



# International Association of Geodesy

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## Newsletter

# December 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:

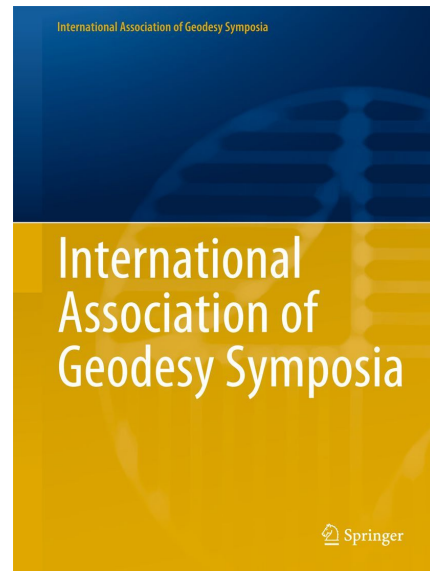
- I. news from the Bureau Members
- II. general information
- III. reports of IAG symposia
- IV. reports by commissions, special commissions or study groups
- V. symposia announcements
- VI. book reviews
- VII. fast bibliography

## General Announcements

### *Publications of the IAG Symposia series*

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

Following the First International Workshop on the Quality of Geodetic Observation and Monitoring Systems (QuGOMS'11), held in Garching/Munich, Germany from April 13-15, 2011, 24 articles were accepted for publication. Main Editors are Hansjörg Kutterer, Florian Seitz, Hamza Alkhatib, and Michael Schmidt. Volume is now published online at (<http://rd.springer.com/book/10.1007/978-3-319-10828-5>). Volume should be available in print in February 2015



#### **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. Associate editors are Riccardo Barzaghi, Oliver Baur, Carla Braitenberg, Jianliang Huang, Shuanggen Jin, Isabelle Panet, Laura Sánchez, Herbert Wilmes. Volume is expected to be online at the end of December 2014 and should be available in print around February 2015. (<http://www.springer.com/earth+sciences+and+geography/geophysics/book/978-3-319-10836-0>).

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

Following the VIIIth Hotine-Marussi, held in Rome, Italy, June 17-21, 2013, 41 manuscripts were accepted. Main Editor is Nico Sneeuw. Associate editors are A. Dermanis, Mattia Crespi, Robert Čunderlík, Richard Gross, Thomas Hobiger, Wieslaw Kosek, Pavel Novák, Eric Pottier, Fernando Sansò, Michael Schmidt, Matthias Weigelt. Volume is currently under production and should be published in early 2015 (<http://rd.springer.com/bookseries/1345>).

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

Following the IAG Scientific Assembly held in Potsdam, Germany from September 1-6, 2013, 99 manuscripts were accepted. Main editors are Chris Rizos, Pascal Willis. Associate editors are Hussein Abdelmotaal, Zuheir Altamimi, Xiaoli Deng, Annette Eicker, Jeff Freymueller, Dorota Grejner-Brzezinska, Manabu Hashimoto, Jianliang Huang, Urs Hugentobler, Allison Kealy, Hansjoerg Kutterer, Urs Marti, Roland Pail, Richard Gross, Laura Sanchez, Joao Agria Torres, Tonie van Dam, Pawel Wielgosz. Volume is expected to be published in Spring 2015 (<http://rd.springer.com/bookseries/1345>).

#### **IAG Symp. 144 (number to be confirmed)**

Following the 3rd International Gravity Field Service (IGFS) General Assembly (IGFS2014), held in Shanghai, China, from 30 June to 6 July 2014 (<http://202.127.29.4/meetings/igfs2014/proceeding.html>), a new proceeding is in preparation. Main editor is Shuanggen Jin. Associate editors are Riccardo Barzaghi, Rene Forsberg, Urs Marti, Roland Pail.

#### **IAG Symp. 145 (number to be confirmed)**

Following the International Symposium on Geodesy for Earthquake and Natural Hazards (GENAH2014), held in Matsushima, Miyagi, Japan from July 22 to 26 2014 (<http://genah2014.jpn.org>), a new proceeding is in preparation. Main editor is Manabu Hashimoto. Associate editors are Jeff Freymueller, Richard Gross, Shuanggen Jin, Cecile Lasserre, Simon McClusky, Yusaku Ohta, Tim Wright.

## **IAG Symp. 146 (number to be confirmed)**

The next volume of the IAG Symposia Series will be related to the REFAG 2014 symposium (Reference Frames for Applications in Geosciences) that was 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 the end of January 2015 using the Springer Web site: <http://www.editorialmanager.com/iags/default.asp>. A few manuscripts were already submitted and are currently under review. Associate editors would be Zuheir Altamimi, Johannes Boehm, Tom Herring, Mikael Lilje, Richard Wonnacott.

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

## *Advances in Space Research*

Dear colleagues,

for your information, issue 55(1) of *Advances in Space Research* (COSPAR official journal) published on paper in January 1, 2015, will remain available free-of-charge without any paid subscription to this journal for a complete year, courtesy of Elsevier, at <http://www.sciencedirect.com/science/journal/02731177/55/1>.

In particular, the articles below could be of scientific interest to the geodetic community.

I remind you that *ASR* publishes 24 issues per year (2 per month), that accepted papers appear online with a DOI in “accepted proofs” only a couple of days after acceptance and that this journal accepts electronic supplements and supports OpenAccess. Published articles are referenced in ISI Web of Science, Scopus and many other scientific databases. This journal also accepts Special Issues. Its Impact Factor has been steadily increasing in the past few years and is now 1.238.



Submissions can be done electronically at any time using the EES System (<http://ees.elsevier.com/asr>).

Published articles can be found online at <http://www.sciencedirect.com/science/journal/02731177>

Seasons Greetings  
Pascal Willis  
Editor-in-Chief  
*Advances in Space Research*.

### ***Invited Reviews***

Alexandre Couhert, Luca Cerri, Jean-François Legeais, Michael Ablain, Nikita P. Zelensky, Bruce J. Haines, Frank G. Lemoine, William I. Bertiger, Shailen D. Desai, Michiel Otten (2015) Towards the 1 mm/y stability of the radial orbit error at regional scales, *Adv. Space Res.*, 55(1), 2–23, DOI : 10.1016/j.asr.2014.06.041  
<http://dx.doi.org/10.1016/j.asr.2014.06.041>

Claude Boucher, Mike Pearlman, Pierguido Sarti (2015) Global geodetic observatories, *Adv. Space Res.*, 55(1), 24–39, DOI : 10.1016/j.asr.2014.10.011  
<http://dx.doi.org/10.1016/j.asr.2014.10.011>

### ***Earth Sciences***

Robert Tenzer, Wenjin Chen, Zhourun Ye (2015) Empirical model of the gravitational field generated by the oceanic lithosphere, *Adv. Space Res.*, 55(1), 72–82, DOI : 10.1016/j.asr.2014.09.023  
<http://dx.doi.org/10.1016/j.asr.2014.09.023>

Lifeng Bao, Peng Gao, Hailong Peng, Yongjun Jia, C.K. Shum, Minseng Lin, Qi Guo (2015) First accuracy assessment of the HY-2A altimeter sea surface height observations: Cross-calibration results, *Adv. Space Res.*, 55(1), 90–105, DOI : 10.1016/j.asr.2014.09.034  
<http://dx.doi.org/10.1016/j.asr.2014.09.034>

Min Wang, Hongzhou Cai, Zongpeng Pan (2015) BDS/GPS relative positioning for long baseline with undifferenced observations, *Adv. Space Res.*, 55(1),113–124, DOI : 10.1016/j.asr.2014.10.001  
<http://dx.doi.org/10.1016/j.asr.2014.10.001>

Laurent Morel, Eric Pottiaux, Frédéric Durand, François Fund, Karen Boniface, Paulo Sergio de Oliveira Junior, Joël Van Baelen (2015) Validity and behaviour of tropospheric gradients estimated by GPS in Corsica, *Adv. Space Res.*, 55(1), 135–149, DOI : 10.1016/j.asr.2014.10.004  
<http://dx.doi.org/10.1016/j.asr.2014.10.004>

Min Li, Wenwen Li, Chuang Shi, Qile Zhao, Xing Su, Lizhong Qu, Zhizhao Liu (2015) Assessment of precipitable water vapor derived from ground-based BeiDou observations with Precise Point Positioning, *Adv. Space Res.*, 55(1), 150–162, DOI : 10.1016/j.asr.2014.10.010  
<http://dx.doi.org/10.1016/j.asr.2014.10.010>

### *Astrodynamic And Space Debris*

Peter Steigenberger, Urs Hugentobler, Sylvain Loyer, Felix Perosanz, Lars Prange, Rolf Dach, Maik Uhlemann, Gerd Gendt, Oliver Montenbruck (2015) Galileo orbit and clock quality of the IGS Multi-GNSS Experiment, *Adv. Space Res.*, 55(1), 269–281, DOI : 10.1016/j.asr.2014.06.030  
<http://dx.doi.org/10.1016/j.asr.2014.06.030>

## Meeting Announcements

### *GIA Modeling 2015*

*Fairbanks, Alaska, May 26-29, 2015*

We are pleased to announce a 3-day symposium on modelling and observation of solid-earth response to ice-ocean load changes. The symposium will be followed by a 1-day hands-on workshop on modelling of elastic deformation.

Please save the dates: *May 26-29, 2015, University of Alaska Fairbanks Geophysical Institute, Fairbanks, Alaska*

#### *Symposium Description*

Melting of ice sheets and glaciers adds to the mass of water that fills the ocean basins and results in solid Earth deformation over a large range of spatial and temporal scales. Both ice-ocean load and surface deformation changes (vertical and horizontal) are far from completely observed and where they are observed they are typically not fully understood. Observations of ice extent and paleo sea level are increasing in number, but provide less spatial or temporal coverage than desired and reconstructions benefit from further indirect constraints associated with the deformation of the solid Earth. Time series of relative sea level are particularly powerful additional constraints, with modern geodetic measurements often providing more complete spatial coverage but with the limitation that the observations only cover a few decades at most. This workshop will bring together those working on ice load reconstructions, modeling of (visco-) elastic processes and comparison to relative sea level and geodetic observations (e.g. GRACE, GPS, ICESat, CRYOSAT II) in order to further refine our understanding of past to present ice/ocean load changes, and the characteristics of the solid Earth under time-varying loads, in order to advance our understanding of past ice sheet and sea level changes, of the structure and rheology of Earth, and of exactly what geodetic measurements are measuring.

#### *Final Day Workshop on Elastic Modelling*

The final day of the meeting will provide an opportunity to gain hands on experience and tutoring on tools for computation of the high-resolution elastic response of Earth to surface load changes. The session will explore

the theory and practical application of two tools - REAR and SPOTL; as well as a summary of sources for obtaining observed or modeled ice loading changes and their treatments. The 1-day workshop will focus on learning through undertaking computer exercises with the software. A familiarity with Linux will be essential. Places are limited and will be allocated on a first-come-first-served basis.

Further information, including registration and abstract submission will be available soon at <http://www.gia2015.org/>.

The workshop is sponsored by IAG sub-commission 3.2 “Cryospheric Deformation” and SCAR SERCE.

JEFF FREYMUELLER, ABBAS KHAN, MICHAEL BENTLEY, PIPPA WHITEHOUSE AND MATT KING  
Symposium/Workshop Organisers

## Meetings Calendar

### ION International Technical Meeting (ITM) 2015

January 26 – 28, 2015, Dana Point, California, USA

URL: <http://www.ion.org/itm/>

### 7th Annual Conference on European Space Policy

January 27 – 28, 2015, Brussels, Belgium

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

### 18. Internationale Geodaetische Woche Obergurgl

February 8 – 14, 2015, Obergurgl, Austria

URL: <http://www.mplusm.at/ifg/>

### GEOProcessing 2015

February 22 – 27, 2015, Lisbon, Portugal

URL: <http://www.iaria.org/conferences2015/GEOProcessing15.html>

### WCDRR

March 14 – 18, 2015, Sendai, Japan

UN World Conference on Disaster Risk Reduction

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

### Mapping Water Bodies from Space (MWBS 2015)

March 18 – 19, 2015, Frascati, Italy

URL: <http://due.esrin.esa.int/mwbs2015/>

### Munich Satellite Navigation Summit 2015

March 24 – 26, 2015, Munich, Germany

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

### European Navigation Conference ENC 2015

April 7 – 10, 2015, Bordeaux, France

URL: <http://www.enc2015.eu/>

### IFCS-EFTF 2015

April 12 – 16, 2015, Denver, Colorado, USA

Joint Conference of the IEEE International Frequency Control Symposium & European Frequency and Time Forum

URL: <http://ifcs-efcf2015.org/>

### European Geosciences Union General Assembly 2015

April 12 – 17, 2015, Vienna, Austria

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

### SPACOMM 2015

April 19 – 24, 2015, Barcelona, Spain

URL: <http://www.iaia.org/conferences2015/SPACOMM15.html>

### RESENS 2015

April 19 – 24, 2015, Barcelona, Spain

URL: <http://www.iaia.org/conferences2015/RESENS.html>

### Eighth IVS Technical Operations Workshop (TOW 2015)

May 7 – 7, 2015, Westford, Massachusetts, USA

URL: <http://ivscc.gsfc.nasa.gov/meetings/tow2015/>

### 36th International Symposium of Remote Sensing of Environment (ISRSE)

May 11 – 15, 2015, Berlin, Germany

URL: <http://www.isrse36.org/>

### 8th Workshop on GNSS Reflectometry (GNSS+R 2015)

May 11 – 13, 2015, Potsdam, Germany

URL: <http://www.gnssr2015.org/>

### 22nd Meeting of the European VLBI Group for Geodesy and Astrometry (EVGA)

May 17 – 21, 2015, Ponta Delgada, Azores, Portugal

URL: <http://evga2015.raege.net/>

### FIG Working Week 2015

May 17 – 21, 2015, Sofia, Bulgaria

URL: <http://www.fig.net/fig2015/>

### GIA Modeling 2015

May 26-29, 2015, Fairbanks, Alaska

URL: <http://www.gia2015.org/>

### Ilulissat Climate Days 2015

June 2-5, 2015, Ilulissat, Greenland

URL: <http://www.polar.dtu.dk/english/Ilulissat-Climate-Days>

### EUREF Symposium 2015

June 3-5, 2015, Leipzig, Germany

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

### TransNav 2015

June 17 – 19, 2015, Gdynia, Poland

URL: <http://transnav2015.am.gdynia.pl>

### XXVI IUGG General Assembly

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

Information about registration and accommodation will be available from June 2014. Call for abstracts will be open during summer 2014. **Deadline for abstract submission is January 31, 2015.**

URL: [www.iugg2015prague.com](http://www.iugg2015prague.com)

### EVN TOG Meeting

June 26, 2015, Robledo, Spain

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

### AOGS 2015

August 2 – 7, 2015, Singapore

URL: <http://www.asiaoceania.org/aogs2015/>

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/)

ION GNSS+ 2015

September 14 – 18, 2015, Tampa, Florida, USA

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

INTERGEO, Geodätische Woche

September 15 – 17, 2015, Stuttgart, Germany

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

ISDE 2015

October 6 – 10, 2015, Halifax, Nova Scotia, Canada

URL: <http://digitalearth2015.ca/>

Earth Observation for Water Cycle Science 2015

October 10 – 23, 2015, ESA-ESRIN, Frascati, Italy

URL: <http://www.eo4water2015.info/>

2nd Symposium of COSPAR: Water and Life in the Universe

November 9 – 13, 2015, Foz do Iguacu, Brazil

URL: <http://cosparbrazil2015.org/>

AGU 2015 Fall Meeting

December 14 – 18, 2015, San Francisco, California, USA

URL: <http://fallmeeting.agu.org/2015/>

EGU General Assembly 2016

April 17 – 22, 2016, Vienna, Austria

URL: <http://www.egu2016.eu/>

FIG Working Week 2016

May 2 – 6, 2016, Christchurch, New Zealand

URL: <http://www.fig.net/fig2016/>

18th Geodynamics and Earth Tide Symposium 2016

June 6 – 9, 2016, Trieste, Italy

URL: <http://www.lithoflex.org/g-et/>

41st COSPAR Scientific Assembly

July 30 – August 7, 2016, Istanbul, Turkey

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

INTERGEO, Geodätische Woche

October 11 – 13, 2015, Hamburg, Germany

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

AGU 2016 Fall Meeting

December 12 – 16, 2016, San Francisco, California, USA

URL: <http://meetings.agu.org/upcoming-meetings/>



### *Outstanding PECORA, ISPRS, IAG Joint Symposium In Denver Denver, Colorado, November 17-20, 2014*

The Pecora 19 Symposium in conjunction with the Joint Symposium of ISPRS Technical Commission I and IAG Commission 4 was held November 17 – 20, 2014 at the Renaissance Denver Hotel in Denver, Colorado with great success for all involved and in attendance.

The Pecora Symposium series was established in the 1970s by the USGS and NASA as a forum to foster the exchange of scientific and applied knowledge derived from remotely sensed data to a broad range of land-based resources, and to provide a forum for discussing ideas, policies, and strategies concerning land remote sensing. I am very pleased to see a broadening scope and extended professional participation of new organizations and professional bodies that joined together to organize this meeting.

This year's theme, "Sustaining Land Imaging: Unmanned Aircraft Systems to Satellites" focused on how remotely sensed data acquired using the latest technology and platforms are being used to advance our understanding of dynamic Earth and its environments, with a special focus on improving the information used for managing our natural resources.

The Symposium welcomed over 480 attendees from more than 25 countries around the globe for a unique and thought provoking two and a half days of technical sessions. All industry segments were well represented with 39% of the attendee base from the Commercial side, 29% from Academia and 32% from Government. More than 190 speakers presented in 35 sessions ranging in topic from "UAS and Data Analysis" and "UAS – Sensors and Applications" to "New Technologies and Systems", "Mobile Mapping Technologies" and many more. "The caliber of sessions at this symposium has been the best I've experienced ..." said one attendee.

The symposium theme, *Sustaining Land Imaging: UAS to Satellites*, carried throughout and particularly with the opening plenary session where Tom Holm, Pecora Steering Committee Chair, U.S. Geological Survey EROS, Charles Toth, President ISPRS Technical Commission I, ISPRS/IAG Commission Committee Chair, The Ohio State University and Dorota A. Grejner-Brzezinska, President IAG Commission 4, The Ohio State University, welcomed all attendees for an opening plenary titled "Landsat: A Vision Realized!" with Dr. Berrien Moore III. Moore gave a brilliant presentation on the importance of the Landsat Program to the Nation and the world.

The morning of Wednesday, November 19<sup>th</sup> brought in a full room of eager attendees to hear the latest news from a panel of experts in the second plenary session titled "UAS to Satellites: Platforms, Sensors, Technology and Systems". This esteemed panel included Dr. Kevin P. Price, EVP Research and Technology Development with RoboFlight Systems, LLC; Dr. Gary Wick, Physicist, NOAA Earth System Research Laboratory, Physical Sciences Division (ESRL/PSD) on detail to the NOAA Unmanned Aircraft Systems Program; and Mr. Anthony Carfang, Ph.D. candidate at the University of Colorado's Research and Engineering Center for Unmanned Vehicles.

The symposium Technology Floor was also a bustling area of activity throughout the week. With industry developers, manufacturers, government agencies, survey/mapping firms, agriculture firms, and companies from UAS-related industries, the Technology Floor held two lunches for the attendees and the always popular Exhibitors' Reception. Over 35 Poster presenters also filled the Technology Floor and foyer with large format technical posters depicting research in areas such as "Imagery-based UAS Navigation Data Analysis", "Development and Processing of Landsat TM and ETM+ Imagery to High-Level Products", "Seamless Synthetic Aperture Radar Archive for Interferometry Analysis" and "Understanding Spatio-Temporal Mobility Patterns Among Senior, Child/Student and Adult Using Smart Card Data".

Wednesday afternoon included another respected panel of experts for a session titled "Land Change Science: User Perspectives Panel Discussion" focusing on the remarkable progress over the last several decades towards developing data sets that characterize the Earth's land surface properties, ranging from local to global scales. Dr. Jim Irons, NASA, moderated this session for an active and engaging discussion between Professor Chris Justice, Department of Geographical Sciences Chair, University of Maryland; Dr. Alan Belward, Land Resource Management Unit, European Commission Joint Research Centre; and Dr. Tom Loveland, U.S. Geological Survey.

The closing plenary session, on Thursday, November 20<sup>th</sup>, "Petapixel Computing for All: Transforming Remote Sensing in the 21<sup>st</sup> Century" brought in a crowd for standing room only and a fascinating presentation from Ms. Rebecca Moore, Founder of the Google Earth Engine & Earth Outreach, Google Inc. Moore demonstrated some of Google's most recent mapping tools to showcase some of the world's most pressing problems in environmental conservation, human rights and cultural preservation.