



**July 2006**

Editor: Gyula Tóth

*IAG Communication and Outreach Branch*  
MTA-BME Research Group for Phys. Geod. and Geodyn.  
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)

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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:**

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

### *Minutes of the IAG Executive Committee meeting April 3, 2006, Vienna*

**Present:** Gerhard Beutler (GB), Michael Sideris (MS), Carl Christian Tscherning (CCT), Fernando Sansò (FS), Jozsef Adam (JA), Herman Drewes (HD), Ilias Tziavos (IT) (representing Chris Jekeli), Veronique Dehant (VD), Pascal Willis (PW) (representing C. Rizos), Jean-Pierre Barriot (JPB), Harald Schuh (HS), Markus Rothacher (MR), Ruth Neilan (RN), Charles Merry (CM)

**Agenda:**

1. Adoption of agenda
2. IUGG Perugia
3. Reports of commission presidents and representatives of services
4. GGOS status
5. Altimetry Service Status
6. Interface/MOU between commissions and services
7. Cassinis Committee work
8. Nomination Committee
9. Presentation of responses for all hosting central bureau and nomination of secretary general
10. Best Young Author Award
11. Sponsorship of meetings, workshop, symposia
12. Next meeting, Perugia 2007 or earlier
13. AOB

**Ad 1. Adoption of agenda**

The agenda was adopted.

**Ad 2. IUGG Perugia**

CCT presented a progress report for the preparation of IUGG2007 in Perugia:

The second circular is ready and will soon be sent out by mail and announced on the IAG webpage.

***Location of the events:***

CCT reported on the visit to Perugia in September 2005:

All the sessions will take place at the University, which is located (spread out) in the valley adjacent to the city. The poster sessions is planned to be located in the city up hill in the historical hallways of the town castle.

***Symposia:***

The preliminary program for the General Assembly was presented. It is planned that IAG leads the following joint joint symposia:

JGS001, "Ocean Circulation and contribution from new satellite missions"

JGS003, "Earthquake and volcano geodesy"

JGS004, "Oceanography and geodesy in the Polar regions"

In addition to the above mentioned joint symposia, GB is the convenor of the Union symposium US003 "Global Earth Observing Systems". Each commission is convening one symposium (length 1.5 days). The ICCT should appoint a coconvenor for each of the four symposia. As an order of magnitude, one session (1.5 hours) should be "reserved for" theory aspects. It is not planned, however, that the theory-related topics are assigned to one session. They should be better integrated into the symposia.

In addition to the four commission symposia (named after the commissions as "reference frames", "gravity field", "Earth rotation and geodynamics", "positioning and applications") there will be a one day symposium on GGOS, convened by Markus Rothacher. The GGOS symposium should, if possible, not overlap with the other G-symposia.

It was suggested that there should be a closure or summary of the IAG-related topics presented at the General Assembly. Unfortunately the programme was fixed in September 2005, and therefore difficult to change.

***Inter Commission Committee on Theory:***

Peiliang Xu has suggested the Theory should have an exclusive session. It is, however, IAG policy that theory should be considered as a part of the 4 commission symposia. Therefore, the procedure, as outlined above, should be followed.

***Convenors and coordinators:***

The Commission Presidents are the lead convenors and the ones to establish the program – together with the co-convenors appointed by ICCT.. Should a president not wish to be a convenor, he or she is free to appoint a deputy.

MS accepted to be the principal coordinator of the IAG symposia.

***Registration and grants:***

In the IAG registration fees are included USD 60 for the proceedings. It became clear at the Scientific Assembly in Cairns that participants do not register as IAG participants to save money. The IUGG annual allocation is depending on as the number of officially registered IAG participants. It was therefore decided to announce in the IAG Newsletter the importance to register as IAG participants. Partly because of the IUGG support, partly because they will NOT receive IAG proceedings if they should not register as such.

CCT has not yet calculated how much IAG can set aside for grants. Each convenor is asked to draft a priority list of the applicants. CCT will schedule a final list according to those lists. Invited speakers usually are assumed not to receive travel grants. It is IAG policy to spend those to young scientists and colleagues from developing countries.

***Social events:***

The opening followed by the IAG reception is for the time being planned to be on Tuesday of the first week.

**Ad 3. Reports of Commission Presidents and representatives of Services.**

***Commissions:***

Herman Drewes for Commission 1., Ilias Tziavos for Commission 2, Veronique Dehant for Commission 3, Pascal Willis for Commission 4: Please see reports on <http://www.gfy.ku.dk/~iag/ec06.htm>

***Services:***

**BGI** presented by JPB:

There is a lot of pressure on BGI due to funding problems and due to the decision of the French government to reduce the GBI staff, which is a paradox, because the interest in BGI work is not reduced – on the contrary.

**IERS and IGFS presented by MR:**

IERS: The IERS is performing very well. The project to combine the technique-specific results on the observation level is "on track".

IGFS: The service has arranged a conference in Istanbul, Turkey this August on which there will be presented a lot of topics concerning GGOS. MR said that as many geodesists as possible should attend the symposium.

**IVS and ILRS presented by HS:**

The ILRS received a lot of attention recently, partly because of many new missions equipped with laser reflectors (all GALILEO satellites shall be equipped with laser reflectors), partly because of the proven capability of ILRS to validate GNSS orbits, partly because new SLR sites were created in the Asian region. Another topic of interest is the construction of next generation laser systems. The IVS

has invested much into the planning of the next generation VLBI systems. The document “VLBI 2010” will serve as a guideline for the development of the IVS and of the next generation of VLBI telescopes.

**IGS, DORIS, PSMSL, AFREF and FAGS presented by RN:**

IGS has just appointed a new board. The IGS will prepare a new strategy paper for the service in 2006/07 for the period 2007-2012.

AFREF: NASA is withdrawing some funding they have promised to the project. ICSU is still very interested in the project. The next major event is the AFREF technical workshop in Cape Town (July 9-13, 2006).

FAGS: ICSU has a plan on how committees/services formerly represented in FAGS should be structured. RN is recommending that those who are involved in committees and services read and comment on the ICSU plan.

**Project on Developing Countries presented by CM: Promoting IAG:**

CM and Luiz Fortes have made a major effort in collecting e-mail addresses from Africa and South-America. They have had considerable success concerning Central America. All the addresses have been passed on to the COB.

It is important that more people from developing countries become involved in the IAG work. CM encouraged the commission presidents to keep this in mind when they meet qualified people and to encourage them to become involved in IAG:

**Conferences:**

SIRGAS has planned a conference in Panama this July.

Also this July a conference in South Africa has been arranged. It is most important that many people attend.

**Ad 4. GGOS status**

MR presented the status on GGOS – please see <http://www.gfy.ku.dk/~iag/ec06.htm> .

MR distributed the Terms of Reference for GGOS. The size of the proposed GGOS Steering Committee (around 30) was discussed extensively.

One concern was that the group is too big to do useful work. MR argued that it is a key element that all the essential groups (apart from the commissions the services, the representatives in GEO and IGOS) are represented in the steering committee. It is easier to encourage people to be active at an early point than later on. Also, the role of the science will receive more visibility thanks to the 8 members in the panel.

The main concern was that the GGOS Terms of Reference are not in agreement with the IAG Bylaws. GB suggested that ICCT has an official representative in the Science Panel. MR will contact ICCT and ask for a representative.

The EC voted on the following issue:

The EC accepted the Terms of Reference until IUGG2007 in Perugia, where the document can be discussed within the NC. GB informs the Cassinis Committee that IAG does not completely follow the By-laws in this matter. The outcome of the vote was:

For: 9

Against: 1

Abstentions: 2

**Ad 5. Altimetry Service status**

A report was presented by HD.

HD had hoped that it would be possible to present the Terms of Reference to the EC at this meeting for approval but the IAS steering Committee had not been able to agree on such a document. It was possible for the IAS SC to agree on the first part of the structure plan, but not on the part involving the Governing Board and Advisory Board. MS argued that the IAS should now be set up as soon as possible with a much leaner structure. There should initially be no governing board and no requests for funding. The service should work under the auspices of IAG and IAPSO.

It was unanimously decided to follow this advise and to begin with the simple structure plan.

**Ad 6. Interface/MoU between commissions and services**

An interface document between commissions and services was drafted by GB in 2003. HS had been asked to revise this original document. The revised document was distributed to the EC prior to the meeting and briefly presented by HS. Few minor changes were discussed and approved. It was decided that HS should finalize the document with the additions discussed at the meeting and mail it to the Bureau for final approval.

#### **Ad 7. Cassinis Committee work**

Klaus-Peter Schwartz was not able to attend the EC meeting. Should there be suggestions to changes to the statutes and by-laws the EC will be informed. CCT suggested that minor changes should be settled by e-mail vote.

#### **Ad 8. Nomination committee**

FS informed the EC of the status of the work of the committee.

All the members of IAG have received a letter from the committee with a short summary of the nomination procedure.

Service representatives are not nominated by IAG members but by the service.

The Time table for nomination and election:

- June 2006: Deadline for nomination.
- July 2006: Reminder to members of voting coming up.
- October 2006: The council members receive a list of the nominated to which they can make other proposals.
- January 2007: Final list will be mailed to the council.
- End February 2007: The procedure should be finished.
- End March 2007: A final list of elected will be announced.

Should a person be nominated for two positions within IAG, the nomination committee will approach the person and ask him/her for the preference.

#### **Ad 9. Presentation of responses for all for hosting Central Bureau and nomination of Secretary General**

CCT emphasized that it is most important that the Nomination Committee makes sure that those nominated for the position as Secretary General have sufficient support from the hosting institute when it comes to secretarial help.

So far there are two nominations:

Germany has nominated HD

France has nominated PW

Both nominees were present as EC members and asked to give a presentation on their intention to assume the job as SG of IAG. After their presentation the candidates left the room and the EC discussed the presentations. Both nominations were regarded as very satisfactory. When a formal nomination from the hosting institutes is received, the Nominating committee will ask the institutes to confirm the promised level of resources. Deadline for nomination is September 15, 2006.

#### **Ad 10. Best Young Author Award**

The editor in chief of JOG, Will Featherstone, has the obligation to nominate candidates. For the year 2006 Will Featherstone has only nominated one candidate.

CCT has informed the EC about the nomination 2 weeks prior to the EC meeting. The situation for 2006 is, that either the EC accepts the nominated or there will not be a Young Author Award in 2006.

The EC voted to accept the candidate.

It was also recommended that in future the editor in chief is requested to nominate at least two candidates. If only one candidate is nominated the award should not be presented.

### **Ad 11. Sponsorship of meetings, workshops, symposia**

The World Climate Research Program has arranged a workshop on Sea-level Rise and Variability, for which IAG was asked to act as a co-sponsor.

CCT argued that the workshop was a closed meeting (on invitation only) and that IAG usually does not sponsor such events.

RN, as a member of the Organizing Committee, informed the EC about the intension of the meeting. Ruth argued that geodesy will receive a lot of visibility thanks to this meeting and that the geodesy lecturers (among them (in addition to RN) Geoff Blewitt, Markus Rothacher) were excellent.

The EC voted on the IAG sponsorship for this meeting: For: 7. Against: 5, Abstention: 2

### **Ad 12. Next meeting, Perugia 2007 or ealier**

CCT proposed to have the next EC meeting at Perugia. Should it be necessary to organize a meeting prior to this event, Monday, April 16, 2007 (attached to the next EGU meeting) was reserved as the meeting date.

### **Ad 13. AOB**

Irene Fischer, who has been very active in defining the satellite global reference system, has just reached the age of 99. CCT suggested that a session or a lecture in Perugia under commission 1 is dedicated to her. Her memoirs have been published and a review is printed in the Newsletter.

JA gave a brief report from the COB:

It is necessary to print new IAG brochures.

The brochure made for the broader public was presented at the meeting. It is planned to be finalized by October 2006. It was argued that IAG should have a new logo, because it is the same as IUGG.

GB closed the meeting by thanking Harald Schuh and his group for their kind hospitality and for setting up the venue for the EC meeting 2006.

CHRISTIAN TSCHERNING,  
Copenhagen  
June 6, 2006

## ***Assistant/Associate Professor in Geodetic Earth Observation***

The *Department of Geomatics Engineering*, in the Schulich School of Engineering at the University of Calgary, invites applications for the position of Assistant or Associate Professor (tenure track) in Geodetic Earth Observation, effective January 1, 2007. Applicants at the Assistant Professor level should have some post-doctoral, industrial, or equivalent experience to be considered. A PhD in science or engineering is required.

Demonstrated expertise in Earth systems monitoring by geodetic techniques is required. Research expertise in one or more of the following areas is desirable: satellite geodesy, satellite altimetry, space borne gravimetry and gradiometry, geodynamics, potential field modeling, geodetic applications of InSAR, and orbit determination methods. Experience with research and applications of dedicated gravity satellite missions, satellite altimetry missions and SAR missions will be an asset. The position is expected to interface with all related disciplines of geomatics engineering and will conduct both teaching and research in geodesy and related areas. The applicant is expected to develop a strong research program and should be capable of attracting external funding for these research activities and graduate student support. The selected candidate must also have the capability and the flexibility to teach undergraduate fundamental engineering courses and is expected to register as a Professional Engineer or Geoscientist in the Province of Alberta.

The Department of Geomatics Engineering is actively involved in all aspects of geomatics engineering and comprises 20 faculty members, some 90 graduate students and 50 students in each year of the undergraduate program. State-of-the-art geomatics engineering equipment and computer facilities are available. Related information can be found at <http://www.geomatics.ucalgary.ca/>

The University of Calgary is a co-educational, non-denominational, government supported institution with a student population of about 27,000. The City of Calgary itself has a population of over one million and is situated within an hour's drive of Banff National Park, one of the most beautiful parts of the Rocky Mountains.

Applications should include a detailed curriculum vitae and a complete list of publications. Three letters of reference should be mailed directly to:

Head, Department of Geomatics Engineering, Schulich School of Engineering  
University of Calgary  
2500 University Drive NW, Calgary, Alberta T2N 1N4, Canada  
E-mail: [minch@ucalgary.ca](mailto:minch@ucalgary.ca)

Closing date: **September 15, 2006**

*All qualified candidates are encouraged to apply; however, Canadian citizens and permanent residents will be given priority.*

*The University of Calgary respects, appreciates and encourages diversity.*

To see all University of Calgary academic positions, please visit [www.ucalgary.ca/hr/career](http://www.ucalgary.ca/hr/career)

### **Call for Proposal – Nominations open for IAG Secretary General**

The present Secretary General, C.C. Tscherning, has served for 3 periods, and cannot be re-elected. The election of a new Secretary General (SG) will take place in the spring of 2007 together with the election of other officers for the 2007-2011 period.

The commitment associated with this position is heavier than that associated with any of the other IAG executive positions. The IAG executive committee has therefore decided to separate the election of the new Secretary General from the other nominations and elections, because the election is based on a call for proposals, which have to be evaluated by the IAG Executive.

The duties of the SG are described in the by-laws, section 2.5.3, as quoted below. Since the SG will also be the director of the Central Bureau, a nomination automatically implies a commitment to host the Bureau, as well.

According to the by-laws, the SG receives no salary, but the expenses of the SG may be covered by the allocation received from IUGG. However, the funds needed for these expenses have normally exceeded the IUGG allocation, so the organization hosting the SG and thereby the Central Bureau contributes to the travel expenses of the SG and the running of the Central Bureau.

The nominated SG should be prepared to spend at least 1 full day per week on IAG matters, and the Central Bureau hosting organization should provide secretarial assistance equivalent to 2 full days per week. A nomination should therefore include information about the degree to which the hosting organization is prepared to cover, in whole or in part, the expenses of the SG and of the Central Bureau.

The proposal should be submitted to the president of the Nominating Committee, Prof. F. Sansò in electronic form. Proposals may be submitted by the adhering bodies of the member countries, officers, fellows, and members of the Association. Candidates shall be asked to signify their acceptance of nomination and to prepare a resume (maximum 150 words) outlining their position, research interests and activities relating to the Association. The proposal should also state the preparedness to host the Central Bureau, and the financial and secretarial support which may be allocated.

Proposals should be submitted before September, 15, 2006.

Extract from By-Laws:

#### **2.5.3 The SECRETARY GENERAL, shall have the following duties:**

- a) Serve as secretary of the General Assembly, the Council, the Executive Committee and the Bureau; arrange for meetings of these bodies, distribute promptly the agenda and prepare and distribute the minutes of all their meetings.
- b) Director of the Central Bureau.
- c) Manage the affairs of the Association, attend to correspondence, and preserve the records.
- d) Circulate all appropriate information related to the Association.
- e) Prepare the reports of the Association's activities.
- f) Perform such other duties as may be assigned to him by the Bureau.

Address of Prof. Sansò:  
Prof. Fernando Sansò  
Politecnico di Milano - Polo Regionale di Como  
via Valleggio, 11 I-22100 Como  
Tel. +39.031.332.7518  
Fax +39.031.332.7519, e-mail: [fernando.sanso@polimi.it](mailto:fernando.sanso@polimi.it)

## Meeting Announcements

### ***International workshop on quality improvement and coast-land applications of satellite altimetry***

*An IAG Special Group 2.3 workshop on satellite altimetry  
July 21-22, 2006, Beijing, China.*

Organized by Chinese Academy of Surveying and Mapping, National Chiao Tung University, and Ohio State University.

Web site with meeting information: <http://space.cv.nctu.edu.tw/altimetryworkshop/ALT2006.htm>.

This workshop is dedicated to the problems and solutions of coast and land applications of satellite altimetry in such areas as coastal gravity field modeling, coastal circulations, river level and lake level monitoring and desert study using satellite altimetry. This workshop is part of the activities of Special Group 2.3, International Association of Geodesy. The scientific committee and local organizing committee welcome world scientists interested in these topics to participate in this workshop. The participants of this workshop are also encouraged to attend the Western Pacific Geophysical Meeting, July 24-27, 2006, Beijing (<http://www.agu.org/meetings/wp06>) to extend the discussions in a related session. Themes of the workshop are:

- methods for improving quality of coastal altimetry data
- waveform retracking for altimetry
- shallow-water tides from altimetry
- coastal gravity field modeling with altimetry
- vertical datum connection using altimetry
- land applications of altimetry
- altimetry applications and problems in polar seas
- lake level and river level changes from altimetry
- coastal circulations from altimetry
- Applications of altimetry to desert study

Submit your abstract to Xiaotao Chang at [changtao@public.bta.net.cn](mailto:changtao@public.bta.net.cn) and Cheinway Hwang at [hwang@geodesy.cv.nctu.edu.tw](mailto:hwang@geodesy.cv.nctu.edu.tw) in the word format. The deadline is *April 30, 2006*.

Chairman of the Scientific Committee:  
C. HWANG  
National Chiao Tung University

### ***First Announcement - 3rd International GOCE User Workshop***

*November 6-8, 2006, ESA-ESRIN, Frascati, Italy.*

The European Space Agency's Gravity field and steady-state Ocean Circulation Explorer (GOCE) Mission is planned for launch in 2007. This, the first of ESA's Core Earth Explorer satellite missions, and promises amongst others scientific applications in Geodesy, Solid-Earth Physics and Oceanography.

This is a preliminary announcement of the ESA's intent to hold the third in a series of International GOCE User Workshops from 6-8 November, 2006 at ESA-ESRIN, in Frascati, near Rome, Italy. This pre-launch workshop is timed to take place prior to the closure of the forthcoming GOCE Data Announcement of Opportunity (see: <http://eopi.esa.int>). It is intended to provide potential users of

GOCE data products with the opportunity to obtain the latest information on satellite performance as well as details regarding ground segment operations, data products and user services. It will allow users the opportunity to learn about product specifications, and the plans for data calibration and validation. This Workshop will also offer the opportunity for users to present their planned scientific studies, prior to consolidating their GOCE Data AO proposals.

Conference proceedings are anticipated to be published as an ESA Special Publication by the ESA Publications Division, and so full scientific papers are encouraged in addition to the Workshop presentation material. The official language of the workshop is English.

#### *Preliminary Calendar of Key Dates*

- |  |                    |
|--|--------------------|
| • First Announcement                                 | March 2006         |
| • Second Call & Web Announcement                     | May 2006           |
| • Deadline for Abstract Submission                   | July 7 2006        |
| • Notification of Acceptance and Preliminary Program | September 2006     |
| • Presentation Material for Proceedings              | Mid October 2006   |
| • GOCE User Workshop                                 | November 6-8, 2006 |
| • Deadline: Paper Submission for Proceedings         | End November 2006  |

Further information on Workshop objectives and themes, as well as details for abstract and paper/poster submission, are available on the Workshop web site:

<http://earth.esa.int/goce06>

We look forward to welcoming you at the Workshop. Please do not hesitate to forward this announcement to colleague you believe may be interested.

The 3rd International GOCE User Workshop 2006 - Organising Committee

M. R. DRINKWATER  
J. BENVENISTE  
R. FLOBERGHAGEN  
R. HAAGMANS  
M. KERN

### ***Symposium on Terrestrial Gravimetry: Static and Mobile Measurements***

*St. Petersburg, Russia, 20 - 22 August 2007.*

The meeting is being organized by Leonid Vitushkin, Chair of the Study Group 2.1 (Comparison of Absolute Gravimeters) of Commission 2. The symposium is officially sponsored by the IAG, co-sponsored by the Institute of Earth Physics of the Russian Academy of Sciences, Moscow; and the BIPM.

The topics of the conference will include the design and investigations of the measuring instruments for the absolute and relative measurement of the gravity field, their applications for terrestrial, shipboard and airborne platforms, and in the metrology of gravimetry. Traditional free-fall, superconducting, and spring-type gravimeters, gradiometers, and new technologies, such as based on atom interferometry, will be especially welcome, as will results and methodologies of static and mobile campaigns, as well as current and future networks. Geophysical interpretation of results and connection with space-borne systems are of limited interest, since the emphasis is on terrestrial (including airborne) instrumentation and methods to extract gravity field measurements for a variety of applications.

More details about the symposium will soon be available on the website of the meeting. Contact person of the Local Organising Committee is Mrs. Margarita Grishina ([mgrishina@eprib.ru](mailto:mgrishina@eprib.ru)).

CHRISTOPHER JEKELI AND  
LEONID VITUSHKIN

## **IGAG Sponsored Meetings**

### **International workshop on quality improvement and coast-land applications of satellite altimetry**

*21-22 July 2006, Beijing, China*

An IAG Special Group 2.3 workshop on satellite altimetry will be held from 21-22 July 2006, Beijing, China. This workshop is dedicated to the problems and solutions of coast and land applications of satellite altimetry in such areas as coastal gravity field modeling, coastal circulations, river level and lake level monitoring and desert study using satellite altimetry. The webpage of the workshop can be reached at the following URL: <http://space.cv.nctu.edu.tw/altimetryworkshop/ALT2006.htm>.

### **“Gravity Field of the Earth” – 1<sup>st</sup> International Symposium of the IGFS**

*28 August - 1 September 2006, Istanbul, Turkey*

The 1st symposium of IGFS as being a continuation of the symposia series of the former International Gravity and Geoid Commission will be held in Istanbul, Turkey. The major objective is to bring together the geoscientists working in general areas of modeling the Earth's gravity field. For more information visit the website: [www.igfs2006.org](http://www.igfs2006.org).

### **XIII Assembly of the Wegener project**

*4-7 September 2006, Nice, France*

The 13th Assembly of WEGENER will provide a forum for discussion, coordination and scientific support for geoscientists interested in unravelling the kinematics and mechanisms of the broad Eurasian/African/Arabian collision zone. Details of the meeting are available: <http://wegener.unice.fr/>.

### **Geodetic Reference Frames GRF2006**

*9-13 October 2006, Munich, Germany*

The Commission 1 „Reference Frames“ of the International Association of Geodesy (IAG) invites scientists and experts from all countries to participate in the Symposium “Geodetic Reference Frames”. The topics of the Symposium include the advanced development and combination of geodetic observation techniques, analysis and processing methods for parameter estimation related to reference frames, definition and integration of regional reference frames, consistent determination of terrestrial and celestial reference frames and Earth orientation parameters. Detailed information is available at the symposium website: <http://iag.dgfi.badw.de/?grf2006>.

### **International Symposium “Modern Technologies, Education and Professional Practice in Geodesy and Related Fields**

*9-10 November 2006, Sofia, Bulgaria*

The symposium (with a special session for young specialists and students) will be held at the House of Science and Techniques, 108 Rakovski Str., Sofia, 09-10 November 2006, from 9 a.m. to 6 p.m. For up-to-date information please, visit the symposium website at: <http://www.gis-sofia.bg/sgzb/>.

### **Symposium on Terrestrial Gravimetry: Static and Mobile Measurements**

*20 - 22 August 2007, St. Petersburg, Russia.*

The topics of the conference will include the design and investigations of the measuring instruments for the absolute and relative measurement of the gravity field, their applications for terrestrial, shipboard and airborne platforms, and in the metrology of gravimetry. Traditional free-fall, superconducting, and spring-type gravimeters, gradiometers, and new technologies, such as based on atom interferometry, will be especially welcome, as will results and methodologies of static and mobile campaigns, as well as current and future networks. More details about the symposium will soon be available on the website of the meeting.

## **IGAG Related Meetings**

### **Asia Oceania Geosciences Society's 3rd Annual Meeting (AOGS 2006)**

*July 10-14, 2006, Singapore, Malaysia*

The AOGS mission is to promote geophysical science for the benefit of humanity in Asia and Oceania. Hence, AOGS 2006 will once again bring together geoscientists from all over Asia, Oceania and the rest of the world to present their works and ideas. AOGS invites all geoscientists to convene their own sessions and present their findings at AOGS 2006 in Singapore. For further details, visit <http://www.asiaoceania-conference.org/>.

### **3<sup>rd</sup> International conference on Cybernetics and Information Technologies, Systems and Applications**

*July 20-23, 2006, Orlando, Florida*

CITSA '06 is an International Multi-Conference being organized with the purpose of providing researchers, practitioners, developers, consultants, and end-users of computerized, communications and/or control systems and technologies, as well as their industrial and social applications in the private and the public sectors, an opportunity to join in a common place sharing experience and knowledge. For details, please visit the conference website <http://www.info-cybernetics.org/citsa2006/>.

### **IAU Joint Discussion 16 at the XXVIth IAU General Assembly**

*August 22-23, 2006, Prague, Czech Republic*

IAU Joint Discussion 16 entitled "Nomenclature, Precession and New Models in Fundamental Astronomy. Applications and scientific contribution to astronomy" will be held during the XXVIth IAU General Assembly, on 22 and 23 August 2006, in Prague. Please see the IAU GA scientific program at: <http://www.astronomy2006.com/scientific-program.php> and the JD16 web page at <http://syrtel.obspm.fr/iauJD16/>.

### **ION GNSS 2006**

*September 26-29, 2006, Fort Worth, Texas*

The Institute of Navigation (ION), hosts the ION GNSS 2006 technical meeting in September. For details, please visit <http://www.ion.org/meetings/#gnss>.

### **Geodetic Week 2006**

*10-12 October 2006, Munich, Germany*

The Geodetic Week is a forum for university and research institutes working in the fields of geodesy, surveying and neighbouring disciplines. Its goal is to foster information exchange between scientists and users with respect to the major topics listed below. Young scientists are particularly invited to give appropriate contributions. Further information and registration forms are available: <http://ifem.bauw.unibw-muenchen.de/gw06/>.

### **3<sup>rd</sup> International GOCE User Workshop**

*November 6-8, 2006, ESA-ESRIN, Frascati, Italy.*

ESA's intent is to hold the third in a series of International GOCE User Workshops from 6-8 November, 2006 at ESA-ESRIN, in Frascati, near Rome, Italy. Further information on Workshop objectives and themes, as well as details for abstract and paper/poster submission, are available on the Workshop web site: <http://earth.esa.int/goce06>.

### **International Symposium on Advances in Geographic Information Systems – ACM-GIS 2006**

*November 10-11, 2006 Arlington, Virginia, USA*

The 2006 International Symposium of ACM GIS will be the fourteenth of a series of symposia/workshops that began in 1993 with the aim of bringing together researchers, developers, users, and practitioners carrying out research and development in novel systems in which geospatial data and knowledge is central. Please visit the website <http://www.itc.nl/acmgis06> for details.

### **125<sup>th</sup> Anniversary of Seismology in Hungary**

*November 13-14, 2006 Budapest, Hungary*

The Permanent Seismological Commission was organised according to resolution of the Hungarian Geological Society of 9 November 1881. In the activity of the Commission took part the most prominent geologists, geographers and geophysicists of the country. Among them Radó Kövesligethy who made a lot to develop the theoretical backgrounds of seismology, organised the national network of earthquake observatories and was one of the founders of international collaboration in seismology.

To commemorate this anniversary of seismology in Hungary the Hungarian Academy of Sciences organises 13-14 November 2006 a meeting in the main building of the Hungarian Academy of Sciences (Budapest, Roosevelt square 9).

For more information contact please Péter Varga ([varga@seismology.hu](mailto:varga@seismology.hu))

## **IGAG Sister Societies' General Assemblies**

### **IAU XXVIth General Assembly**

*August 14-25, 2006, Prague, Czech Republic*

The XXVIth General Assembly of the International Astronomical Union (IAU) will be held in Prague, Czech Republic, in a city with a rich astronomical history going back to the middle of XIVth century, when the oldest central European university was established there. The webpage of the Assembly is <http://www.astronomy2006.com>.

### **FIG 2006**

*October 8-12, 2006, Munich, Germany*

The Organising Committee has the pleasure of cordially inviting you to Munich to attend the XXIII International FIG World Congress from 8 to 13 October 2006. This event will take place concurrently with the INTERGEO 2006, the largest international congress and fair for geodesy, geo-information and land management. For details, please visit <http://www.fig2006.de>.

### **XIIIth ISM Congress**

*September 24-28, 2007, Budapest, Hungary*

The XIIIth Congress of International Society for Mine Surveying (ISM) will be held at Budapest University of Technology and Economics, Budapest, Hungary. The preliminary program is available from the ISM website: <http://www.ism.rwth-aachen.de>.

## **Meeting Reports**

### ***3rd IAG Symposium on Geodesy for Geotechnical and Structural Engineering and 12th FIG Symposium on Deformation Measurements***

*Baden, Austria, May 22 – 24, 2006*

The 3rd IAG symposium on “Geodesy for Geotechnical and Structural Engineering“ was held jointly with the 12th FIG symposium on “Deformation Measurements” in Baden, Austria, from May 22-24, 2006. It was organized by the Research Group Engineering Geodesy of the Institute of Geodesy and Geophysics of the Vienna University of Technology (Prof. Heribert Kahmen) together with Prof. Adam Chrzanowski from the Department of Geodesy and Geomatics Engineering of the University of New Brunswick, Fredericton, Canada. The meeting was co-sponsored by the IAG Sub-Commission 4.2 and the FIG Working Group 6.1. The conference was attended by 140 participants from 35 countries from all over the world. About 121 papers were presented in 23 technical sessions and one poster session. Main topics of the conference were sensors and sensor fusion, wireless sensor networks, geodesy on large construction sites, geodesy in the open pit, oil and gas industry, landslides and crustal movements, monitoring of structures (dams, tunnels, etc.), modelling of deformations, navigation and mobile mapping as well as InSAR. After welcome addresses from Prof. Kahmen, Prof. Chrzanowski, Prof. Brunner (representing the Austrian Geodetic Commission) and a representative of the city of Baden in the opening ceremony, the keynote speech was given by Prof. Chris Rizos, President of IAG Commission 4, from the University of New South Wales, Sydney, Australia. It was entitled “From Idea to Reality: The Case Study of a New Deformation Monitoring Technology”. A second presentation in the opening ceremony was given by Joël van Cranenbroeck from Leica Geosystems entitled “Driving Burj Dubai Core Walls with an advanced Data Fusion System”. The subsequent technical sessions were run in two parallel streams. On the first day one session on “Large Construction Sites” and “Landslides / Crustal Movements” as well as two sessions each on “GPS / Pseudolites” and “Open Pit / Gas / Oil” were held. On the second day eight sessions were held, i.e.,

one on “Instrumentation and Analysis of Deformations”, two on “Monitoring of Structures” and “Laserscanning” as well as three sessions on “Modelling of Deformations”. The third day saw a session on “Monitoring of Dams”, “Monitoring of Tunnels”, “Monitoring of Bridges”, “Optical 3D Systems”, “Navigation of Construction Processes”, “Navigation / Mobile Mapping” as well as two sessions on “InSAR”, followed by the closing ceremony. On the first two days of the conference four companies (i.e., Leica and Rost, Trimble and Geodäsie Austria, 3D Laser Mapping and Walter de Gruyter) participated in the technical exhibition. On the third day a poster session with 17 presentations was held parallel to the technical sessions. The social events included a Ice Breaker Party on the first day of the conference and a typical dinner at a Wine Tavern (“Heuriger”) on the second day.

The conference proceedings was published on CD Rom. It can be ordered at a cost of Euro 40 (+ Euro 15 for postage and packing for delivery in Europe) by sending an email to [conf@pop.tuwien.ac.at](mailto:conf@pop.tuwien.ac.at). Further information can also be found on the website of the conference at <http://info.tuwien.ac.at/ingeo/sc4/baden/>. Due to the success of the conference it was decided to continue to organise the next joint IAG-FIG conference in two years.

GÜNTHER RETSCHER, VIENNA  
Chairman of the Organising CommitteeBook Review

### ***Report from the International Geoid Service (IGeS) School for the Determination and Use of the Geoid, Copenhagen, June 2006.***

The school was hosted by the Niels Bohr Institute at the University of Copenhagen and run from June 19 – 23, 2006. The teachers were Prof. Fernando Sansò (Politecnico di Milano), Dr. Ole Andersen (Danish National Space Center), Prof. C.C.Tscherning, (University of Copenhagen), Prof. M.Sideris (University of Calgary), Dr. N. Pavlis, SGT, Inc, Greenbelt, and Stategeodesist R.Forsberg (Danish National Space Center). The school received support from IAG in the form of 4 travel grants.

The lectures covered both theory and computational aspects of global and regional gravity field models. As a new addition to the lectures, N.Pavlis included a description of a new (preliminary) spherical harmonic model to degree 2160. Software which could be used to evaluate such a model, as well as software related to the different methods presented during the lectures were distributed free of charge to the participants.

There were 24 participants from 15 countries. The program and some of the presentations are available at <http://www.gfy.ku.dk/~geoid06>

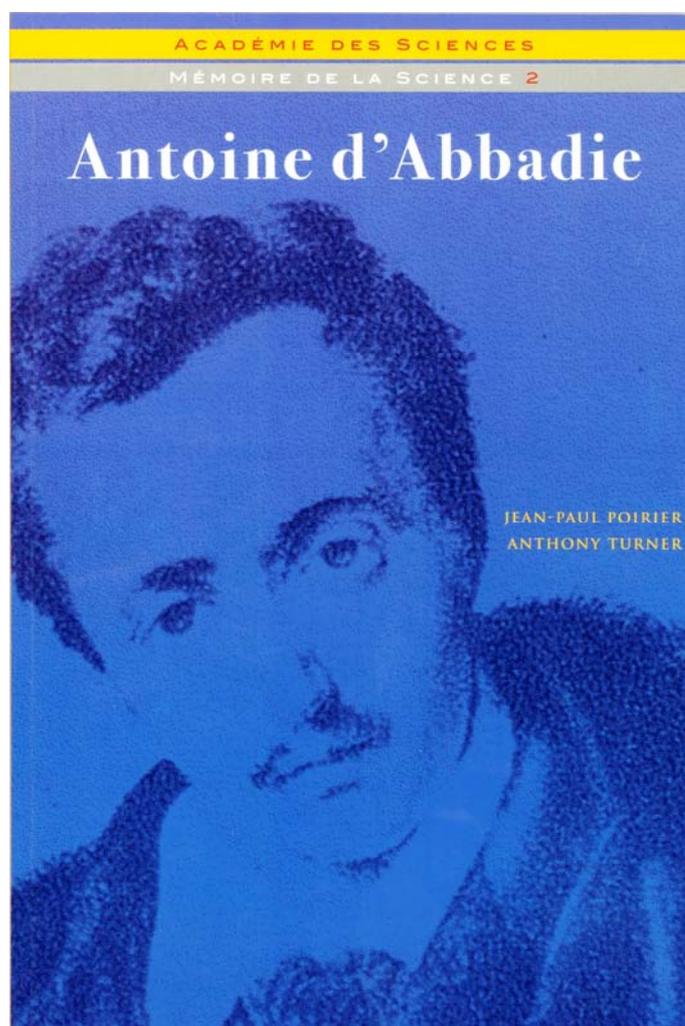
C.C.TSCHERNING  
Chairman LOC.



Attached: Photo of (nearly all) the participants and members of the LOC.  
From left to right: R.Teixeira Luz (Brasil), Tarek Laghzil (Maroc), Ramon Garcia (Mexico), Christina Schneider (LOC, Denmark), Anwar Radwan (Egypt), Eulalia Pares (Spain), Lars Prange (Switzerland), Mohammed El Fadili (Maroc), Louise Sandberg (Denmark), C.C.Tscherning (Denmark), Ana Flör (Portugal), Jose Rosales (Spain), Toke Andersson (Denmark), Lisa Petrusini (Italy), Alberto Molteni (Italy), Henning Föh (Denmark), Constantin Andrei (Romania), Ernest Bosch (Spain), Dagny Lysaker (Norway), Huseyin Onur Yilmaz (Turkey), Daniel Prouty (USA)

## Book Reviews

### *Jean-Paul Poirier and Anthony Turner: Antoine d'Abbadie*



title: Antoine d'Abbadie  
authors: Jean-Paul Poirier, and Anthony Turner  
publisher: Académie des sciences, Collection Mémoire de la Science (in French)  
ISBN: 2-9093440-0090-06  
year: 2002  
price: 12 euros  
pages: 127  
size: 16 x 24 cm  
details: hard cover

This book (in French) is the second book in a series called *Mémoire de la Science* created by the French Academy of Sciences to provide a better outreach on historical contributions of the Academy.

Antoine Thompson d'Abbadie (1810-1897), of Irish origin, emigrated in France and is mostly known for his scientific expeditions in Abyssinia (Ethiopia) with his brother Arnaud Michel. As a “gentleman scientist”, his interests were very broad: explorer, astronomer, geodesist, surveyor, ethnologist (he spoke a dozen of languages and wrote the first dictionary in Amharic), and fervent Catholic.

He built new instruments to observe variations of the vertical (*nadirane*) as well as new types of theodolites and developed improved field surveying techniques. He published a large number of

manuscripts for the French Academy of Sciences and the French Geographic Society. He was elected President of the French Academy of Sciences in 1867, to which he donated his domain of Abbazia (close to Hendaye, in Basque country) as well as his observatory and instruments. The Abbazia Castle is still open for visit, within a foundation of the French Academy of Sciences (<http://www.academie-sciences.fr/abbazia.htm>)

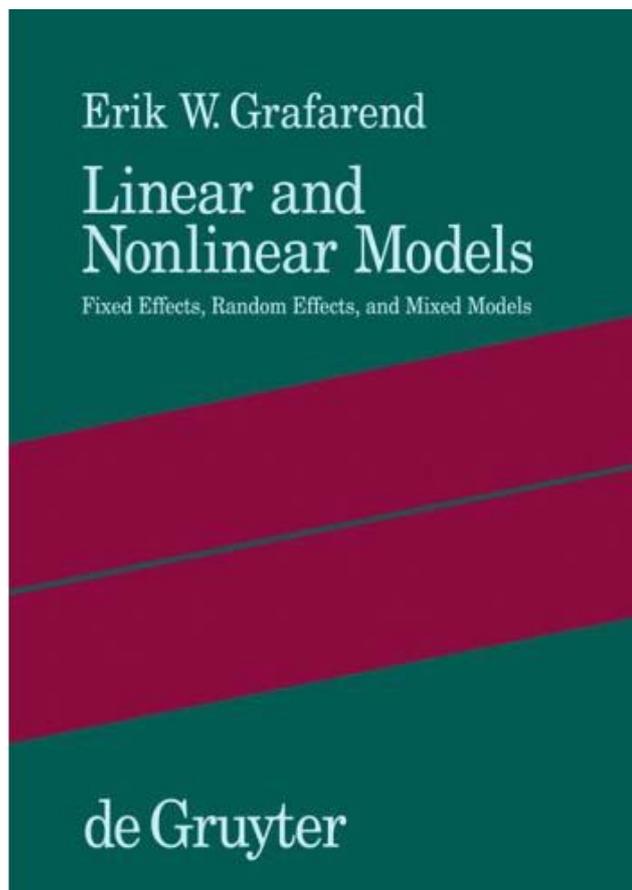
In the first part of this book (Anthony Turner), the authors present from a technical point of view the different instruments developed by Antoine d'Abbadie. The book also provides a very large number of color illustrations of these instruments. In particular, Antoine d'Abbadie was a well-known supporter of the decimal system and many instruments were built for this goal. This is one of the many particularities of these instruments.

The second part of the book (Jean-Paul Poirier) addresses more specifically the contribution of Antoine d'Abbadie to geophysics and the earth's interior. The authors present his work in the scientific context of this epoch, in which, due to the lack of data, the discussion about the elastic nature of the Earth's crust was still an open scientific problem where different theories were fighting against each other.

Antoine d'Abbadie was more a man of the XVIIIth century than a man of his own time. He had a large variety of scientific and human interests: searching for the source of the Nile, while studying local populations and their languages, developing new instruments and faster surveying techniques, and trying to expand the influence of the Roman Catholic Church and France in Abyssinia.

PASCAL WILLIS  
IGN/France  
JPL/USA

***Erik W. Grafarend: Linear and Nonlinear Models: Fixed Effects, Random Effects, and Mixed Models***



title: Linear and Nonlinear Models: Fixed Effects, Random Effects, and Mixed Models  
authors: Erik W. Grafarend  
publisher: Walter de Gruyter . Berlin . New York

ISBN-13: 978-3-11-016216-5  
year: 2006  
price: 168 euros  
pages: 752  
size: 17 x 24 cm  
details: hard cover

This book is a monograph on estimation theory and presents in detail the algebraic and statistical solutions for a variety of different model forms (linear and nonlinear). The book (752 pages) consists of 15 chapters, 6 appendices (173 pages), an extensive list of references (80 pages) and an index. The set up of the book is such that the solutions of the various model forms are treated alternatively from an algebraic point of view and a probabilistic point of view. Differences and equivalences of these two standpoints are discussed and highlighted. At various places in the book, historical notes are included and small worked-examples are given to illustrate the theory.

The first six chapters deal with the linear Gauss-Markov model (linear system of observation equations) in its standard form. This is the so-called fixed effects form in which the unknown parameters are considered to be non-random. First, the underdetermined case (chapters 1 and 2), then the overdetermined case (chapters 3 and 4) and finally the combined case of having overdeterminacy and underdeterminacy at the same time (chapters 5 and 6), is considered. For the underdetermined case, the weighted minimum norm solution is discussed from an algebraic and probabilistic standpoint, with the latter putting emphasis on the inherent bias of the parameter estimator. For the overdetermined case, the weighted least squares solution is discussed (chapter 3), together with the unbiased minimum variance estimator as its probabilistic counterpart (chapter 4). Chapter 4 also contains a section on quadratic estimators for the purpose of variance component estimation. For the over- and underdetermined case (chapters 5 and 6), the double-weighted minimum norm least squares solution is discussed, also in the context of the theory of generalised inverses. Chapter 5 also includes a section in which the connection with different regularization methods is made.

In chapters 8, 10 and 11, the standard (fixed effects) linear Gauss-Markov model is extended to the random effects case (chapter 8), the mixed effects case (chapter 10) and the errors-in-variables case (chapter 11). In the random effects case, the parameters are considered random variables, while in the mixed effects case, some of the parameters are considered random while others are considered deterministic. The errors-in-variables Gauss-Markov model has, in the first instance, the appearance of a standard linear Gauss-Markov model, but is in essence a nonlinear model. It follows when the entries of the design matrix of the standard Gauss-Markov model are observable random variables with unknown mean and additive noise. An example is the connection of geodetic networks by means of a coordinate transformation (e.g. a similarity transformation) in which both sets of coordinates are considered to be random. In the one-dimensional case it reduces to the problem of fitting a straight line to a set of points of which both coordinates are observed. This latter problem is treated as an example in chapter 11. The algebraic counterpart of the errors-in-variables solution is known as the total least squares solution.

In chapters 9, 12 and 14, the Gauss-Markov model is extended and modified so as to include constraints and/or conditions. First, the model with condition equations is treated (chapter 9). This is the model that explicitly specifies the conditions the means of the observable random vectors have to satisfy. If the observation equations are considered the parametric form of a model, the condition equations are the implicit form of the model. When the linear model of condition equations contains unknown parameters as well, the so-called linear Gauss-Helmert model is obtained. This model is treated in chapter 12. The model of condition equations (no parameters) and the standard Gauss-Markov model (no conditions) are special cases of the Gauss-Helmert model. Finally, chapter 14 deals with what the author calls the general Gauss-Helmert model. It consists of the standard Gauss-Helmert model, together with condition equations on the mean of the observables and constraints on the unknown parameters.

Chapters 7 and 13 deal with two special nonlinear models. In chapter 7, the case of inconsistent directional observation equations is treated. These are equations for which the observations are circular (or spherical), such as angular observations or longitudinal data. For directional data, the von Mises distribution takes over the role of the (Gaussian) normal distribution. In chapter 13, the weighted least-squares solution of the nonlinear three-dimensional datum transformation is presented and the corresponding Procrustes algorithm is discussed. The solution is based on keeping one of the two coordinate sets fixed. As a possible extension one could consider the case in which both coordinate sets are adjusted for. Such an extension would also allow for a link with the earlier treated errors-in-

variables model. Perhaps such an extension would be a suggestion for a possible 2nd edition of the book.

Finally, chapter 15 briefly deals with three special models, the multivariate Gauss-Markov model, the n-way classification model, and the model having additional dynamical system equations. Although all these three topics are indeed of importance in their own way, this reviewer would have liked some more space to have been given to the dynamical system's model, in particular because of its importance for practical applications. In the six appendices, the necessary prerequisites for the main text are collected. Appendices A and B contain the prerequisites on matrix algebra and matrix analysis, respectively, and appendix C describes the Lagrange multiplier rule for solving constrained optimisation problems. Appendices D and E are on statistical notions (E) and on sampling distributions and confidence regions (D). For a next edition, it is suggested to interchange the order of these two appendices and to shorten appendix D. Although the latter appendix is quite extensive (100 pages) on confidence intervals/regions, not all the material is needed as prerequisite for the main text. Finally, chapter F contains a useful description of bibliographic indices on statistics and probability. The references at the end of the book are extensive. Apart from this list, also some chapters are concluded with references. Unfortunately, however, these references do not always match up with the whole book's reference list.

The author of the book is an authority in his field and has made significant and well-known contributions to the discipline of geodetic inference. The book is written at an advanced level and covers an impressive list of topics from estimation theory, all of which are presented in a systematic way. The topics are well chosen and are all very relevant for those working on problems of geodetic data processing or on problems of geodetic optimisation. The book is written in the well-known and recognizable style of the author. Being a monograph, the book is not really a textbook in the classical sense. The book offers a thorough treatment of algebraic and statistical methods for solving over- and underdetermined systems of equations. However, in order to appreciate the sometimes subtle, but important, differences between the various estimators involved, the reader will have to be already versed in some of the basics of estimation theory. With such a background however, the keen student or researcher alike will find that the book has much to offer for obtaining a deeper and better understanding of the intricacies of geodetic inference.

PETER J.G. TEUNISSEN  
Delft, The Netherlands