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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

### ***NASA's Lunar Reconnaissance Orbiter (LRO) was launched***

NASA's Lunar Reconnaissance Orbiter (LRO) was launched on June 18 and achieved its commissioning orbit around the Moon on June 23. The GSFC NGSRLR successfully ranged to LRO on its first attempt on June 30 at 21:10 UTC. The ranging was strong with LOLA seeing 20+ (out of a possible 28) returns per second throughout most of the hour long pass. Since that initial pass, NGSRLR has had several successful ranges to SLR. McDonald Laser Ranging System (MLRS) at the University of Texas successfully ranged to LRO on their first attempt on July 2nd. Other approved sites will begin ranging to LRO soon.

Congratulations to the entire LRO-LR team!

JAN MCGARRY  
NASA GSFC

## Meeting Announcements

### ***Geodesy for Planet Earth***

*IAG 2009 Scientific Assembly, Buenos Aires,  
Argentina, August 31 to September 4, 2009*



2<sup>nd</sup> Circular is reachable through the webpage of the conference [www.iag2009.com.ar](http://www.iag2009.com.ar).

#### *Important Dates*

- Deadline of Standard Registration: **July 31, 2009**
- Third Circular: June, 2009
- Deadline for Submission of Full-Papers Manuscripts: September 30th, 2009

LOCAL ORGANIZING COMMITTEE

### ***2009 ILRS Technical Workshop on SLR Tracking of GNSS Constellations***

*Metsovo, Greece, Sept. 14-19, 2009*

Dear Colleagues,

We have the pleasure to announce that the International Laser Ranging Service (ILRS) in collaboration with the National Technical University of Athens, Greece (NTUA) is organizing an ILRS Technical Workshop entitled:

#### **SLR Tracking of GNSS Constellations 50 Years of Satellite Geodesy and Geodynamics**

in Metsovo, Greece, from September 14 to 19, 2009, on the occasion of Prof George Veis 80<sup>th</sup> birthday and the 50<sup>th</sup> anniversary of his doctoral thesis, a document that laid the foundations of satellite geodesy. Details and the Second Circular are available from the workshop web page [http://www.ntua.gr/MIRC/ILRS\\_W2009](http://www.ntua.gr/MIRC/ILRS_W2009).

#### **Objectives**

- Overview of the two techniques with emphasis on their synergism
- Review of GNSS and SLR constellations & networks and current state of the art

- Satellite geodesy applied in geodynamics, POD, positioning, gravity, etc.
- Survey of the likely gains in science from SLR tracking of GNSS constellations
- Examine approaches to help accomplish the goals set by GGOS, investigating options such as:
  - higher repetition rates,
  - optimal normal point formulation,
  - interleaving tracking of targets, better sampling of orbits,
  - allocating targets to sub-networks, etc.
- Optimization of the network design and deployment of the appropriate space segment
- Discussion of the fundamental differences, geometric and dynamic, between geodetic cannonball type targets (LAGEOS) and the complicated GNSS spacecraft
- Discussion of applications specifically enabled through the synergism of the two techniques. e.g. the likely improvement of LEO POD with the improved GNSS orbital products and their impact on Earth Observation products relying on these orbits (radar and laser altimetry, geopotential missions, atmospheric lidar and sounding missions, topography missions, SAR and InSAR missions, etc.).

We would like to invite you to participate in the workshop and submit presentations to the sessions of your choice. Deadline for abstract submission and early registration is **July 31, 2009**.

We look forward to seeing you all in Metsovo!

ERRICOS C. PAVLIS AND DEMITRIS PARADISSIS

## ***IAG Sponsored Meetings***

### **Geodesy for Planet Earth**

*IAG 2009 Buenos Aires*

*August 31 to September 4, 2009*

The International Association of Geodesy Scientific Assembly IAG2009 that will be hosted by the IUGG National Committee together with the Argentine Association of Geophysics and Geodesy, will take place in the city of Buenos Aires. IAG2009 will be an event that covers the whole of geodesy in an exciting social environment that extends our knowledge, improves our practice, and widens our friendship networks. Following the long outstanding tradition of these scientific assemblies, IAG2009 will be a major scientific event, bringing together geodesists from all over the world, and demonstrating the vital role that geodesy plays in our society. This will be the main geodetic meeting in 2009. 2<sup>nd</sup> Circular is reachable through the webpage of the conference [www.iag2009.com.ar](http://www.iag2009.com.ar).

### **2nd International Colloquium – Scientific and Fundamental Aspects of the Galileo Programme**

*October 14-16, 2009, Padua, Italy*

The second international colloquium on fundamental aspects and scientific applications of Galileo and GNSS will be held in Padua October 2009. The colloquium will address three major areas of research. The fundamental aspects of navigation by satellites and Galileo. Scientific applications in meteorology, geodesy, geophysics, space physics, oceanography, land surface and ecosystem studies, using either direct or reflected signals, differential measurements, phase measurements, radio occultation measurements, using receivers placed on the ground, in airplanes or on satellites. Scientific developments in physics and dealing with future systems, particularly in testing fundamental laws, in astronomy, in quantum communication, and in developing clocks or experiments based on GNSS. To find more information, please visit the conference website <http://www.congrex.nl/09c10/>.

## ***IAG Related Meetings***

### **Workshop: Changes of the Greenland Cryosphere**

*August 25-27, 2009, Katuaq, Nuuk, Greenland*

The CGC workshop is an interdisciplinary workshop on the current changes of the Greenland ice sheet, sea-ice and permafrost, and presents an opportunity for in-depth discussions of the observed changes as measured by satellite, airborne and in-situ networks (climate stations and GPS), the modelling of the changes, and future projections of change. Geodesy has a special role to play in the monitoring of the Greenland ice sheet, especially due to GRACE and geodynamic uplift studies by GPS and absolute gravity. The workshop is part of the Nuuk Climate Days, with a parallel workshop on the Arctic Freshwater Budget (FreshNor), and a joint event on the impact of effects of climate changes on the Greenland society, arranged in cooperation with the

Danish Meteorological Institute, Greenland Institute of Natural Resources, and Asiaq-Greenland Survey. Deadline for abstracts: June 1. Web site: [www.space.dtu.dk/nuuk2009](http://www.space.dtu.dk/nuuk2009).

### **6th International Symposium on LBS & TeleCartography**

*September 2-4, 2009, Centre for Geospatial Science, University of Nottingham, UK*

The symposium will bring together experts from around the world to present the latest research results and developments with focus on Location Based Services in the fields of Cartography, Geoinformation, Computer Sciences, Telecommunication, Geodesy, and Geomedia Techniques. For further information see: <http://www.lbs2009.org/>.

### **GNSS Vulnerabilities and Solutions 2009 Conference**

*September 2-5, 2009, Baska, Krk Island, Croatia*

The 2<sup>nd</sup> GNSS Vulnerabilities and Solutions 2009 Conference is to be held on 2-5 September 2009 in Baska, Krk Island, Croatia. This four-day event aims to gather GNSS experts and focuses on GNSS problems and vulnerabilities, as well as to developments aiming to improve the accuracy and reliability of GNSS. For further information please refer to the Call for Papers, which can be downloaded from [http://www.rin.org.uk/files/POOL/vulnerabilitiesAndSolutions2009\\_CallForPapers.pdf](http://www.rin.org.uk/files/POOL/vulnerabilitiesAndSolutions2009_CallForPapers.pdf).

### **2009 ILRS Technical Workshop on SLR Tracking of GNSS Constellations**

*Metsovo, Greece, Sept. 14-19, 2009*

The International Laser Ranging Service (ILRS) in collaboration with the National Technical University of Athens, Greece (NTUA) is organizing an ILRS Technical Workshop entitled: "SLR Tracking of GNSS Constellations – 50 Years of Satellite Geodesy and Geodynamics" in Metsovo, Greece, from September 14 to 19, 2009. Details and the Second Circular are available from the workshop web page [http://www.ntua.gr/MIRC/ILRS\\_W2009](http://www.ntua.gr/MIRC/ILRS_W2009).

### **ION GNSS 2009**

*September 22-25, 2009, Georgia, USA*

The Institute of Navigation's GNSS 2009 (technical sessions and exhibits) will be held at the Savannah International Convention Center, Savannah, Georgia. Pre-conference tutorials will be held in Savannah on September 21-22. See the ION website ([www.ion.org](http://www.ion.org)) for details.

### **2nd Workshop on Absolute Long Distance Measurement in Air**

*October 2, 2009, VSL, Delft, The Netherlands*

The Workshop is organized within the scope of the European Metrology Research Programme, Joint Research Project 3.1 on Long Distance measurement in air. The workshop aims to cover the current status in the field of long distance measurement in air, with contributions from both invited speakers and JRP partners. The Workshop Program will be shortly posted and updated at the official webpage of the project [www.longdistanceproject.eu](http://www.longdistanceproject.eu).

### **International UN-SPIDER Bonn Workshop**

*October 21 – 23, 2009, Bonn, Germany*

The Third United Nations International UN-SPIDER Bonn Workshop: Disaster Management and Space Technology From Concepts to Applications is being jointly organized by the United Nations Office for Outer Space Affairs (UNOOSA) and the German Aerospace Center (DLR). The workshop will be held in Bonn, Germany, from 21 – 23 October 2009 in the UN Building in Bonn. Please check out: <http://www.unoosa.org/oosa/en/unspider/workshops.html>.

### **SPRINGL'09**

*November 3, 2009, Seattle, USA*

SPRINGL'09 - 2nd ACM International Workshop on Security and Privacy in GIS and LBS is co-located with 17th ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems (ACM GIS 2009). SPRINGL 2009 is the second workshop in the SPRINGL workshop series that aims at bringing together researchers working on the foundations of the field and on novel applications bridging spatio-temporal data management and security and privacy. Further details are available from the webpage <http://www.cs.purdue.edu/homes/daic/springl09>.

## **ACM GIS 2009**

*November 4-6, 2009, Seattle, USA*

The ACM SIGSPATIAL International Conference on Advances in Geographic Information Systems 2009 (ACM GIS 2009) is the seventeenth event of a series of symposia and workshops that began in 1993 with the aim of bringing together researchers, developers, users, and practitioners carrying out research and development in novel systems based on geo-spatial data and knowledge, and fostering interdisciplinary discussions and research in all aspects of geographic information systems. Visit <http://acmgis09.cs.umn.edu> for details.

## ***IAG Sister Societies' General Assemblies***

### **Associations' Scientific Assemblies of the IUGG**

- IUGG/IAGA, August 23-30, 2009, Sopron, Hungary
- IUGG/IAHS, September 7-12, 2009, Hyderabad, India
- IUGG/IAG, August 31-September 4, 2009, Buenos Aires, Argentina
- IUGG/IACS-IAMAS-IAPSO, July 19-29, 2009, Montreal, Canada

### **XXIV FIG International Congress**

*April 11-16, 2010, Sydney, Australia*

The FIG 2010 Congress, hosted by the International Federation of Surveyors (FIG) and Institution of Surveyors, Australia (ISA), is expected to bring together over 2,000 participants from almost 100 countries. The Congress will have a full professional program consisting of more than 80 technical and poster sessions, several workshops, pre-congress seminars, and special forums, including four plenary sessions focusing on the hot issues of the global agenda and of our profession: namely the big challenges of climate change, disaster risk management and good land governance; spatially enabled society; and different aspects of the technological futures. The webpage of the FIG 2010 Congress is [www.fig2010.com](http://www.fig2010.com).

## **Reports**

### ***7<sup>th</sup> Hotine-Marussi Symposium***

*July 6-10, 2009 in Rome, Italy*

The 7th Hotine-Marussi Symposium on theoretical geodesy was held at the Faculty of Engineering of the Sapienza University of Rome, Italy on July 6-10, 2009. The symposium was organized under the scientific coordination of the IAG's Inter-Commission Committee on Theory (ICCT). The program consisted of 52 oral and 50 poster presentations. 112 participants from 20 countries discussed during the five-day program of the symposium recent advances and future trends in the geodetic theory. The proceedings of the symposium will be published by the Springer Verlag during 2010. More information on the symposium can be found at [http://w3.uniroma1.it/Hotine-marussi\\_symposium\\_2009](http://w3.uniroma1.it/Hotine-marussi_symposium_2009).

NICO SNEEUW  
PAVEL NOVAK

### ***IAG-PAIGH-SIRGAS School on Reference Systems***

*July 13-17, 2009 in Bogota, Columbia*

The first "IAG-PAIGH-SIRGAS School on Reference Systems" took place from July 13 to 17, 2009 (see more details at [www.sirgas.org](http://www.sirgas.org)). It was held at the Instituto Geográfico Agustín Codazzi (IGAC), Bogota, Colombia, under the sponsorship of the International Association of Geodesy (IAG) and the Pan American Institute of Geography and History (PAIGH).

The School was conceived to provide the attendants with state-of-the-art concepts related to the generation and use of fundamental geodetic data (see detailed program below). The great number of attendants (120) and the diversity of countries present in the audience (12) are the best indicators of success achieved by this initiative.

Scholars from Bolivia, El Salvador, Guatemala, Honduras, Panamá, Paraguay, and Perú were granted by the PAIGH. The Deutsches Geodätisches Forschungsinstitut (DGFI) supported the participation of two lecturers (H. Drewes and L. Sánchez), and the National University of La Plata (UNLP), Argentina, supported the participation of one lecturer (C. Brunini). Besides providing the local organization and infrastructure needed for the School, the IGAC supported the participation of one lecturer (W. Martínez) and several assistants.

The capacity building program approved by the IAG SC1.3b (SIRGAS) Executive Council encompasses two activities: theoretical schools like the one described here plus training courses for the use of processing software. Training courses focused on the use of the Bernese GPS Software were already delivered in several countries that have recently established new analysis centres for SIRGAS (some of them still experimental), namely: Colombia, Argentina, Ecuador, Uruguay and Chile. This scheme based on theoretical schools attended by people from different countries, plus practical courses for a few persons directly in charge of the analysis centres will be repeated in the future.

The School was scheduled in five seven-hour sessions and the program covered the following topics:

1. Types of coordinates, their definitions, relations and transformations (Cartesian 3D coordinates; ellipsoidal coordinates; local (topocentric) coordinates; plane (cartographic) coordinates; UTM system; Gauss-Krüger (Transverse Mercator) projection; Lambert conformal conic projection; azimuthal projection; coordinates transformation and conversion); by W. Martínez.
2. Reference systems and frames (inertial conventional reference system; International Celestial Reference System and Frame (ICRS, ICRF); International Terrestrial Reference System and Frame (ITRS, ITRF); ICRS-ITRS relations; precession and nutation; polar motion and Earth rotation; coordinate variations in time); by H. Drewes.
3. Coordinates determination from GNSS (rationale of GNSS positioning; GNSS observables; multipath and thermal noise effects; observation equations; errors due to satellite ephemerides and clocks; errors due to the Earth atmosphere; errors due to antenna phase centres and electronic delays; ambiguities solving strategies); by C. Brunini.
4. Vertical reference systems (ellipsoidal heights; physical heights; reference surfaces (ellipsoid, geoid, quasigeoid); classical vertical datums; modern vertical reference systems); by L. Sánchez.
5. SIRGAS (definition, realization, purposes, organization issues; spreading and application of SIRGAS products; SIRGAS Working Groups; SIRGAS scientific objectives); by all the lecturers.

CLAUDIO BRUNINI  
LAURA SÁNCHEZ