G. Blewitt (President of Commission 1), S. Jin (Vice-President of Commission 2, standing in for R. Pail), M. Hashimoto (President of Commission 3), M. Santos (President of Commission 4), P. Novák (President of ICC on Theory), R. Barzaghi, A. Nothnagel (Representatives of the Services), C. Rizos (IAG Immediate Past President)

**Attendees (non-voting):** M. Sideris (IAG Past President, 2007-2011)

**Guest:** R. Heinkelmann (minute taker)

**Regrets:** R. Pail (President of Commission 2), H. Kutterer (Chair of GGOS), J. Adám (President of the COB), R. Neilan (Representative of the Services), L. Combrinck and M.C. Pacino (Members at Large)

### **Summary of Agenda Items:**

#### **1. Welcome and adoption of agenda**

The 5<sup>th</sup> IAG EC Meeting in the term 2015-2019 took place on 30 July 2017 at the International Conference Center in Kobe, Japan, during the first day of the IAG-IASPEI Scientific Assembly 2017. The agenda was distributed previously by email and was unanimously adopted. *H. Schuh*, the President of the IAG, welcomed the members of the IAG Executive Committee (10 out of 16 voting members, 1 non-voting member and 1 guest) and introduced *R. Heinkelmann* who represents *F. Kuglitsch* as the minute taker. *F. Kuglitsch* could not attend the meeting due to the birth of his daughter. The EC Members approved the minutes of the fourth EC Meeting in Vienna, Austria, 28 April 2017.

#### **2. Information on the IAG-IASPEI Scientific Assembly, Kobe, 2017**

*H. Schuh* invited *H. Drewes* to share his information on the IAG-IASPEI Scientific Assembly, Kobe, 2017. *H. Drewes* reported about the Program Book, the Kobe International Conference Center, and major events happening during the Scientific Assembly. *He* mentioned that the poster sessions will take place in a different building, and that the IAG Strategy Discussion will take place on 3 August 2017, from 18:00-20:00, in Room 402 again.

#### **3. Proceedings of the IAG Symposia; Status of the IAG Series**

*H. Schuh* mentioned that the IAG Symposia Series shall be renamed to IAG Topical Series and that IAG will soon have a new contract with Springer International Publishing AG. *He* explained that the major change would be that an article would be published online, one day after it was accepted by the Editor-in-Chief, and that there will be a volume/e-book (not open access) once all articles have got accepted. *H. Drewes* discussed the major points of the new draft contract and highlighted suggestions for revision. *H. Schuh* suggested asking *Dr. Büttner* from Springer International Publishing AG whether it would be possible to pay for a volume in advance (e.g., USD 34), so that one can download all articles which already got accepted immediately and NOT having to wait until all articles have got accepted to access the volume. *He* clarified that one year after publication, an author has the right legally distributing the final version of his/her publication (without Springer logo). *H. Drewes* suggested that the meeting organizers (LOC) include the publications costs in the registration fees to access the articles. *He* further noted that a minimum of 100 copies have to be ordered. IAG will not cover the costs except for General/Scientific Assemblies proceedings.

#### **4. IAG mid-term reports (Travaux de l'AIG) of Commissions and ICCT**

*H. Drewes* presented an overview of the IAG mid-term reports he has received so far (all the reports except for IGS). *H. Drewes* further mentioned that the “Joint Board of GIS” was renamed to “UN-GGIM: Geospatial Societies”. *He* noted that the mid-term reports also serve to identify bodies that are actually not working and

therefore should be discontinued. All the reports may be found at <https://iag.dgfi.tum.de/en/iag-publications-position-papers/>.

*G. Blewitt* gave a summary presentation about the mid-term report of **Commission 1**. *He* reported about the work of the four Sub-commissions: Sub-commission 1.1 (Coordination of Space Geodetic Techniques; chaired by *U. Hugentobler*), Sub-commission 1.2 (Global Reference Frames; chaired by *X. Collilieux*), Sub-commission 1.3 (Regional Reference Frames; chaired by *C. Bruyninx*), and Sub-commission 1.4 (Interaction of Terrestrial and Celestial Reference Frames; chaired by *Z. Malkin*), and the (Joint) Study/Working Groups during the reporting period 2015-2017. *He* further mentioned that the next meeting on Reference Frames for Applications in Geosciences (REFAG) will take place during the COSPAR Assembly between 14 and 22 July 2018, in Pasadena, CA, USA. *He* noted that WG 1.2.1 (Offset Detection in Geodetic Coordinate Time Series) is to be dissolved. The EC approved the termination of the WG 1.2.1, but is still considering this an important topic. A similar working group should be re-established as soon as possible. *G. Blewitt* suggested making a connection to a study group within ICCT. *H. Drewes* noted the importance of being active within COSPAR. *C. Rizos* mentioned that the COSPAR Assembly 2020 will be organized in Sydney, Australia.

On behalf of *R. Pail*, *S. Jin* gave a summary presentation about the mid-term report of **Commission 2**. *He* reported about the work of the six Sub-commissions: Sub-commission 2.1 (Gravimetry and Gravity Networks; chaired by *L. Vitushkin*), Sub-commission 2.2 (Methodology for Geoid and Height Determination; chaired by *J. Agren*), Sub-commission 2.3 (Satellite Gravity Missions; chaired by *A. Jäggi*), Sub-commission 2.4 (Regional Geoid Determination; chaired by *M.C. Pacino*), Sub-commission 2.5 (Satellite Altimetry; chaired by *X. Deng*), Sub-commission 2.6 (Gravity and Mass Transport in the Earth System; chaired by *J. Kusche*), and the (Joint) Study/Working Groups during the reporting period 2015-2017. *He* further announced the IAG Workshop: Satellite Geodesy for Climate Studies, Bonn, Germany, 19-21 September 2017, and the Second Joint Commission 2 and IGFS Meeting – International Symposium on Gravity, Geoid and Height Systems 2018, Copenhagen, Denmark, 17-21 September 2018. The EC suggested *S. Jin* asking *R. Pail* and *X. Deng* from Sub-commission 2.5 to come up with a proposal to re-install an Altimetry Service and how to proceed (incl. call for participation, partners etc.).

*M. Hashimoto* gave a summary presentation about the mid-term report of **Commission 3**. *He* reported about the work of the five Sub-commissions: Sub-commission 3.1 (Earth Tides and Geodynamics; chaired by *J. Bogusz*), Sub-commission 3.2 (Crustal Deformation; chaired by *Z.-K. Shen*), Sub-commission 3.3 (Earth Rotation and Geophysical Fluids; chaired by *J. Chen*), Sub-commission 3.4 (Cryospheric Deformation; chaired by *S. A. Khan*), and Sub-commission 3.5 (Tectonics and Earthquake Geodesy; chaired by *H. Ozener*), and the (Joint) Study/Working Groups during the reporting period 2015-2017. *He* suggested merging Sub-commission 3.2 with Sub-commission 3.5 to establish a new joint IAG-IAVCEI Sub-commission on Volcano Geodesy. *H. Drewes* noted that Sub-commission 3.2 has only little output and supported a re-structuring. On 28 July 2017, there was a meeting with IASPEI about possible future collaboration. Similar meetings could be organized with IAVCEI and IACS during the IUGG Business Meetings in Montreal, Canada, in September 2017. *H. Schuh* noted that IAG has received a lot of positive response from IAVCEI concerning further collaboration. *M. Sideris* suggested re-structuring (i) Sub-commission 3.2 into an IAG-IAVCEI Inter-Association Activity on Volcano Geodesy, (ii) Sub-commission 3.4 into an IAG-IACS Inter-Association Activity on Cryospheric Deformation, and (iii) Sub-commission 3.5 into an IAG-IASPEI Inter-Association Activity on Tectonics and Earthquake Geodesy. The EC decided merging Sub-commission 3.2 with Sub-commission 3.5 under the name "Tectonics and Earthquake Geodesy". The EC further decided establishing a new Sub-commission 3.2 on Volcano Geodesy and recommended Commission 3 installing 1 to 3 Working Groups (with up to 20 members) for each Sub-commission.

*M. Santos* gave a summary presentation about the mid-term report of **Commission 4**. *He* reported about the work of the four Sub-commissions: Sub-commission 4.1 (Emerging Positioning Technologies and GNSS Augmentation; chaired by *V. Gikas*), Sub-commission 4.2 (Geo-spatial Mapping and Geodetic Engineering; chaired by *J. Wang*), Sub-commission 4.3 (Atmosphere Remote Sensing; chaired by *M. Schmidt*), and Sub-commission 4.4 (Multi-constellation GNSS; chaired by *P. Wielgosz*), and the (Joint) Study/Working Groups during the reporting period 2015-2017. *He* noted that SG 4.3.1 (Ionospheric and Atmospheric Coupling Processes and Phenomena: Modeling and Measurements) was not active and is to be dissolved. The EC approved the termination of SG 4.3.1. *M. Santos* then proposed to establish a Joint Working Group on modern GNSS using new GNSS signals (L5, L2C) for practical applications, and *he* presented preliminary Terms of Reference. The discussion resulted in the option to have it joint with Commission 3 and in close cooperation or merging with WG 4.4.1 (Biases in Multi-Signal Data Processing) and WG 4.4.2 (Integer Ambiguity Resolution for Multi-GNSS). It was recommended to name it JWG 4.4.1 "New GNSS Signals for Crustal Motion Studies". *J. Geng* was proposed as the chairperson. The EC recommended establishing a JWG 4.4.1 joint with Commission 3

*P. Novák* gave a summary presentation about the mid-term report of ICCT. *He* presented the major activities of all 13 study groups within ICCT during the reporting period 2015-2017 and gave an outlook for ICCT activities from 2017 to 2019. He noted that JSG 0.22 (Definition of next generation terrestrial reference frames) is to be dissolved due to missing output. The EC approved the termination of JSG 0.22. *P. Novák* further noted that the mid-term report from JSG 0.16 (Earth's inner structure from combined geodetic and geophysical sources) was weak and agreed (i) to submit a revised mid-term report, (ii) to appoint a Vice Chair and further study group members, and (iii) to deliver a good final report in 2019. *He* mentioned that the proposed dates for the next Hotine-Marussi Symposium are 18-22 June 2018, in Rome, Italy (instead of Assisi, Italy, as announced earlier).

## **5. IAG mid-term reports (Travaux de l'AIG) of GGOS and Services**

There was no presentation given for GGOS.

*R. Barzaghi* presented the major activities of the following Gravity Field Services during the reporting period 2015-2017: International Gravity Field Service (IGFS), International Gravimetric Bureau (BGI), International Service for the Geoid (ISG), International Geodynamics and Earth Tide Service (IGETS), International Center for Global Earth Models (ICGEM), and International DEM Service (IDEMS). Further, *he* presented the new IGFS website (<http://igfs.topo.auth.gr/>). *R. Barzaghi* also referred to the discussion on the International Combination Service for Time-variable Gravity Field Solutions (COST-G) started at the previous EC meeting in Vienna, April 2017. *He* agreed explaining the difference between an IGFS Service and an IGFS Processing Center to *A. Jäggi*, Chair of the COST-G. An IGFS Processing Center should have a more experimental (evaluating and analyzing) character while an IGFS Service should be broader, fully developed and operational. Thus, the EC recommends starting with a Processing Center under IGFS.

There was no report on the geometry-oriented services.

*Axel Nothnagel* reported about the activities 2015-2017 of the following Services: International Earth Rotation and Reference Systems Service (IERS), International VLBI Service for Geodesy and Astrometry (IVS), Bureau International des Poids et Mesures (BIPM), Permanent Service of Mean Sea Level (PSMSL). The BIPM Time Department will get a new director because *E. F. Arias* will retire by the end of the year. A call for applications has been published.

## **6. International Combination Service for Time-variable Gravity Field Solutions (COST-G)**

This issue was presented by *R. Barzaghi* (c.f. Agenda Point 5) and discussed there.

## **7. Report of the COB**

*H. Drewes* presented a report provided by *J. Adam*.

## **8. Reports of Members-at-Large**

There were no presentations given by the Members-at-Large.

## **9. Report of the Journal of Geodesy Editor-in-Chief**

On behalf of *J. Kusche*, *H. Drewes* presented the report of the Journal of Geodesy Editor-in-Chief. *He* suggested adding more Assistant Editors in the area of gravity and GNSS, and accepting fewer papers. The majority of EC members endorsed a larger number of AEs, but was not in favor of rejecting more papers, because the rejection rate is already very high. There was a general agreement to accept more papers from practice, as theory is dominating at present.

## **10. Status of the GGOS Chair appointment**

*H. Schuh* mentioned that, as of 29 July 2017, *R. Gross* was elected as the new GGOS Chair and will start his duties on 1 August 2017.

## **11. Report from IUGG**

There was no presentation given for IUGG.

## 12. Nomination Committee for IAG officers 2019-2023

According to the IAG Bylaws, the IAG President, after taking advice from the EC, appoints a Nomination Committee for the election of the IAG Officers for the upcoming period by the IAG Council. The Committee consists of a Chair and three other members. *H. Schuh* proposed to follow the tradition that the immediate Past President be the Chair of the Committee. The EC agreed, and *H. Schuh* appointed *C. Rizos* as the Chair of the Nomination Committee for the IAG officers of the period 2019-2023. *He* asked the EC to propose candidates for the other members, preferably from different continents. *He* will then appoint three of them.

## 13. Status of the IAG Strategy discussion

The EC discussed the status of the IAG Strategy discussion and a proposal received from the Chinese National Committee for International Association of Geodesy (CNC-IAG) on 18 June 2017. The EC agreed aiming for a better regional balance of EC members. At present, 8 EC members come from Europe, 4 from North America, 1 each for Asia, Australia, Africa, and South America. There was a dedicated EC meeting on the IAG Strategy four days later on August 3, 2017.

## 14. Upcoming IAG meetings and sponsorship

*H. Drewes* presented the updated list of upcoming IAG meetings, which can be downloaded in its respective status from the IAG Office homepage (<https://iag.dgfi.tum.de/en/meetings-calendar/>).

## 15. Any other business

The EC decided to hold its next meeting on the occasion of the EGU General Assembly 2018 in Vienna, Austria.

## 16. Visit of the IAG-IASPEI Scientific Assembly venue

### Adjourn

*H. Schuh* thanked the participants for their contributions and closed the session at 18:00.

Respectfully submitted by  
F. Kuglitsch, Assistant Secretary General  
H. Drewes, Secretary General

## Meeting Announcements

### *Meetings Calendar*

### *IAG Sponsored Meetings*

#### *SIRGAS Workshop on GNSS Real-Time Positioning*

*November 22-24, 2017, Mendoza, Argentina*

URL: <http://ingenieria.uncuyo.edu.ar/sirgas2017/en/>

#### *SIRGAS 2017 Symposium*

*November 27-29, 2017, Mendoza, Argentina*

URL: <http://ingenieria.uncuyo.edu.ar/sirgas2017/en/>

#### *5th High Level Forum of the UN-GGIM*

*November 28-30, 2017, Mexico City, Mexico*

URL: <http://ggim.un.org/meetings/2017-Mexico>

SIRGAS Workshop on SLR in Latin America

November 30 – December 1, 2017, Mendoza, Argentina

URL: <http://ingenieria.uncuyo.edu.ar/sirgas2017/en/>

12th Meeting of the International Committee on Global Navigation Satellite Systems

December 2-7, 2017, Kyoto, Japan

URL: <http://icg12.jp/>

UN GGIM AP / IAG / FIG Technical Seminar on Reference Frames in Practice

May 4-5, 2018, Istanbul, Turkey

URL: <https://iag.dgfi.tum.de/en/meetings-calendar/>

EUREF Symposium 2018

May 30 – June 1, 2018, Amsterdam, The Netherlands

URL: [http://www.euref.eu/euref\\_symposia.html](http://www.euref.eu/euref_symposia.html)

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

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

URL: <https://video.kartverket.no/the-10th-ivs-general-meeting>

IX Hotine-Marussi Symposium on Mathematical Geodesy

June 18-22, 2018, Rome, Italy

URL: <https://iag.dgfi.tum.de/en/meetings-calendar/>

42nd COSPAR Scientific Assembly

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

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

IAU XXXth General Assembly

August 20-31, 2018, Vienna, Austria

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

International DORIS Service (IDS) Workshop

September 24-29, 2018, Ponta Delgada, Azores

URL: <https://iag.dgfi.tum.de/en/meetings-calendar/>

IGS 2018 Workshop

October 29 – November 2, 2018, Wuhan, China

URL: <https://iag.dgfi.tum.de/en/meetings-calendar/>

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

November 5-9, 2018, Canberra, Australia

URL: <http://www.serc.org.au/ilrs-2018/>

27th IUGG General Assembly

July 8 – 17, 2019, Montreal, Canada

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

IAG Related Meetings

LAPIS 2017 School

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

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

1st Galileo User Assembly

28-29 November 2017, Madrid, Spain

URL: <https://www.gsa.europa.eu/1st-galileo-user-assembly-registration-request-form>

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>

Munich Satellite Navigation Summit 2018

March 15-17, 2018, Munich, Germany

URL: <http://www.munich-satellite-navigation-summit.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)

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/>

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

### *1st IUGG Symposium on Planetary Science (IUGG-PS 2017) – Interdisciplinary observation and understanding of the Solar System*

*July 3-5, 2017, Berlin, Germany*

Planetary science is an increasingly interdisciplinary field of research propelled forward by advances in space exploration and ground based studies. Detailed characterization of planetary environments within and beyond our Solar System requires collaborative studies across the fields of geology, atmospheric science, geophysics, geodesy, seismology, aeronomy, planetary origins, chemistry and astrobiology. The IUGG Union Commission on Planetary Sciences (UCPS) was established by decision of the IUGG Executive Committee in June 2015, which promotes the advancement of scientific understanding of planetary science and exploration of the solar system origin, formation and evolution including a search for life beyond Earth. The 1st IUGG Symposium on Planetary Science (IUGG-PS2017): Interdisciplinary observation and understanding of the Solar System was successfully held on July 3-5, 2017, Berlin, Germany, which was organized and sponsored by the IUGG Union Commission on Planetary Sciences (UCPS), International Association of Planetary Sciences (IAPS) and German Aerospace Center (DLR).



The IUGG-PS 2017 brought together international scientists and engineers focused on interdisciplinary observation and understanding of the Solar System with 11 sessions. Topics include planetary geodesy, remote sensing, atmosphere, ionosphere/plasma physics, magnetic and gravity field, geomorphology, geophysics, geodynamics, geology, petrology, volcanology, geochemistry, interior physics, Life & Astrobiology. About 100 participants attended IUGG-PS 2017 from 14 countries with about 45 oral talks and 25 posters. The IUGG-PS 2017 provided a very good platform for progress presentations and detailed discussion as well as communication. More information can be found at <http://www.dlr.de/iugg-ps2017>



*Participants of the 1st IUGG Symposium on Planetary Science*

PROF. SHUANGGEN JIN  
DR. JÖRN HELBERT

### *IAG Workshop SGCS2017: Participants urge closer collaboration between geodesists and climate scientists*

The IAG sub-commission 2.6 *Gravity and Mass Transport in the Earth System* and the joint working groups 2.6.1 *Geodetic Observations for Climate Model Evaluation* and 4.3.8 *GNSS Tropospheric Products for Climate* held, for the first time, a joint workshop on *Satellite Geodesy for Climate Studies* on September 19-21, 2017 (SGCS17) at the University of Bonn, Germany. In total, 68 scientists participated in four sessions: A) What is required for validating climate models using geodetic data, B) Long and consistent geodetic time series, C) Climate modelling and observable variables, D) Prospects of future missions and constellations.

As part of the workshop, geodesists and climate scientists met in breakout sessions to draft a roadmap for closer collaboration between these communities. While it is generally recognized that geodetic data like GNSS troposphere and radio-occultation observables, satellite-gravimetric surface mass change, and altimetric sea level provide invaluable information for studying the planet's changing climate, programmatic obstacles and scientifically open questions have been identified that hamper a wider acceptance of geodesy as a tool for climate research. In particular, the participants suggest that

- communication between communities be improved through networking activities and through, e.g., improving data product and modeling transparency and access,
- visibility of geodetic climate research be improved, e.g. through publishing key review papers authored by geodesy scientists in climate journals and vice versa, through involvement of associations IAG, IAMAS and IAPSO, programs such as WCRP and GCOS, the space agencies, and finally through pushing for the acknowledgement of geodesy products used in climate science as a more visible contribution of geodesy
- a new branch of early career scientists at the interface of geodesy and climate scientists should be established and supported through summer schools and joint PhD programs
- the science groundwork be improved through building, in collaboration, more showcases and publishing more joint, high-impact science papers

A more extended set of recommendations will be worked out as a collaboration effort between the communities. In summary, the workshop (<http://geodesy-for-climate.org/>) has been very well recognized. It has been agreed that the next step toward expanding collaborative research should be the organization of joint sessions at international conferences, such as the AGU Fall Meeting 2018.



*Participants of IAG Workshop SGCS2017, Bonn, September 19-21, 2017 (Photo credit: Basem Elsaka)*

JÜRGEN KUSCHE,  
ANNETTE EICKER, ROSA PACIONE, CARMEN BÖNING, WEI FENG, HENRYK DOBSLAW, BERT WOUTERS

### *Chinese Annual Geodetic General Assembly (CAGGA) 2017 held in Guangzhou, China*

The Chinese Annual Geodetic General Assembly 2017 was held in Guangzhou city during the time from Sep. 21 to 23, 2017 over 500 participants from universities, research institutions and other organizations gathered around for the assembly. This year's assembly is the largest gathering and academic event than ever before in China.

The assembly was jointly organized by the CNC-IAG (Chinese National Committee for International Association of Geodesy) and the CSSMG (Geodesy and Navigation Committee of the Chinese Society for Surveying, Mapping and Geoinformation).

The general assembly is composed of five parallel sessions: (1) High-profile geodetic forum; (2) Geodetic datum and navigation; (3) Earth gravity field and geoid; (4) Navigation and positioning; (5) Geodetic data processing and geodynamics. The newly established high-profile geodetic forum attracted over 200 participants, about 300 delegates participated in other four sessions.



Participants of the Chinese Annual Geodetic General Assembly 2017

Three academicians from Chinese Academy of Science, Prof. Dr. Junyong Chen, Prof. Dr. Houze Xu and Prof. Dr. Yuanxi Yang, and one academician from Chinese Academy of Engineering, Prof. Jinsheng Ning attended the assembly. Over 180 oral presentations and 40 posters were accepted and arranged, among which 20 papers were selected as excellent papers for graduated students.





Participants of the Chinese Annual Geodetic General Assembly 2017

### ***High-profile geodetic forum of CAGGA 2017***

CAGGA 2017 opened up a new session named high-profile geodetic forum, which aims to provide a high level platform for leading scientists, such as academicians of Chinese Academy of Science and Chinese Academy of Engineering, scientists of the Thousand Talents Plan, the Yangtze River Scholar and overseas leading scientists, to disseminate their academic achievements and communicate with colleagues in the geodetic science community.

This year, Academicians Junyong Chen, Jinsheng Ning, Houze Xu and Yuanxi Yang attended the first high-profile geodetic forum. The forum was kicked off by academician Jinsheng Ning with the keynote speech titled “A review on the evolution from traditional surveying and mapping to modern geospatial information”. Academician Houze Xu, Profs. Xiaohong Zhang, Kefei Zhang and other leading geodesist presented their latest work in English on this forum and received unprecedented attentions from the audiences.

The high-profile geodetic forum will continue within the framework of CAGGA. Our vision for the high-profile geodetic forum is that it will operate in the cooperative framework between CSSMG and IAG to provide a high level platform for academic exchanges between Chinese and foreign leading scientists. Therefore, the high-profile geodetic forum is also opened to non-Chinese scientists, we kindly invite foreign celebrated scientists to attend this forum next year.

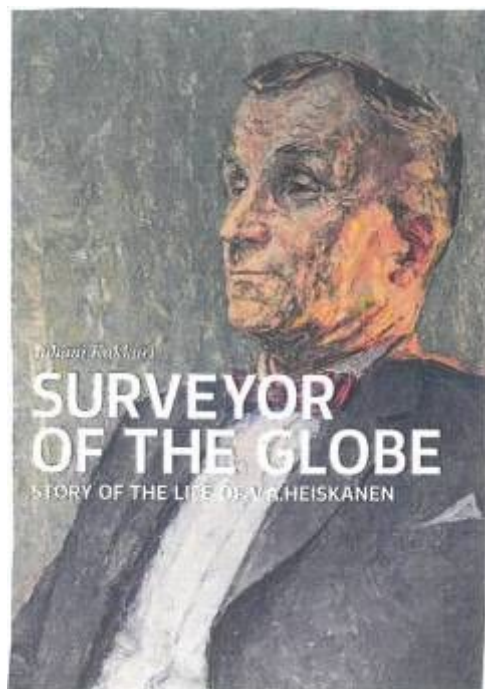


Participants of the High-profile geodetic forum of CAGGA 2017

YAMIN DANG

## Book Review

*Juhani A. Kakkuri: Surveyor of the Globe. Story of the life of V.A.Heiskanen*



Title: Surveyor of the Globe. *Story of the life of V.A.Heiskanen*  
Author: Juhani A. Kakkuri  
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*Juhani Kakkuri*, retired Director General of the famous Finnish Geodetic Research Institute, nowadays Geospatial Research Institute, wrote a marvelous book about one of the greatest *Geodesist*, *Veikko Aleksanteri Heiskanen* (1895-1971), author of 141 scientific contributions! As the 1975 recipient of the “*Veikko A. and Kaarina Research Award*” of the Ohio State University it is my pleasure to comment on the legendary book rich of remarkable photographs supported by the *Heiskanen Family Society*. The book was first published in Finnish, finally this year in English.

Very fascinating is its contents list:

Thanks  
Background  
Childhood and Adolescence  
Cartographic work in Finland before Heiskanen  
The Finnish Geodetic Institute 1918-1925  
In the University of Technology  
Geoid Research  
Research into Isostasy  
Years in America  
A Respected Person  
Sources  
V. A. Heiskanen's Publications

In “*Background*” the author explains why V.A. Heiskanen was the *world famous researcher of isostasy*. Very charming is the story of *Mikko Levander* who was the *vicar of Kuhmoinen*: the first daughter married another famous Geodesist, *Yrjö Väisälä*. When Väisälä was appointed professor at the *University of Turku*, Heiskanen inherited his desk. Indeed, when Heiskanen married *Mikko Levander second daughter Kaarina* a reasonable prediction was whom the *third daughter* was marrying? It was the last daughter of her father! Being no surprise anymore, *Aili married Uno Pesonen* at the Finnish Geodetic Institute who took over from *Heiskanen* as the director when *Heiskanen* moved to the University of Technology in Helsinki, of course, also his desk. It was my honor to sit at the *legendary desk*, when I was often visiting the Finnish Geodetic Research Institute: it has numerous drawers and levels ---.

“*Childhood and Adolescence*” includes a photo of the parents, home and parents, childhood memories, study years in Savonlinna, patriotic action and happy marriage.

Of special importance is the chapter on “*Astronomy*”: as a student of *Hans Ludendor* in *Potsdam, Star World*, first volume of “*Tähtitiede*” and his *second volume, Spherical Astronomy*. Co-founder of “*The Ursa Astronomical Association*” his work on *Solar Ellipses* 1945, 1947 and 1954, together with *T.J. Kukkamäki* at the *Ohio State University*.

“*Cartographic Work in Finland before Heiskanen*” illustrates the *National History of Cartography*; at the begin “*Finland under the “Swedish Rule”*”, namely at the time of Charles IX and Gustav II Adolph, “*Finland under the Russian Rule*”, the basic *Map Committee, the Donner’s Committee*, the tasks and composition of the *National Geodetic Institute*.

“*The Finnish Geodetic Institute 1918-1925*” is a wonderful review of the period 1918-1928: names like *Bonsdor, Väisälä, Keränen, Pesonen, Leinberg*, later *Veikko Heiskanen* were internationally well known. The review begins with the operational start and continuous with *Heiskanen entering the institute*, namely with the *principle of triangulation* and its basic field work,

“At the *University of Technology*” appointed  
V.A. Heiskanen started to teach *Geodetic Science*  
in 1928: at this time he formed the famous

#### *International Isostatic Institute*

by purchasing first gravimeter. “*It has been a pleasure to witness the rapid development of the University of Technology*”, but Heiskanen returned in 1949 to the *Finnish Geodetic Institute as head of the Institute*. In eight years he had graduated 6 new doctors!

“*Geoid Research*” was in center of his research: it started with the work in a *two-and three-axis reference ellipsoid*. It was a center of his life when he moved in 1950 to the United States in order to study.

the Earth’s Crust and the isostatic balance,

namely at the Ohio State University. He founded the famous *Department of Geodetic Science at OSU*: “*From about 1950 to 1970, the OSU geodetic science group was the most significant group of the geodetic researchers in the world*. Founded almost entirely by the military and intelligence agencies, they pioneered the technologies, organized the research initiatives, ordered data sets and trained the generation of Geodesists<sup>□</sup> .” quoting from *J. Cloud, Stud. Hist. Phil. Mod. Phys. 31(2000)pp.371-404, Elsevier Science Ltd*. Research on the *Gauss-Listing Geoid as the Mean Reference Sea Surface* at a given epoch, the *Astrogeodetic Geoid*, the basic gravimetry, namely the *Geoid of Hirvonen and Tanni* and the highlight studies of the *Standard Gravity Formula* which was the legal reference on the *International Reference Ellipsoid since 1930*.

“*Research into Isostasy*” made V.A. Heiskanen worldwide most famous. Based on studies of *Bouguer and Everest, Pratt and Airy, Heiskanen and Vening Meinesz* presented many studies which led the basic “*Fennoscandinavian Land Uplift*”. The result was the basis of the famous textbook *V.A. Heiskanen and F. A. Vening*

*Meinesz: The Earth and its Gravity Field*, Mc. Grawhill, New York 1958. In the same year *W. Kaula and V.A. Heiskanen* published “*The Columbus Geoid: Discussion*” *Trans. Amer. Geophys. Union*, 39(1958) No.4.

What is the situation of Isostasy nowadays? Thousands of scientists published scientific contributions related to Isostasy, both in *Geophysics as well as in Geodesy*. We name basic contributions of Geophysicists: Book and at least 20 scientific papers by

*R. Bintania et al (2002), C. Cabanes et al (2001), A. Cazenave et al (2004), J. Church et al (2004), J. Clark et al (1978), J. Davis et al (1996), B. Douglas et al (2002), W. Farrell et al (1976), K. Flemming et al (2002), J. Hagedorn (2005), S. Holgate et al (2004), P. Johnston et al (1999), G. Kaufmann et al (1957), V. Klemann et al (2007), K. Lambeck et al (2003), A. Lombard et al (2003), Z. Martinek et al (2005), R. McConnell (1968), G. Milne et al (1999), J. Mitrovica et al (2001), J. Okuno et al (2001), W. Peltier (1994), P. Pizarolli (2000), A. Trupin et al (1990), A. Hingham et al (1991), D. Wolf et al (2006), P. Wu et al (2003), Y. Yokohama et al (2005), C. Zweck et al (2005) document the version of V.A. Heiskanen.*

Various analysis were published by *Geodesists*: for instance *M. Ekman and L.E. Sjöberg* (1984) analyzed land uplift and Mean Sea Level in Stockholm 1774-1982, Uppsala University, in 1984, *M. Ekman* (1978), 1979,1983,1984), *H.G. Scherneck* (1983), *A. J. Anderson* (1984), *H. Virtanen*(2006), *D. Crossley et al.* (1999), *V. Dehant et al* (1999), *B. Ducame et al.* (2004) *J. Goodkind* (1999), *J. Hinderer et al* (1997,2000,2004), *G. Jentzsch et al* (2004), *J. Mäkinen* (1990, 1995), *H.P.Sun et al* (2002), *T.M. van Dam et al*(1998), *H.G. Wenzel*(1996), *R. Widmer-Schmidrig*(2003), *W. Zürn et al*(2000), *O. Cadek et al*(2003) *J.A. Clark et al*(1978), *W.E. Fallell et al* (1976), *G. Kaufmann et al* (1999,2002), *K.Lambeck* (1995),*W.R.Peltier et al* (1976), *R. Sabadini et al*(1986), *G. Spada et al*(2004,2006), *A. M. Tushingaam et al* (1991,1993), *J. Tromp et al* (2000), *J.Wahr et al* (2002), *P.Wu et al*(2000,2005), *S. Zhong et al*(2003).

“*Years in America*” opens to quote “*The world’s greatest Geodesist*” for establishing the *International Isostatic Institute* as early as 1936 in *Helsinki*. But *Heiskanen* himself considered *Vening-Meinesz* as the greatest living Geodesist. *Heiskanen* considered “*American -Wonderland*”. First *Heiskanen* accepted an invitation of Caltech in 1948 to work there as an Visiting Professor. Second, in 1950 he followed an invitation of Professor G.H. Harding, Head of Mapping and Charting Research Laboratory to OSU: Columbus was the Capital of the State, hosting the largest American University. He lectured on Geodesy! Assistants were *R. Hirvonen*, *S. Laurila*, *L. Kivioja*, *U. Uotila*- all of Finnish origin and the *Hungarian Ivan Mueller*. Famous is, in addition, the “*Columbus Program*” entitled: “*On the World Geodetic Reference System*” published as early as 1951! *Heiskanen* stated “*that the Earth can be considered a plane, a sphere, an ellipsoid of revolution, a three axis ellipsoid and, on top, the Geoid depending on how large an area the mapping work is concerned and what level of accuracy one seeks to obtain.*” Indeed it makes sense to study this great program today. As early as April 1951 the program was recommended by the *International Union of Geodesy and Geophysics* strongly supported by *W.D. Lambert*, *G.H. Harding*, *G.P. Woollard* and *M. Ewing*. *Heiskanen* sent a circular letter to some 200 *Geodetic Institutes, universities, private scientists and 17 oil companies to get their support!* A byproduct has been the *celebrated Columbus Geoid* of type *Gauss-Listing*. As a “*valued expert*”, *Heiskanen* has been appointed to committee preparing *NASA’s space missions*. It was to the deep bitterness in the USA when Russia launched *Sputnik 1* first. The new space geodetic measurements produced massive information on the dimensions of the Globe, its gravity field and the structure of the ocean surface in shortest time replacing geodetic measurements through the centuries.

The research work led by *Heiskanen* culminated in 1960 when the *International Union of Geodesy and Geophysics* held its *General Assembly* in *Helsinki*. It was *largest meeting/conference ever arranged* in Finland, founding deep sounding, *new geodetic satellites* and highly precise *electrooptical measurement techniques* as well as *precise gravity*. Absolute modern gravimeters were developed in USSR, Japan and USA, namely for land uplift observations. “*After all we don’t know what is the shape of the Earth’s core*”, the statement of *Heiskanen*.

As a member of the *Finnish Parliament* *Heiskanen* took care of the “*Finnishness*”, he studied the *Old University Act form 1920*, the “*right solution of the University Question*” when he became in 1933 elected. He cared for the “*Association of Finnish culture and Identity*” and took responsibility of the “*Finnish Cultural Foundation*” as well as for the “*Academic Karelia Society*”

As the *most respected Finnish person*, *Heiskanen* was awarded the famous *Bowie Medal* - considered the equivalent the *Nobel Prize in Earth Science* - of 1956 in *Washington D.C.* : *D. Lambert* called *V.A. Heiskanen* “*a true American*”. *Numerous Academies, the Pontifical Academy of Science, the Linceorum*, were electing him as a *respected Earth Scientist*. *T.J. Kukkamäki*, *Heiskanen’s* successor as the head of *Finnish Geodetic Institute*, wrote the following words to his predecessor

“*Few are the citizen of a small country  
who have managed through their own  
work ... to mighty America ... to enhance  
as much in the field of gravimetry*”

*V.A. Heiskanen*, one of the founder of the “*Nordic Geodetic Commission*”, was presented finally by a personal review of the “*life and faith*” of his family.

Finally, it has to be mentioned that *V.A. Heiskanen* published his last contribution, the most popular book “*Physical Geodesy*” in 1967 (the book saw many reprints) together with the also famous co-author the *Austrian Geodesist H. Moritz*.

Professor *Dr. Dr. Ing. h.c. Juhani Kakkuri*, born in the year 1933, from 1977 to 1998 *Director General of the Finnish Geodetic Institute*, nowadays called *Finnish Geospatial Institute*, has written one of the greatest historical books about one of the *worldwide most known Geodesist*

V.A. Heiskanen.  
!Congratulations!

I recommend its reading, not only to Geodesists, but Earth’s Scientists overall.

ERIK W. GRAFAREND