



# International Association of Geodesy

## Newsletter

April 2013

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)

## Contents

<b>General Announcements</b> .....	<b>3</b>
ILRS News .....	3
<b>Meeting Announcements</b> .....	<b>3</b>
IAG Scientific Assembly 2013 .....	3
Third International School on "The KTH Approach to Modeling the Geoid" .....	3
<b>Meetings Calendar</b> .....	<b>4</b>
International Symposium on Mobile Mapping Technology 2013 .....	4
Seventh IVS Technical Operations Workshop .....	4
FIG Working Week 2013.....	4
IERS Workshop on Local Surveys and Co-locations.....	4
EUREF Symposium 2013 .....	4
5th International Conference on Spacecraft Formation Flying Missions and Technologies (SFFMT).....	4
International Symposium: Reconciling Observations and Models of Elastic and Viscoelastic Deformation due to Ice Mass Change .....	4
EOGC 2013.....	4
GNSS PPP Workshop .....	4
SGEM 2013 .....	4
VIII Hotine-Marussi Symposium .....	4
TransNav 2013 .....	4
ICEO-SI 2013.....	5
IRI-2013 Workshop "IRI and GNSS" .....	5
AOGS2013.....	5
UN-SPIDER Bonn Expert Meeting on Space-based Information for Early Warning Systems .....	5
International Symposium on Planetary Sciences (IAPS2013) .....	5
GI_Forum 2013 – Creating the GISociety.....	5
2013 Beacon Satellite Symposium.....	5
Joint IAMAS-IACS Assembly .....	5
ESA International Summerschool on GNSS 2013.....	5
Joint IAHS-IAPSO-IASPEI Scientific Assembly .....	5
26th International Cartographic Conference .....	5
ISDE 2013.....	5
12th IAGA Scientific Assembly.....	5
IC-MSQUARE 2013 .....	6
IAG Scientific Assembly.....	6
2nd Joint International Symposium on Deformation Monitoring (JISDM) .....	6
ESA Living Planet Symposium 2013.....	6
TGSMM 2013.....	6
Scientific developments from highly accurate space-time reference systems.....	6
ION GNSS 2013.....	6
ITU/BIPM Workshop on the Future of the International Time Scale .....	6
Statusseminar der DFG-Forscherguppe Referenzsysteme (FOR1503) .....	6
7th Coastal Altimetry Workshop.....	6
11th International School of Geoid Service: Heights and Height Datum .....	6
Geodätische Woche and INTERGEO .....	6
Ocean Surface Topography Science Team (OSTST) Meeting .....	6
School on Reference Systems, Crustal Deformation and Ionosphere Monitoring.....	6
SIRGAS Meeting 2013 .....	7
ICAG 2013 .....	7
GRMSE2013 .....	7
18th International Workshop on Laser Ranging .....	7
6th European Workshop on GNSS Signals and Signal Processing .....	7
AGU 2013 Fall Meeting .....	7
17. Internationaler Ingenieurvermessungskurs .....	7
Munich Satellite Navigation Summit 2014.....	7

Third International School on "The KTH Approach to Modeling the Geoid" .....	7
40th COSPAR Scientific Assembly.....	7
AGU 2014 Fall Meeting.....	7
XXVI IUGG General Assembly .....	7
<b>Book Review.....</b>	<b>8</b>
<b>Mark Denny: The Science of Navigation. From Dead Reckoning to GPS.....</b>	<b>8</b>

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:

C.C Tscherning  
University of Copenhagen  
Dept. of Geophysics  
Copenhagen, Denmark  
Fax: +45 35365357  
E-mail: [cct@gfy.ku.dk](mailto:cct@gfy.ku.dk)

## General Announcements

### *ILRS News*

The ILRS has recently been accepted as a network member of the International Council for Science (ICSU) World Data System (WDS, <http://icsu-wds.org>). The WDS strives to enable open access to multidisciplinary scientific data, data services, products and information. The WDS works to ensure long-term stewardship of data and data services to a global scientific user community. The ILRS is a network member of the WDS, representing its two data centers and coordinating their activities within the WDS. ILRS membership in the WDS will promote the Service to new user communities and show its commitment to the quality of ILRS data and services.

CAREY NOLL  
Secretary, ILRS Central Bureau

## Meeting Announcements

### *IAG Scientific Assembly 2013*

Themes as well as detailed description of themes of the IAG Scientific Assembly 2013 are available from the webpage [http://www.iag2013.org/IAG\\_2013/Themes.html](http://www.iag2013.org/IAG_2013/Themes.html). For further conference information, please visit our homepage <http://www.iag2013.org>.

All abstracts accepted and presented at the Assembly (oral or poster) may be submitted as papers for publication in the peer-reviewed IAG Symposia Series at Springer Publisher within one month after the Assembly.

IAG 2013 will offer you an interesting and comprehensive scientific program together with a variety of unique cultural events.

IAG 2013 LOC

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

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

After the successful experiences in the determinations and evaluations of precise local geoid models in different countries, we plan to arrange the third International Geoid School based on the KTH approach. (KTH is a Swedish abbreviation for Royal Institute of Technology, Stockholm, Sweden.). The school will be arranged at UTM from 31 March to 4 April, 2014, to be hosted again by the Department of Geomatic Engineering, Faculty of Geoinformation and Real Estate, Universiti Teknologi Malaysia (UTM), Johor Bahru, Malaysia.

The geoid school is led by

Prof. Lars E. Sjöberg  
Royal Institute of Technology  
Division of Geodesy  
Stockholm, Sweden

Detailed information and registration form can be downloaded from the following webpage:

<http://www.infra.kth.se/geo/events/IGS2014.pdf>

Contact Person:

MOHAMMAD BAGHERBANDI  
Division of Geodesy  
Royal Institute of Technology (KTH)  
[mohbag@kth.se](mailto:mohbag@kth.se)

## Meetings Calendar

### International Symposium on Mobile Mapping Technology 2013

April 30 - May 2, 2013, Tainan, Taiwan

URL: <http://conf.ncku.edu.tw/mmt2013/wm02.htm>

### Seventh IVS Technical Operations Workshop

May 6-9, 2013, Westford, MA, USA

### FIG Working Week 2013

May 6-10, 2013, Abuja, Nigeria

URL: <http://www.fig.net/fig2013/>

### IERS Workshop on Local Surveys and Co-locations

May 21-22, 2013, Paris, France

URL: <http://iersworkshop2013.ign.fr/>

### EUREF Symposium 2013

May 29-31, 2013, Budapest, Hungary

URL: <http://euref2013.fomi.hu/>

### 5th International Conference on Spacecraft Formation Flying Missions and Technologies (SFFMT)

May 29-31, 2013, Munich, Germany

URL: <http://www.sffmt2013.org/>

### International Symposium: Reconciling Observations and Models of Elastic and Viscoelastic Deformation due to Ice Mass Change

May 30 – June 2, 2013, Ilulissat, Greenland

URL: <http://www.dtu.dk/subsites/iag.aspx>

### EOGC 2013

June 5-7, 2013, Toronto, Canada

International Conference on Earth Observation for Global Changes

URL: <http://eogc2013.blog.ryerson.ca/>

### GNSS PPP Workshop

June 12-14, 2013, Ottawa, Canada

URL: <http://www.yorku.ca/pppworkshop2013>

### SGEM 2013

June 16-22, 2013, Albena, Bulgaria

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

### VIII Hotine-Marussi Symposium

June 17-21, 2013, Rome, Italy

URL: <http://w3.dicea.uniroma1.it/hotine-marussi-2013/>

### TransNav 2013

June 19-21, 2013, Gdynia, Poland

URL: <http://transnav2013.am.gdynia.pl>

### ICEO-SI 2013

June 23-25, 2013, Tainan City, Taiwan

International Conference on Earth Observations and Societal Impacts

URL: <http://2013.iceo-si.org.tw/>

### IRI-2013 Workshop "IRI and GNSS"

June 24-28, 2013, Olsztyn, Poland

URL: [http://www.uwm.edu.pl/kaig/iri\\_workshop\\_2013/](http://www.uwm.edu.pl/kaig/iri_workshop_2013/)

### AOGS2013

June 24-28, 2013, Brisbane, Australia

URL: <http://www.asiaoceania.org/aogs2013/>

### UN-SPIDER Bonn Expert Meeting on Space-based Information for Early Warning Systems

June 25-26, 2013, Bonn, Germany

URL: <http://www.un-spider.org/earlywarning>

### International Symposium on Planetary Sciences (IAPS2013)

July 1-4, 2013, Shanghai, China

URL: <http://202.127.29.4/meetings/iaps2013/>

### GI Forum 2013 – Creating the GISociety

July 2-5, 2013, Salzburg, Austria

URL: [www.daca-13.org](http://www.daca-13.org)

### 2013 Beacon Satellite Symposium

July 8-12, 2013, Bath, UK

URL: <http://people.bath.ac.uk/ee3jarr/beaconsatellite2013/>

### Joint IAMAS-IACS Assembly

July 8-12, 2013, Davos, Switzerland

Davos Atmosphere and Cryosphere Assembly 2013, Ice & Air – Process Interactions

URL: [www.gi-forum.org](http://www.gi-forum.org)

### ESA International Summerschool on GNSS 2013

July 15-25, 2013, Davos, Switzerland

URL: <http://www.congrexprojects.com/13m07>

### Joint IAHS-IAPSO-IASPEI Scientific Assembly

July 22-26, 2013, Gothenburg, Sweden

URL: <http://www.iaspei.org/meetings/forthcoming.html#iaspei2013>

### 26th International Cartographic Conference

August 25-30, 2013, Dresden, Germany

URL: <http://www.icc2013.org/>

### ISDE 2013

August 26-29, 2013, Kuching, Sarawak, Malaysia

8<sup>th</sup> International Symposium on Digital Earth 2013

URL: <http://isde2013.utm.my/>

### 12th IAGA Scientific Assembly

August 26-31, 2013, Mérida, Mexico

URL: [www.iaga2013.org.mx](http://www.iaga2013.org.mx)

IC-MSQUARE 2013

September 1-5, 2013, Prague, Czech Republic  
2<sup>nd</sup> International Conference on Mathematical Modeling in Physical Sciences  
URL: <http://www.icmsquare.net>

IAG Scientific Assembly

September 1-6, 2013, Potsdam, Germany  
URL: <http://www.iag2013.org>

2nd Joint International Symposium on Deformation Monitoring (JISDM)

September 9-11, 2013, Nottingham, UK  
URL: [www.nottingham.ac.uk/ngi/documents/events-pdfs/jisd2013.pdf](http://www.nottingham.ac.uk/ngi/documents/events-pdfs/jisd2013.pdf)

ESA Living Planet Symposium 2013

September 9-13, 2013, Edinburgh, UK  
URL: <http://www.livingplanet2013.org/>

TGSMM 2013

September 11-20, 2013, St Petersburg, Russian Federation  
IAG Third Symposium "Terrestrial Gravimetry: Static and Mobile Measurements - TGSMM-2013"

Scientific developments from highly accurate space-time reference systems

September 16-18, 2013, Observatoire de Paris, Paris, France  
URL: <http://synte.obspm.fr/jsr/journees2013/>

ION GNSS 2013

September 16-20, 2013, Nashville, TN, USA  
URL: <http://www.ion.org/meetings/?conf=gnss>

ITU/BIPM Workshop on the Future of the International Time Scale

September 19-20, 2013, Geneva, Switzerland  
URL: <http://www.itu.int/ITU-R/go/itu-bipm-workshop-13/>

Statusseminar der DFG-Forschergruppe Referenzsysteme (FOR1503)

September 19-20, 2013, Berlin, Germany  
URL: <http://www.referenzsysteme.de/>

7th Coastal Altimetry Workshop

October 7-8, 2013, Boulder, USA  
URL: <http://www.coastalaltimetry.org/>

11th International School of Geoid Service: Heights and Height Datum

October 7-11, 2013, Loja, Ecuador  
URL: <http://www.11iges.utpl.edu.ec/>

Geodätische Woche and INTERGEO

October 8-10, 2013, Essen, Germany  
URL: <http://www.intergeo.de/>

Ocean Surface Topography Science Team (OSTST) Meeting

October 8-11, 2013, Boulder, USA  
URL: <http://sealevel.jpl.nasa.gov/science/ostscienceteam/scienceteammeetings/>

School on Reference Systems, Crustal Deformation and Ionosphere Monitoring

October 21-23, 2013, Panama City, Panama  
URL: <http://www.sirgas.org/index.php?id=233&L=0>

SIRGAS Meeting 2013

October 24-26, 2013, Panama City, Panama

URL: <http://www.sirgas.org/index.php?id=193&L=2>

ICAG 2013

November 5-13, 2013, Walferdange Underground Laboratory, Luxembourg

International Comparison of Absolute Gravimeters

GRMSE2013

November 8-10, 2013, Wuhan, China

International Conference on Geo-Informatics in Resource Management & Sustainable Ecosystem

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

18th International Workshop on Laser Ranging

November 11-15, 2013, Fujiyoshida, Japan

URL: <http://geo.science.hit-u.ac.jp/lw18>

6th European Workshop on GNSS Signals and Signal Processing

December 5-6, 2013, Munich, Germany

URL: <http://ifen.bauv.unibw.de/gnss-signals-workshop/>

AGU 2013 Fall Meeting

December 9-13, 2013, San Francisco, CA, USA

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

17. Internationaler Ingenieurvermessungskurs

January 14-17, 2014, Zurich, Switzerland

URL: <http://www.igp.ethz.ch/iv2014/>

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>

40th COSPAR Scientific Assembly

August 2-10, 2014, Moscow, Russia

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

AGU 2014 Fall Meeting

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

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

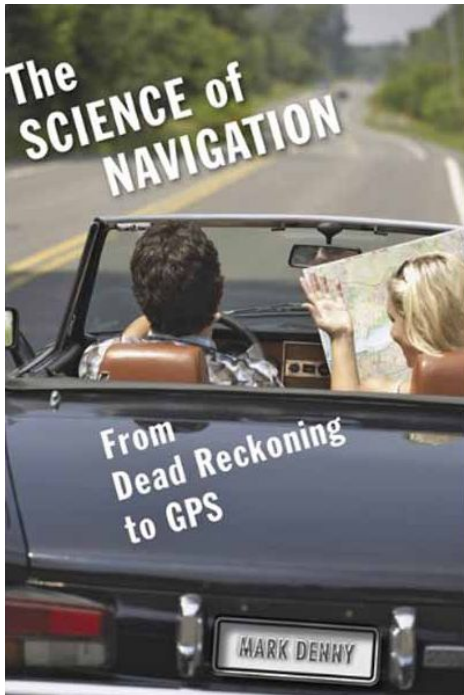
XXVI IUGG General Assembly

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

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

## Book Review

Mark Denny: *The Science of Navigation. From Dead Reckoning to GPS*



Title: The Science of Navigation. From Dead Reckoning to GPS  
Author: Mark Denny  
Publisher: Johns Hopkins University Press  
ISBN: 978-1421405117 (hardback) / 978-1421405124 (paperback)  
Year: 2012  
Price: USD 65 (hardback), USD 30 (paperback)  
Details: hardback/paperback, 272 pages  
Other: Width: 152 mm, Height: 229 mm, 67 halftones, 59 line drawings

The book is about navigation: what the author has in mind is mainly ocean navigation as explained by himself in Chapter 5.2 “Navigation is all about applying knowledge of the world around us to get a particular destination through unknown or featureless territory”. In other words to determine the position of a point on the earth sphere independently of what you see, for instance when you are in the mid of the ocean, is very much at the heart of the book. Funny enough this is the contrary of what suggested by the figure on the front page that is alluding to car navigation by visual inspection of the surroundings and the help of a map.

The perspective of the author is quite clearly historical, in each of the different sections, or better quadrants as the author calls them, in which the book is divided. However the scientific reasoning is not at all extraneous to the setting of the book, as it was to be expected from a theoretical physicist as M.Denny is. Only the tools used, basically an intuitive spherical geometry, are such as to make the reading understandable to any person with a typical high school background.

The first quadrant is “Geodesy”. The author wants to describe the Earth, the object that we want to navigate, its physical behaviour, including the motion with respect to a celestial reference system, the tides of the ocean, its magnetic field and specially its gravity field and its shape, namely the central chapter of physical geodesy. Naturally the shape of the Earth is an argument calling for its historical development, which is seen in a comprehensive way; not only the Greeks Pythagoras, Erastotenes and Posidonius, and Romans as Ptolemy, but also Chinese and Arabian scientists, like Al Birumi that in the xth century estimated the radius of the Earth to within 17 km of its actual mean value.

Next quadrant is “Cartography”. It is about surveying, namely determining the coordinates of points, and mapping, i.e. representing the geographic information. The interesting point about this quadrant is the use of the historical line of thought as tool to show how the improvement of the technique has been modifying the image of



our world. Namely the accuracy of measurements also shapes the physical model of the world. A point of view this, that is very much in the spirit of modern geodesy.

The third quadrant is about navigation in action, namely “Early exploitation and navigation”. The historical view of the matter here is essential one again the author is not limited by a eurocentric vision. So together with Greeks and Phoenicians we find the Pacific Saga with the spread of sailing populations from the coast of Taiwan through the many island areas of that ocean, to reach Easter Island (Rapa Nui) and possibly the shores of South America. And then the area of the great geographical discoveries from Colombo, to Drake and Magellan.

Interesting to learn is that Portugal, under the indicative of Prince Henry the Navigator, was first to set up a regular school of navigation at Sagres. In this quadrant we learn how by ancient instruments marines could measure azimuth and velocity of their vessels in open sea. Reconstructing the trajectory from this information, i.e. what we could call nowadays traversing, is what is named traditionally as dead reckoning.

The last quadrant is “Navigation in modern times”. Here we read the evolution of navigation capability from the use of measurements to points on the coast of known coordinates from maps, to the astronomical measurements to the sun, to the moon and stars to determine geographic coordinates of a ship. Not to be forgotten the history of the measurement of the longitude, with its first attempts of using celestial bodies as clocks (Galileo already suggested the use of the four moons of Jupiter), to come finally to the accurate marine chronometers, that superseded all the other methods.

Finally the electronic era takes over with its beacons, the Lorenz system used during the second world war to guide German borders and finally the LORAN system (LONg RANGE Navigation) that by employing long wavelengths could issue waves travelling as far as 5.000 km, well over the horizon, thanks to the waveguide effect of the ionosphere.

Last in time come the GPS and the modern navigation coupled with inertial navigation systems, which are explained in a plain, understandable fashion.

The book is closed by a very enjoyable chapter on Nature's Navigation, describing the analogy of human navigation (and its achievements) with that of different animals. Piloting, namely returning on the same route by identifying benchmarks, is used for instance by some species of digger wasps. Compass, indicating the magnetic north, is used by birds in their navigation. Dead Reckoning is used by ants in the Sahara to trace trajectories to travel forth and back. Celestial Navigation is used by birds that are nocturnal migrants. Radar or better something close to it, like sonar, is used by bats, dolphins and whales.

All in all let me claim that when I started reading the book I was a little skeptic as I'm often (not always) in front of a “popular science”; when I finished my reading I was happy I did it.

FERNANDO SANSÓ