



# International Association of Geodesy

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## Newsletter

# January 2014

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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

Books for review are the responsibility of:

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## General Announcements

### *Publications of the IAG Symposia series*

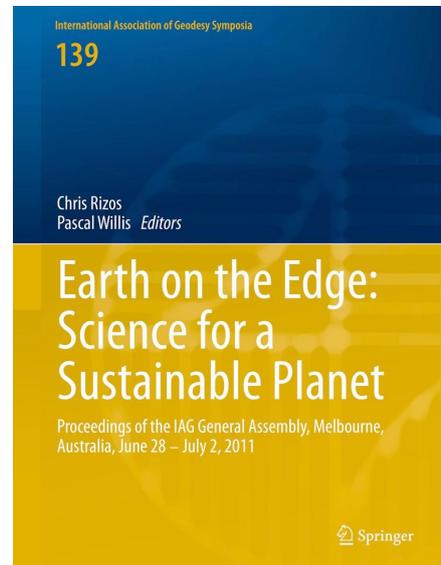
#### **IAG Symp. 139**

Volume related to the IUGG General Assembly held in Melbourne, Australia from June 28 to July 7, 2011 is named "Earth on the Edge: Science for a Sustainable Planet" (Eds. Chris Rizos, Pascal Willis), 2014. It contains 617 pages and 429 illustrations, including 218 in colour.

This volume is now published online and in print. Articles from this volume should be referenced in ISI Web of Science (Conference Proceedings Citation Index – Science = CPCI-S) and Scopus, GoogleScholar, as well as many other bibliographic databases.

Full volume is available online at the following URL : <http://www.springer.com/earth+sciences+and+geography/geophysics/book/978-3-642-37221-6>

Participants at this meeting can purchase this volume at a specific discounted price and have already been contacted by Hermann Drewes [drewes@dgfi.badw.de](mailto:drewes@dgfi.badw.de) about this offer.



#### **IAG Symp. 140**

Following the First International Workshop on the Quality of Geodetic Observation and Monitoring Systems (QuGOM'11), held in Garching/Munich, Germany from April 13-15, 2011, 24 articles were accepted for publication. Main Editor is Hansjörg Kutterer. Co-editors are Hamza Alkhatib, Michael Schmidt, Florian Seitz.

#### **IAG Symp. 141**

Following the International Symposium on Gravity, Geoid and Height Systems (GGHS 2012) held in Venice, Italy from October 9-12, 2012, 42 manuscripts were accepted. Main editor is Urs Marti. Co-editors are Riccardo Barzaghi, Oliver Baur, Carla Braitenberg, Jianliang Huang, Shuanggen Jin, Isabelle Panet, Laura Sánchez, Herbert Wilmes.

#### **IAG Symp. 142**

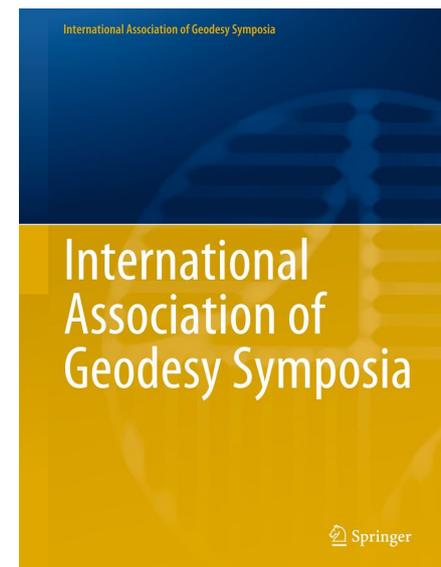
Following the VIIIth Hotine-Marussi, held in Rome, Italy, June 17-21, 2013, 49 manuscripts were submitted. Submission Web site is now closed and a few articles are still under review. Main Editor is Nico Sneeuw. Co-editors are A. Dermanis, Mattia Crespi, Robert Čunderlík, Richard Gross, Thomas Hobiger, Wieslaw Kosek, Pavel Novák, Eric Pottier, Fernando Sansò, Michael Schmidt, Matthias Weigel.

#### **IAG Symp. 143**

Following the IAG Scientific Assembly held in Potsdam, Germany from September 1-6, 2013, 122 were submitted through the Springer submission Web site: <http://www.editorialmanager.com/iags>, which is now closed for submission. Review process is in progress.

#### **IAG Symp. 144**

The next volume of the IAG Symposia Series will be related to the REFAG 2014 symposium (Reference Frames for Applications in Geosciences) that will be organized from 14 to 17 October 2014 in Luxemburg by the IAG Commission 1. Main Editor will be Tonie van



Dam. Submissions are expected by November 30, 2014 using the Springer Web site: <http://www.editorialmanager.com/iags/default.asp>.

CHRIS RIZOS (Editor)  
PASCAL WILLIS (assistant Editor-in-Chief)

## *Robert Wilson King Received the First “Ivan I Mueller Award for Distinguished Service and Leadership”*

*at the American Geophysical Union San Francisco Meeting in December, 2013*

### *Citation*

Bob King has been the principal architect of the GAMIT GPS analysis software, an extremely versatile and useful tool. It supports the large and diverse global community of geodesists, geophysicists, oceanographers, and others, who make use of this tool in their scientific investigations.

Bob has spent so much time supporting GAMIT, and the user community, that he has always had much less time available than his peers to use GAMIT purely in the pursuit of his own investigations. He has always played this highly productive role with great modesty, grinding away behind the scenes, honing this powerful tool, selflessly making it available for the asking, without anticipating or getting the credits given to those on the “receiving” end, for their scientific investigations using his tool. Over 500 GAMIT licenses have been issued.

A list of Bob’s training workshops over the years to help in the use of GAMIT is revealing: Toulouse, Boulder, Sapporo, Columbus, Luxembourg, Grottaminarda, Acapulco, Sofia, Pamplona, Munich, Bangalore, Wuhan, Chengdu, Miami and Lima, almost everywhere except on the Moon.

This Award for distinguished service and leadership formally acknowledges Bob’s life-time accomplishments.



source: eapsweb.mit.edu

AGU GEODESY SECTION

### *IAG monthly news for GIM – IAG pages in the GIM International November and December 2013*

The IAG became a partner with the magazine GIM International from the start of 2012. We would join sister geospatial organisations such as the FIG, ISPRS, ICA, GSDI & OGC in having a monthly page of news. The articles titled “150 Years of International Co-operation: Scientific Assembly of the International Association of Geodesy” and “2nd Joint FIG/IAG/ISPRS International Symposium on Deformation Monitoring” for the November and December 2013 issues of GIM is available from the webpages <http://www.gim-international.com/issues/articles/id2042-Years of International Cooperation Scientific Assembly of the International Association of Geodesy.html> and <http://www.gim-international.com/issues/articles/id2051-nd Joint FIGIAGISPRS International Symposium on Deformation Monitoring.html>, respectively.

CHRIS RIZOS  
President of IAG

### *Geodetic News from Arabia*

The slow but steady motion of the Arabian plate (Arabia) has been observed with high precision utilizing a geodetic network of permanent stations. The first couple of stations were established in February, 2001. Now King Abdulaziz City for Science and Technology (KACST) operates eight continuous stations with the main station located in the Solar village near Riyadh. As the name suggests, the village houses a large “farm” of solar research facility. As well as that, there is a Satellite Laser Ranging (SLR) station operated and maintained by a full time 24-hour staff.

The network uses the Global Position System (GPS) of satellites in making the observations. Three of these permanent stations are located in the most northern corner of the country where it is relative active in seismicity. Moreover, there are a large number of well-established points where they become occupied and observed annually. For more reading of the results of our analysis of the motion of Arabia, there are a number of papers published. For example, this is one of them:

## Meeting Announcements

### *REFAG2014, Reference Frames for Applications in Geoscience and Georeferencing*

Accurate reference frames are fundamentally important for Earth science studies, satellite navigation, many applications relying on geo-spatial information, and increasingly for demanding commercial applications such as agriculture, aviation, construction, public safety, and transportation.

The primary goal of the symposium, is to bring together 1) the many individuals and government representatives responsible for funding, installing, and maintaining the global International Terrestrial Reference Frame infrastructure, 2) scientists, and 3) representatives from industry who use georeferencing to address the most important questions and issues that the community must consider regarding theoretical and practical implementation of improved reference frames for science, surveying, and commerce.

In this symposium, we will change the standard meeting paradigm to have a greater impact on the science. Sessions have been designed to address the most relevant questions—not simply reporting results.

The programme will address the underlying limiting factors, systematic errors and novel approaches for future improvements to the ITRF. Additionally, reference frame requirements, geoscience and commercial usage, and applications will be of great importance to the symposium.

The symposium will be held in Luxembourg 13-17 October. We invite contributed presentations on the topics outlined below. Information will be posted at <http://iag.uni.lu/index.php?id=189>.

#### **Program Outline**

##### **Session 1: Theory and Concepts**

###### Session Questions:

- Are present reference frame theory and concepts adequate for current measurement accuracy and all types of station position time variations?
- How well do the concepts match current practice (e.g., UTC/Terrestrial time versus geocentric time)? Are changes needed?
- What about the mismatch between long-term linear theoretical frames and the reality of constantly moving stations? Is a new conceptual framework needed?
- To what extent are fundamental physical standards limiting, e.g., the present inaccuracy of the constants  $G$  and  $G_{mE}$ , relativistic formulation, the time-variable gravity field and the present inaccuracy of geocenter and geocenter motion?

##### **Session 2: Geodetic Measurement Techniques**

###### Session Questions:

- How can the strengths and weaknesses of current technologies be better meshed to improve the ITRF?
- What are the present leading geophysical model limitations and how can they be improved? How do we ensure consistency of geophysical model application among different techniques?
- How can we best cope with the rapidly expanding volume of geodetic data (esp. GNSS data)?
- Should more synergistic and multi-technique analysis approaches be promoted for the future?
- How do we precisely quantify the limiting factors of the legacy network and optimally deploy next generation systems?

##### **Session 3: Regional Reference Frames**

###### Session Questions:

- Is there a future role for sub-global reference frames of high accuracy?
- If the main justification for regional frames is to remove large-scale tectonic effects, how well can this really be done? What about residual motions?
- How should national and regional frame efforts be best coordinated?

#### **Session 4: Celestial to Terrestrial Frame Transformations**

##### Session Questions:

- Can the value of EOPs as monitors of global variations of the Earth system be improved (e.g., better accuracy, higher temporal resolution)?
- Is additional, non-geodetic data needed to achieve greater insight or value? If so, what types?
- Is the current array of observing systems evolving towards an optional delivery of EOP results or are changes needed?
- Is the interaction between the geodetic EOP community and groups engaged in modelling large-scale terrestrial fluids adequate? Can the benefits to both sides be improved?
- How can the current ICRF implementation be made consistent with the ITRF and EOPs and what is the current level of consistency? What is the needed level of consistency from the ICRF user applications' point of view?

#### **Session 5: Usage and applications of reference frames in Geosciences**

##### Session Questions:

- In what ways are geoscience and geophysical applications under-served by the present geodetic system? Are large-scale shifts in emphasis needed or beneficial?
- What are the major questions of geoscience that are not currently well addressed by the geodetic observing systems? What is the required accuracy of all types of geodetic products needed?
- How best to integrate geodetic and gravimetric systems?
- How to maintain a suitable balance between societal needs (e.g., natural hazard monitoring) and basic scientific goals?

#### **Session 6: Georeferencing in Practice (FIG Technical Seminar)**

##### Session Questions:

- Are emerging commercial geodetic applications (e.g., GIS) approaching high-accuracy requirements?
- How best to synchronize commercial requirements with basic research needs? How can conflicts of interest be minimized?
- How can the basic infrastructure observing systems that have traditionally been funded by national research bodies be sustained, especially as commercial applications grow in importance?
- Are large-scale changes in the national, regional, and global geodetic frameworks needed? If so, what sort?

TONIE M. VAN DAM

#### *COSPAR Moscow 2014, 40th COSPAR Scientific Assembly*

*2-10 August 2014, Moscow, Russia*

<https://www.cospar-assembly.org>

<http://cospar2014moscow.com>



The next COSPAR meeting will attract about 2500 scientists and engineers from the world over. The 119 symposia will cover all areas of space science: Space studies of the Earth's surface, meteorology and climate, Space Studies of the Earth-Moon, Planets and small bodies of the solar system Space studies of the upper atmospheres of the Earth and Planets including reference atmosphere, Space plasmas in the Solar system, including planetary magnetospheres, research in astrophysics from space, life sciences as related to space, material sciences in space, fundamental physics in space, and several Panel meetings.

Interdisciplinary lectures will also be given by key scientists and several associated events, such as meeting organized by Elsevier for young scientists to help them publish or review scientific articles.

In particular, we would like to draw the attention of geodesists of a 2-day meeting, organized by the COSPAR Panel on Satellite Dynamics, in conjunction with IAG Commission 1.

The aim of the Panel on Satellite Dynamics is to support activities related to the detailed description of the motion of artificial celestial bodies. This should be achieved by improvement of the theories of motion and by more sophisticated evaluation of their determining forces. Detailed theoretical understanding of the dynamics of satellites should be matched with the results of precise tracking in order to obtain the most precise knowledge possible of the orbit itself and the corresponding orbital positions. The scope of the Panel on Satellite Dynamics is positioning of a wide range of objects, including Earth orbiting satellites for observing geopotential fields such as GRACE and GOCE, sea and ice level, and navigation satellite systems such as GPS, GLONASS, Galileo, Beidou, or tracking systems such as SLR and DORIS. In addition, positioning plays an important role for the continuously growing number of today's and future planetary and solar system missions. Limiting errors in Precise Orbit Determination (solar radiation pressure, time variable gravity fields, phase center corrections, etc...) are of critical interest for this discipline. Moreover, formations of satellites are being realized and proposed for Earth observation and fundamental sciences, that pose very high demands on (relative) positioning and orbit and attitude control solutions (e.g. micro-propulsion). Satellite orbit determination requires the availability of tracking systems, well established reference frames and accurate station coordinate solutions, detailed force and satellite models, and high-precision time and frequency standards. Contributions are solicited covering all recent developments and plans in ground, satellite or probe positioning and navigation.

Important dates:

**14 February 2014:** Abstract submission deadline  
**17 May 2014:** end of early registration fees

PASCAL WILLIS and HEIKE BOCK  
Convenors of the Satellite Dynamic Panel session

## *Meetings Calendar*

### SPACOMM 2014

*February 23-27, 2014, Nice, France*

URL: <http://www.iaia.org/conferences2014/SPACOMM14.html>

### IVS General Meeting

*March 2-7, 2014, Shanghai, China*

URL: <http://ivs2014.csp.escience.cn/>

### ESG 2014

*March 15-17, 2014, Venice, Italy*

The 2014 International Conference on Environmental Science and Geoscience

URL: <http://tinyurl.com/esg2014>

### GEOProcessing 2014

*March 23-27, 2014, Barcelona, Spain*

URL: <http://www.iaia.org/conferences2014/GEOProcessing14.html>

### Munich Satellite Navigation Summit 2014

*March 25-27, 2014, Munich, Germany*

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

### Third International School on "The KTH Approach to Modeling the Geoid"

*March 31-April 4, 2014, Johor Bahru, Malaysia*

URL: <http://www.infra.kth.se/geo/events/geoidschool.html>

### 3rd International Conference on the Use of Space Technology for Water Management

*April 1- 4, 2014, Rabat, Morocco*

Organized in cooperation with European Space Agency (ESA)

URL: <http://www.unoosa.org/osa/en/SAP/act2014/Morocco/index.html>

#### INGEO 2014

April 3- 4, 2014, Prague, Czech Republic

6<sup>th</sup> International Conference on Engineering Surveying

URL: [https://www.svf.stuba.sk/generate\\_page.php?page\\_id=5061](https://www.svf.stuba.sk/generate_page.php?page_id=5061)

#### European Navigation Conference ENC GNSS 2014

April 15-17, 2014, Rotterdam, The Netherlands

URL: <http://www.enc-gnss2014.com/>

#### SARAL International Science and Applications Meeting

April 22-24, 2014, Ahmedabad, India

URL: [http://smc.cnes.fr/SARAL/GP\\_actualite.htm](http://smc.cnes.fr/SARAL/GP_actualite.htm)

#### European Geosciences Union General Assembly 2014

April 27 – May 2, 2014, Vienna, Austria

URL: <http://www.egu2014.eu/>

#### GNSS : Principles, Augmentation and Evolutions of EGNOS

May 12- 23, 2014, Toulouse, France

URL: <http://www.formationcontinue-enac.fr/co/WORKGNSSEXT.html>

#### EUREF Symposium 2014

June 4- 6, 2014, Vilnius, Lithuania

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

#### ICC&GIS 2014

June 15-21, 2014, Riviera, Bulgaria

5th Jubilee International Conference on Cartography & GIS

URL: [www.iccgis2014.cartography-gis.com](http://www.iccgis2014.cartography-gis.com)

#### IGS Workshop 2014

June 23-27, 2014, Pasadena, CA, USA

URL: <http://igs.cb.jpl.nasa.gov/pipermail/igsmail/2013/008013.html>

#### The 3rd International Gravity Field Service (IGFS) General Assembly

June 30-July 6, 2014, Shanghai, China

URL: <http://202.127.29.4/meetings/igfs2014/index.html>

#### International Symposium on Certification of GNSS Systems & Services

July 8 - 9, 2014, Dresden, Germany

URL: <http://www.dgon-cergal.org/>

#### GENAH 2014

July 22-25, 2014, Matsushima, Miyagi, Japan

International Symposium on Geodesy for Earthquake and Natural Hazards

URL: <http://genah2014.jpn.org/index.html>

#### AOGS 11<sup>th</sup> Annual Meeting

July 28-August 1, 2014, Sapporo, Japan

URL: <http://www.asiaoceania.org/aogs2014/public.asp?page=home.htm>

#### 40th COSPAR Scientific Assembly

August 2-10, 2014, Moscow, Russia

URL: <http://www.cospar-assembly.org/>

18th WEGENER General Assembly: Measuring and Modelling our Dynamic Planet

September 1-4, 2014, Leeds, UK

URL: <http://see.leeds.ac.uk/wegener/>

INTERGEO / Geodätische Woche

September 7-9, 2014, Berlin, Germany

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

Summer school on "GRACE/GRACE-FO applications for the terrestrial water cycle"

September 15-19, 2014, TBD, Germany

URL: <http://www.massentransporte.de/index.php?id=28>

European VLBI Network (EVN) Symposium

October 7-10, 2014, Cagliari, Italy

URL: <http://www.evlbi.org/meetings/meetings.html>

REFAG2014

October 13-17, 2014, Luxembourg

IAG Commission 1 Symposium 2014 "Reference Frames for Applications in Geosciences"

URL: <http://iag.uni.lu/index.php?id=189>

The Climate Symposium 2014

October 13-17, 2014, Darmstadt, Germany

URL: <http://www.theclimatesymposium2014.com>

SARAL/AltiKa Workshop

October 27, 2014, Konstanz, Germany

URL: <http://www.ostst-altimetry-2014.com/>

IDS Workshop

October 27-28, 2014, Konstanz, Germany

URL: <http://www.ostst-altimetry-2014.com/>

ILRS Technical Workshop

October 27-31, 2014, Greenbelt, MD, USA

URL: <http://ilrs.gsfc.nasa.gov/about/meetings.html>

Ocean Surface Topography Science Team (OSTST) meeting

October 28-31, 2014, Konstanz, Germany

URL: <http://www.ostst-altimetry-2014.com/>

ICSU GRC Conference "Improving Geophysical Risk Assessment, Forecasting and Management"

November 18-21, 2014, Madrid, Spain

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

AGU 2014 Fall Meeting

December 15-19, 2014, San Francisco, CA, USA

URL: <http://sites.agu.org/meetings/>

European Geosciences Union General Assembly 2015

April 12 – 17, 2015, Vienna, Austria

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

XXVI IUGG General Assembly

June 22 – July 2, 2015, Prague, Czech Republic

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

XXIXth IAU General Assembly

*August 3 – 14, 2015, Honolulu, Hawaii, USA*

URL: [http://www.iau.org/science/meetings/future/general\\_assemblies/1024/](http://www.iau.org/science/meetings/future/general_assemblies/1024/)

41th COSPAR Scientific Assembly

*July 30 – August 7, 2016, Istanbul, Turkey*

URL: <http://www.cospar-assembly.org/>