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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

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## General Announcements

### ***Preliminary call for special issue 'CONT08' in Journal of Geodesy***

Dear Colleagues,

Between August 12 and August 26, 2008 the International VLBI Service for Geodesy and Astrometry has observed the so-called CONT08 campaign of 15 days of uninterrupted VLBI observations for Earth orientation studies. The other space-geodetic services as well as science partners in other geodynamical disciplines had been asked to consider dedicated observing sessions at the same time period.

About a year later, the data should all be analyzed and the idea was developed to bring together all publications related to the CONT08 period in a joint Special Issue of Journal of Geodesy. With this call we solicit the submission of titles (and authors) of possible contributions in order to have a rough indication whether a sufficient number of papers can be expected. The scope of the papers may cover all types of measurements carried out during the CONT08 period for Earth orientation studies and related disciplines as well as aspects of modeling of the acquired data and interpretation of the obtained results.

If you plan to submit a paper to a Special Issue on CONT08, please send your title (with authors) to one of us until **December 15, 2009**. If at least seven positive responses are received by that date, a full call will be issued aiming at a submission date for the full manuscripts of March 31, 2010.

Yours sincerely

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Guest Editors to Journal of Geodesy

## Meeting Announcements

### ***Second Announcement for the 6th IVS General Meeting***

*February 7-13, 2010, Hobart, Tasmania, Australia*

The sixth General Meeting of the International VLBI Service for Geodesy and Astrometry (IVS) will be held February 7-13, 2010, in Hobart, TAS, Australia. All IVS Associate Members and individuals who have interests in the application of VLBI in the fields of geodesy, Earth sciences, and astrometry are invited to attend the meeting.

The keynote of the sixth General Meeting is the new perspectives of the next generation VLBI system under the theme "VLBI2010: From Vision to Reality". The vision of the VLBI2010 system is gradually being realized. The unprecedented new capabilities of 1-mm positional accuracy and station velocities of 0.1 mm/yr, continuous observational time series or station positions and Earth orientation parameters, and fast turnaround time from observation to geodetic and astrometric result will foster new science and applications. Keynote speakers will be asked to address the keynote in their presentations.

The meeting host is the University of Tasmania, School of Mathematics and Physics. Details about the meeting including the registration, accommodations, and abstract submission are available at the meeting Web site:

<http://ivscc.gsfc.nasa.gov/meetings/gm2010/>

**Registration:** Registration for the meeting is now open. Please visit the meeting Web site, click on "Registration", and download the registration and accommodation form (PDF or Word format). Fill in the form and send it to the local organizers. Early bird registration deadline is November 30, 2009; regular registration deadline is January 7, 2010.

**Accommodation:** The local organizing committee has blocked a number of rooms in the on-campus housing facilities and in a selected hotel. These two options should be requested together with the registration. Please use the registration and accommodation form for this action. The deadline for arranging accommodation through the local organizing committee is January 7, 2010.

**Abstracts:** **The abstract submission deadline has been extended to December 2, 2009.** Contributions are welcome from anyone attending the meeting. To submit an abstract, visit the meeting Web site and click on "Submit an Abstract". Then use the abstract submission form. For further information contact any member of the Local Organizing Committee, the Program Committee, or the Coordinating Center.

Regards,  
DIRK BEHREND  
IVS Coordinating Center Director

## ***EUREF Symposium 2010***

*June 2-5, 2010, Gävle, Sweden*

The next EUREF Symposium will be held in Gävle, Sweden, June 2-5, 2010. The 2010 symposium is organised by Lantmäteriet - the Swedish mapping, cadastral and land registration authority - and co-sponsored by KTH Royal Institute of Technology and Onsala Space Observatory at Chalmers University of Technology. The website of the 2010 symposium [www.lantmateriet.se/euref2010](http://www.lantmateriet.se/euref2010) from time to time will be completed.

A **Best Student Poster Award** is offered and the winner will be awarded by 100 Euro.

HELMUT HORNIK

## ***IAG Sponsored Meetings***

### ***International VLBI Service for Geodesy and Astrometry (IVS) 2010 General Meeting***

*February 7-14, 2010, Hobart, Australia*

The purpose of the meeting is to assemble representatives from all IVS components to share information, hear reports, and plan future activities. The meeting also provides a forum for interaction with other members of the VLBI and Earth science communities. The keynote of the sixth GM is the new perspectives of the next generation VLBI system under the theme "VLBI2010: From Vision to Reality". The content of the meeting will be of interest to the broad spectrum of IVS members as well as to the wider VLBI and Earth science community. URL: <http://ivscc.gsfc.nasa.gov/meetings/gm2010>

## ***IAG Related Meetings***

### ***AGU Fall Meeting 2009***

*December 14-18, 2009, San Francisco, USA*

The Fall Meeting provides an opportunity for researchers, teachers, students, and consultants to review the latest issues affecting the Earth, the planets, and their environments in space. This meeting will cover topics in all areas of geophysical sciences including geodesy. Please visit <http://www.agu.org/meetings/fm09/index.php> for further details.

### ***GEOProcessing 2010***

*February 10-15, 2010, St. Maarten, Netherlands Antilles*

The Second International Conference on Advanced Geographic Information Systems, Applications, and Services will take place in St. Maarten, Netherlands Antilles from February 10-15, 2010. The topics suggested by the conference can be discussed in term of concepts, state of the art, research, standards, implementations, running experiments, applications, and industrial case studies. Authors are invited to submit complete unpublished papers, which are not under review in any other conference or journal in the following, but not limited to, topic areas. General page of the Conference is <http://www.iaia.org/conferences2010/GEOProcessing10.html>.

### ***Munich Satellite Navigation Summit 2010***

*March 9-11, 2010, Munich, Germany*

The Munich Satellite Navigation Summit 2010 – the eighth one – to be held March 9-11 2010 in the famous “Residenz München”, Germany – has been established as the European and International conference with global impact featuring invited high-ranking worldwide speakers from industry, science and governments dealing with the directions of satellite navigation now and in the future. For online registration and details please visit <http://www.munich-satellite-navigation-summit.org>.

#### **GOCE User Workshop**

*March 17-19, 2010, Munich, Germany*

#### **EGU General Assembly 2010**

*May 2-7, 2010, Wien, Austria*

URL: <http://meetings.copernicus.org/egu2010/>

#### **EUREF Symposium 2010**

*June 2-5, 2010, Gävle, Sweden*

The next EUREF Symposium will be held in Gävle, Sweden, June 2-5, 2010. The 2010 symposium is organised by Lantmäteriet - the Swedish mapping, cadastral and land registration authority - and co-sponsored by KTH Royal Institute of Technology and Onsala Space Observatory at Chalmers University of Technology. The website of the 2010 symposium [www.lantmateriet.se/euref2010](http://www.lantmateriet.se/euref2010) from time to time will be completed.

#### **SPACOMM 2010**

*June 13-19, 2010 - Athens, Greece*

The Second International Conference on Advances in Satellite and Space Communications (SPACOMM 2010) will be held in Athens, Greece, June 13-19, 2010. All tracks are open to both research and industry contributions. For details please visit the webpage of the conference <http://www.iaria.org/conferences2010/SPACOMM10.html>.

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

#### **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

### **Final Report of IAG 2009**

*Geodesy for Planet Earth*

*Buenos Aires, Argentina, August 31 - September 4, 2009*

The Scientific Assembly of the International Associations of Geodesy (IAG) was held in Buenos Aires, Argentina, from August 31<sup>st</sup> 2009 to September 4<sup>th</sup> 2009. The 5 day conference attracted 364 delegates from 66 countries. The total budget involved was about US\$ 150 000 that comprised US\$ 117,000 in registrations and US\$ 33,000 in grants and sponsorships. Seven national and international exhibitors were also present. The Intercontinental Hotel was an ideal venue. In almost all aspects, feedback from delegates and members of the Executive Committee indicated that the conference was a great success.

The conference theme for the IAG Scientific Assembly IAG2009 was "Geodesy for Planet Earth", recalling the International Year for Planet Earth (2007 – 2009)

Informal meetings were held between the Local Organizing Committee and Hermann Drewes, secretary of the Assembly, by May 2008. The first LOC meeting was held immediately during the IUGG General Assembly, where Buenos Aires was chosen venue for this IAG 2009. The first decision was made to appoint IDEAR EVENTOS as Professional Conference Organizer. The first item decided was the composition of the LOC as well as the roles and responsibilities of their members. Besides, an invitation letter was sent to all the Argentinean scientists in connection with Geodesy aiming to cooperate with the LOC.

Local Committee: María Cristina Pacino, Alfredo Augusto Stahlschmidt, Eduardo Andrés Lauría, Claudia Noemí Tocho, Sergio Rubén Cimbaro.

Scientific Committee:

*Chair:* Steve Kenyon

*Members:* Zuheir Altamini, Michael Bevis, Sylvain Bonvalot, Dorota Brzezinska, Yoichi Fukuda, Richard Gross, Urs Marti, Ruth Neilan, Pavel Novak, María Cristina Pacino, Markus Rothacher, Harald Schuh, Charles Toth, Sandra Verhagen.

Assembly Secretary: Hermann Drewes.

A total of 512 Abstracts have been received. More than 90% of them were uploaded through the website. The LOC took care of those that were sent by e-mail and uploaded them to the website. In most of these cases, the authors didn't follow the format and some information was missing (keywords, preferred session, etc.).

Three different size flyers were prepared: A4, A3 and double A3. A total of 5000 flyers were distributed among institutions and colleagues. Some colleagues helped by displaying an important amount of flyers at International Events.

In addition, a permanent communication by e-mails was established to keep the potential participants informed about several aspects of the Assembly as well as to recall them important dates and deadlines.

More than 1,000,000 visitors accessed the website since its operation. The periods of marked increase in access are in coincidence with deadlines and mainly during the month before the Assembly. The statistical analysis demonstrated that the website was very well utilized, it is recommended that this type of electronic medium continue to be an integral part of any future conferences.

A total of 364 delegates attended the conference and 424 presentations were made. The bulk of attendees came from Argentina, United States, Germany, Brazil and China. The number of abstracts submitted overpass 500. However, about 70 of these submissions were subsequently withdrawn leading to a total of 424 presentations. The withdrawals continued right up to the conference itself resulting in additional work and cost overruns through:

- a) several rewritings of the scientific program,
- b) the overbooking of both rooms and A/V equipment.

For future conferences, it would be useful to charge a small fee for the submission of every abstract, which is standard procedure for many meetings. It would make delegates to think more carefully about whether they will actually attend the conference.

### Grants:

IAG, IUGG and IPGH provided funding for grants to 17 delegates. In addition, the LOC allowed 14 of these delegates to register at no cost. The LOC also allowed a no-cost registration to 4 representatives of sister associations.

Furthermore, twelve students were awarded by the LOC to fund their attendance to the conference in return for assisting with the operations on two days of the conference. The objects of these grants were to involve local students and Universities and to provide the students with contacts for Doctoral and Post-Doctoral opportunities. The awards were judged a great success.

More detailed version of the Final IAG 2009 Report is available from [IAG website](#).

M. CRISTINA PACINO  
EDUARDO A. LAURÍA

## ***The ILRS Technical Workshop 2009: SLR Tracking of GNSS Constellations***

*50 years of Satellite Geodesy & Geodynamics*

*Metsovo, Greece, September 14-19, 2009*



Prof. G. Veis during his lecture

The 2009 International Laser Ranging Service (ILRS) Technical Workshop addressed a very timely issue: the tracking of current and future Global Navigation Satellite Systems (GNSS) constellations with Satellite Laser Ranging (SLR). The idea behind this workshop was to bring together experts from the SLR and GNSS communities providing them with a forum to discuss all aspects of the theme, focusing primarily on the science benefits, while tackling also problems arising from the large number of GNSS clients and the finite resources available to ILRS. In the opening lecture of the workshop, Professor Emeritus of the National Technical University of Athens, George Veis, the person to whom the workshop was dedicated on the occasion of his 80<sup>th</sup> birthday and who is by most considered the father of satellite geodesy, offered an excellent historical review of space geodesy, from its inception to present, including all modern space techniques with many examples and some rare photographic records.

The workshop intended to survey the two communities on the likely gains in Global Geodetic Observing System (GGOS) science from SLR tracking of GNSS constellations. Amongst the objectives of the workshop were to present an

overview of the two techniques with emphasis on their synergism, a review of GNSS and SLR constellations and their networks, and the current state of the art. Additionally, presentations demonstrated how the two space geodetic techniques are applied in geodynamics, POD, positioning, gravity mapping, etc. One of the most central objectives was to examine approaches to help accomplish the goals set by GGOS, investigating the various options available (e.g. higher repetition rates, optimal normal point formulation, interleaving tracking of targets, better sampling of orbits, allocating targets to sub-networks, etc.). One of the goals of the workshop was to select the appropriate information for the optimization of the network design and deployment of the appropriate space segment to meet the GGOS requirements. A significant part of the deliberations was devoted to the fundamental differences between geodetic cannonball type targets (LAGEOS) and the complicated GNSS spacecraft. The material presented at the workshop indicated that applications specifically enabled through the synergism of the two techniques would likely benefit the most, however, additional studies taking into account the discussed mode of operations are required in order to define this qualitatively.

The meeting stressed that there is great synergism between the two techniques and that these synergies should be fully exploited to the benefit of the larger community, in particular the communities of space geodesy

and Earth science. What is now required is to understand the requirements of each of the GNSS constellations and then to optimize SLR and GNSS resources to maximize the benefit to all.

The combined list of benefits to both techniques, space geodesy, and to the broader community of users in general, can be summarized in the following:

- SLR tracking of the GNSS satellites allows to connect the ILRS/SLR and IGS/GNSS reference frames in space (using "space ties");
- Validation and calibration of the GNSS orbit quality, passing SLR tracking through GNSS-based orbits and by comparison of GNSS orbits to independently determined orbits from SLR tracking;
- Improvement of GNSS-based results by combining SLR and GNSS data at the observation level;
- Improvement in the determination of the SLR contribution to the terrestrial reference frame by including laser ranging to GNSS satellites along with that to lower satellites (e.g. LAGEOS);
- Improved scale contribution to International Terrestrial Reference Frame (ITRF) from improved GM estimates based on SLR tracking of GNSS satellites (and indirect improvement of lower orbits as well, e.g. for LAGEOS);
- Improving the orbits of LEO satellites with onboard sensors like radar and laser altimeters, sounders, SAR, InSAR, etc.

The presentations of the GNSS operators indicated that there is already a great effort on interoperability of these constellations for the benefit of society. It remains to be seen if these operators will rise to the occasion and we will see an equally enthusiastic harmonization of their relationship to the SLR community, signing up to the requirements and ensuring a uniform treatment for all GNSS constellations. This can only increase the benefits to all parties and keep the cost and effort of the SLR community as low as possible.

From the GNSS point of view, the most important requirements on SLR are:

- Continuous SLR tracking of all GNSS targets, or as network capacity permits, using optimized scenarios that ultimately rely on the combined use of the two techniques;
- GNSS operators should follow strictly the ILRS recommendations for laser reflector array (LRA) designs to meet network requirements for best data yield;
- The SLR community should document unambiguously and maintain a publicly accessible data base of all known system biases for the ILRS network, past and future, with clear documentation even for non-SLR users;
- Extensive and timely (even near real-time) support of GNSS constellations, especially during the initial deployment phase and their "in-orbit validation" phases for models, hardware, software, operations, etc.

From the ILRS point of view, important requirements are:

- All of the GNSS operators should adhere to the adopted ILRS standard for the laser reflector arrays (LRA), so that ILRS can assure uniform tracking capability throughout its network and at all times and conditions;
- An accurate calibration of all LRA designs prior to launch with a goal of a measurement of the vector to the center of gravity of the spacecraft to within a few millimeters (1-3 mm) and continuous monitoring of any changes while in orbit, due to fuel expenditure, attitude changes, etc. ;
- A precise description of the spacecraft attitude routine while in orbit and during periods of SLR tracking in particular;
- The ILRS must work with the separate GNSS constellation communities to develop a practical strategy to satisfy both the tracking requirements of the constellations and those for the development of the terrestrial reference frame;
- The ILRS should continue the simulation activity on GNSS satellites in order to quantify trade-offs among competing options

An overarching requirement is that the GNSS and SLR communities work together to facilitate communications so that planning can be done well in advance of any new GNSS deployments to exploit best the combination of techniques.



Participants at excursion to ancient Dodoni

The success of the workshop is the result of the hard work of those who assembled and presented the various position papers, as well as those who contributed with supporting presentations and discussions. This workshop is only a first attempt to bring closer two of the IAG Services, ILRS and IGS, and it is hoped that it will be followed by similar events which will result in even closer collaboration between the two in the realm of GGOS. Finally, the overall success of the event is the result of the hard work of the local organizing committee and the support that we received from our sponsors. The workshop adopted unanimously a resolution thanking each and everyone who contributed to the success of the workshop.

ERRICOS C. PAVLIS

## Obituary

### *Irene Fischer (1907 – 2009)*



Irene Kaminka Fischer, the grande dame of 20th century geodesy, died on October 22, 2009 at the age of 102. During her 25 years at the United States Army Map Service and its successor agencies, spanning the period 1952-1977, she established an unmatched scientific record. Her workplace recognized her accomplishments by naming her to its Hall of Fame and presenting her the Department of Defense Distinguished Civilian Service Award and the U. S. Army Meritorious Civilian Service Medal. Her peers elected her to the U. S. National Academy of Engineering and a Fellow of the American Geophysical Union. The University of Karlsruhe

granted her an honorary doctorate. An Earth spheroid employed operationally by NASA in the 1960's bore her name. After her retirement from U. S. government service she received the first Federal Retiree of the Year Award.

Fischer was born in 1907 in Vienna, Austria, and graduated with a degree in mathematics from the Vienna Institute of Technology. She and her husband, Eric, a noted geographer, settled in the U. S. in 1941. After raising their children to school age she joined the Army Map Service in 1952 as a mathematician in the Research and Analysis Branch of the Geodetic Division. Subsequently she attained the position of Chief of the Geoid Branch of that Division, which she held until her retirement. Her entry into geodetic science coincided with three remarkable breakthroughs in that field in the 1950's. First, the arrival of artificial satellites and space techniques enormously multiplied the quantity and scope of geodetic observations. She was fortunate to have John O'Keefe, one of the pioneers of the satellite era, as an initial mentor. Second, the introduction of electronic computers enabled that data to be handled much more expeditiously. The Army Map Service was the recipient of one of the first of these – the UNIVAC. Third, widened support for geodetic programs was recognized as

essential for national security, and enabled resources to flow to her agency. During Fischer's tenure, and due in large part to her contributions, the Army Map Service became acknowledged as one of the key centers of geodetic activities in the U. S.

Because Fischer outlived most of her contemporaries, her reputation today rests as an historical figure rather than as a direct influence on current research. Present-day geodesists are still concerned with refining the figure of the Earth and its gravitational field, but now primarily as functions of time. However, this would not be possible without the foundation that the previous generation built from the initial satellite data. That Fischer was among the most distinguished of this group is manifested by her more than 120 publications. Among the notable achievements that she participated in or was wholly responsible for were the revision of the International Ellipsoid in 1956, the refining of the NASA reference ellipsoid for satellite tracking, the transfer of astrogeodetic deflections of the vertical into geoid contours, the construction of the Department of Defense 1960 World Geodetic System, the creation of the South American 1969 Datum, the reconciliation of oceanographic with geodetic leveling, and the construction of oceanic calibration zones for satellite altimetry. A more complete summary of her work can be found in a centennial tribute to her appearing in *Survey Review*, July, 2007.

Apart from her research activities, she was an outstanding expositor. For example, she wrote articles for *The Mathematics Teacher* to explain basic geodetic concepts and results to students, and published a geometry textbook. Geodetic history was one of her favorite avocations (cf. "At the Dawn of Geodesy", *Bull. Géodésique*, June 1981). Her agency took advantage of her reputation and skills, both written and oral, for innumerable presentations to high ranking government authorities.

Fischer was an engaged member of the worldwide geodetic community and developed close friendships with leading geodesists in many countries, especially Guy Bomford and Erik Tengström. Starting with the Toronto IAG General Assembly in 1957, she and her husband became well-known participants at international geodetic gatherings. Almost immediately she joined, and eventually headed, several IAG Special Study Groups and at the 1963 Berkeley Assembly was elected a Section Secretary. Inevitably she would have attained at least a Section Presidency, but unfortunately her agency refused permission for her to attend the 1971 Assembly in Moscow, when she would have been considered for that office. However, her many friends were gratified to see her and Eric again at the 1975 Grenoble and 1979 Canberra meetings.

One of Fischer's most lasting legacies is her unconventional memoir "Geodesy? What's That? My Personal Involvement in the Age-old Quest for the Size and Shape of the Earth", a fascinating, detailed account of her 25 years as a research geodesist. It provides a unique window into this critical transition period for geodesy and many other sciences. She frankly describes her handicaps as a female in the male-oriented environment of the 1950's, and the bureaucratic obstructions she had to face. But she also gave "tribute to the many friendly souls at all levels who made my government service such an interesting and satisfying experience". Her organization lost an irreplaceable resource upon her retirement, but her continuing presence among us long afterward has served as a felicitous bridge from 20th to 21st century geodesy.

BERNARD CHOVITZ