

Summary of the Sixth Meeting of the IAG EC 2007-2011

Place: Technical University, Institute for Geodesy and Geophysics, Gusshausstr. 27-29, Vienna, Austria

Time: Sunday, May 2, 2010, 09:00 – 16:15

Attendees (voting): M. Sideris (IAG President), C. Rizos (IAG Vice-President), H. Drewes (IAG Secretary General), Z. Altamimi (President Commission 1), Y. Fukuda (President Commission 2), R. Gross (Vice-President Commission 3), M Santos (standing in for S. Verhagen, President Commission 4), M. Rothacher (Chair of GGOS), J. Ádám (President of COB), S. Kenyon, R. Neilan, H. Schuh (Representatives of the Services), K. Heki (Member at Large)

Attendees (non-voting): F. Sansò (IAG Past President), N. Sneeuw (Inter-Commission Committee on Theory), H. Hornik (IAG Assistant Secretary)

Guests: M. Pearlman (International Laser Ranging Service, ILRS)

Regrets: G. Beutler (IAG Immediate Past President), M. Bevis (President Commission 3), R. Wonnacott (Member at Large), R. Klees (Editor in Chief Journal of Geodesy)

Summary of Agenda Items:

1. Welcome and adoption of agenda

M. Sideris welcomed the members of the IAG Executive Committee (11 out of 15 voting members, 3 non-voting members) and one guest. He thanked *H. Schuh* for providing again the facilities in the Institute for Geodesy and Geophysics, Technical University of Vienna. The agenda was unanimously adopted.

2. Reports of the Commissions

Z. Altamimi reported on the coming IAG Commission 1 Symposium 2010 “Reference Frames for Applications in Geosciences (REFAG2010)” which will be held from October 4-8, 2010 in Marne la Vallée/France. *M. Sideris* proposed that Commission 1 as well as the IAG COB should advertise this conference to IAG sister organizations, in particular to FIG Commission 5. *Z. Altamimi* presented then the plans for the “IAG School on Reference Frames” from June 7-12, 2010 at the Aegean University, Mytilene, Lesbos, Greece. This school is jointly organized by Commission 1, ICCT, IERS and Study Group IC-SG1. Main topics are the installation and modernization of reference frames. It is the first school of this type in Europe. *H. Drewes* mentioned that there were similar IAG/SIRGAS schools on Reference Frames in South America in the past, the next being held in Peru, November 2010.

Y. Fukuda summarized the results of the Commission 2 meeting on occasion of the IAG2009 Scientific Assembly on September 3, 2009 in Buenos Aires. At this meeting the question was raised whether the scope can be broadened to include a group on “lunar gravimetry”. The “International Workshop on Gravity, GPS and Satellite Altimetry Observations of Tibet, Xinjiang and Siberia (TibXS 2009)” has been held from August 20-22, 2009 in Urumqi, Xinjiang, China. The conference was organized by *Ch. Hwang*, President of SC 2.5 (Satellite Altimetry). Most of the papers will be published in a special issue of “Terrestrial, Atmospheric and Oceanic Sciences”. *Y. Fukuda* mentioned also the “International Workshop on Monitoring North American Geoid Change” held from October 21-23, 2009 in Boulder, USA. As the next event, the “IAG Symposium on Terrestrial Gravimetry: Static and Mobile Measurements (TG-SMM2010)” will be held from June 22-25, 2010 in Saint Petersburg, Russia. The meeting is organized by *L. Vitushkin*, President of IAG SC2.1.

R. Gross presented an overview on the scientific meetings and discussions of Commission 3 and its sub-components. Most of the meetings were held in connection with other meetings such as GGOS, IERS, WEGENER, IAU General Assembly 2009, Journées “Systèmes de Référence Spatio-Temporels” and AGU/EGU conferences. As selected scientific achievements, *R. Gross* mentioned in particular the updated tide models (IERS Conventions), the improved modelling of surface geophysical fluids (atmosphere, oceans, hydrology, cryosphere), regional effects, and GRACE measurements of mass transport (geophysical fluids, glacial isostatic adjustment). *H. Drewes* commented on the investigations of several groups after the Chile earthquake on February 27, 2010. The horizontal (up to 3 m) as well as vertical (up to several decimetres) motions are partly so large that the reference frame in South America, especially between 30 and 40°S, has to be thoroughly corrected.

By proxy of *S. Verhagen*, *M. Santos* gave a summarizing report on the activities of Commission 4 mentioning in particular the topics of a special issue of the Journal of Geodesy related to remote sensing of the ionosphere,

submission for another special issue of JoG related to neutral-atmosphere, the planned joint IUGG Symposium (IAG/IAMAS) on geodesy-meteorology synergisms, the revision of IAG2009 papers submitted to the proceedings, a comparison campaign on ray-tracing of NWM (implications for positioning, and GGOS products), and the workshop on ray-tracing in Vienna, April 29-30, 2010.

3. Report of the Inter-Commission Committee on Theory (ICCT)

Concerning the activities of the ICCT, *N. Sneeuw* mentioned the completion of the proceedings of the Hotine-Marussi Symposium (Rome, July 06-10, 2009). It is expected that all reviewed and approved papers can be sent to Springer for publication late May or early June this year. Together with Commission 1, the ICCT Study Group 1 "Theory, implementation and quality assessment of geodetic reference frames" is organizing the Summer School on Reference Frames, June 7-12, 2010 at the Aegean University, Mytilene, Lesvos, Greece (cf. topic 2). A new study group, joint with Commission 2, may be installed later this year. During the workshop "Airborne Gravity 2010" (Sydney, August 22-26, 2010) the establishment of a test range in Western Australia (Kauring) will be announced, for purposes of testing and validating gravimetry and gradiometry activities. Setting up an IAG study group may be an appropriate way to liaise to the exploration/gradiometry community.

4. Report of COB

J. Ádám complained the lack of information for the regular IAG-Newsletter and appealed all colleagues to deliver facts for the Newsletter. The COB-Webmaster *S. Rozsa* has compiled a draft for a new IAG-Webpage; *J. Ádám* presented the page to the plenum. The EC discussed the installation of a "Today's Topic" in the website. As a daily changing topic will hardly be kept over a longer time, it was concluded to switch to a "Weekly Topic". On this basis each group within the IAG should deliver one topic per year to the COB. The main purpose of this topic is to introduce geodesy and the IAG to the public. *F. Sansò* recommended publishing especially such topics which really concern the general community, e.g. the geodetic methods for the determination of land uplift or sea level change. Finally *J. Ádám* informed that the new IAG-Brochure can be received on request from the IAG-Office to be distributed on adequate occasions.

5. Report of GGOS

The development of GGOS since the 5th EC-Meeting was presented by *M. Rothacher*. Main topics were the new components of the GGOS structure, the Frankfurt meeting on a GGOS Intergovernmental Committee (GIC) and follow-on meetings, the GGOS retreat (planning meeting) in Miami, February 1-4, 2010, the 17th GGOS SC meeting in Miami, February 4, 2010, GEO activities, and GGOS themes towards integrated GGOS products. As new components established for GGOS he mentioned the Bureau for Networks and Communication (Cambridge Center for Astrophysics/NASA, Chair *M. Pearlman*), the Bureau for Standards and Conventions (Research Group on Satellite Geodesy in Munich, Chair *U. Hugentobler*), and the WG on Satellite and Space Missions (Ohio State University, OSU, Chair *C.K. Shum*).

In January 2009 the GGOS Portal has been established at the Federal Agency of Cartography and Geodesy (BKG), Frankfurt, Germany. Further in January 2010 the GGOS Coordination Office has been installed at the ASI (Italian Space Agency) in charge of the Coordination Office. The major steps in the next future are in particular the implementation of GGOS2020, the GGOS Strategy Document, the progress with the GGOS Portal and official GGOS web pages, contributions to GEO tasks and IGOS, and the Call for Participation for the Global Geodetic Core Network (GGCN).

Concerning the GIC, *M. Rothacher* emphasized the essential problem of long-term support and sustainability of the IAG Services and the global GGOS infrastructure. *R. Neilan* recommended nominating a permanent secretary for GIC as well as to install carefully the best possible infrastructure that GIC really can work. Moreover all institutions working on topics which are of interest for GGOS should be officially contacted and involved, e.g. CNES. *H. Drewes* mentioned the proposal of *D. Grünreich* to place GGOS on a broader basis upon intergovernmental agreements considering the fact that the IAG has no legal status and a rather low budget.

6. Report of the Services

A summarizing report on the activities of the International Gravity Field Service (IGFS) was presented by *S. Kenyon*. The task of the IGFS is to serve as a unifying 'umbrella' IAG Service for coordinating the collection, validation, archiving and dissemination of gravity field related data, coordinating the exchange of software for gravity field activities, coordinating courses, information materials and general public outreach relating to the

Earth's gravity field, and implementing practical standards for general gravity field-related reference system issues, such as a global vertical datum. IAG-Services contributing to these tasks are the International Gravimetric Bureau (BGI), International Geoid Service (IGeS), International Center for Earth Tides (ICET), International Center for Global Earth Models (ICGEM) and International DEM Service (IDEMS). Further the IGFS co-operates closely with the International Altimetry Service (IAS).

S. Kenyon announced that it might be proposed to install with the upcoming Global Gravity Project (superconducting gravimeter net) a new respective IAG-Service. He informed on the Call for an IGFS Central Bureau, issued in March 2010. The specific tasks of the Bureau are to provide links between the IGFS entities and external projects, networks and organizations (oceanic, atmospheric, hydrologic) and to the GGOS Bureau and to communicate their requirements and recommendations to the IGFS, as well as to implement standards and recommendations related to gravity field observations, secure consistency with geometric standards, and promote their use within the geo-scientific community. The CB should also coordinate the individual services integrated by the IGFS. He then showed a map of the distribution of absolute gravimeter observations and some results related to the earthquake in Chile, where strong gravity variations on a well defined reference station could be observed. As a contribution of the IGFS to GGOS, *S. Kenyon* mentioned global gravity field models, precise refined geoid models, global absolute and superconducting gravity networks, and a global vertical datum.

The activities of the International GNSS Service (IGS) were summarized by *R. Neilan*. For the upcoming "IGS Workshop and Special Workshop on Vertical Rates from GPS" (June 28 - July 07, 2010, Newcastle, UK) the website of the IGS will be completely updated with emphasis to inform the public and to give specific motivation to geodesists working on the field of GNSS for own activities. A focus will be on reference frames, in particular AFREF. *R. Neilan* then pointed out the successful activities of the common Working Group of IGS, IAG and FIG which met on occasion of the 4th Meeting of the International Committee on Global Navigation Satellite Systems (ICG) in St. Petersburg/Russia from September 14 - 18, 2009. The co-operation of these groups is developing very well.

H. Schuh informed about the activities of the International Laser Ranging Service (ILRS) and the International VLBI Service for Geodesy and Astrometry (IVS). There is a resurgence of interest and success in Lunar Laser ranging. Both the Grasse refurbished MEO system and the Matera station have reported returns from the Apollo reflectors, and the Apache Point Observatory has ranged to the 'lost' Lunokhod 1 Russian rover of 1970/71. The rover was identified by the Lunar Reconnaissance Orbiter, also an ongoing ILRS-support. The SLR community continues to work on tracking of GNSS satellites, COMPASS and GLONASS-115 which have retro-reflector arrays that meet the ILRS Standard; several stations are now doing daylight ranging. Current tracking issues include discussions on how to maximize tracking support for an increasing constellation of satellites, which recently includes CRYOSat-2. Several stations are now using high repetition rate Laser (100 - 2KHz), semi-autonomous operations, pass-interleaving, etc. Some stations are interleaving 3 -4 satellites at a time and several stations are involved with the one-way ranging to the Lunar Orbiter.

The 6th IVS General Meeting (GM2010) was held on 7-13 February 2010, in Hobart, TAS, Australia with more than 100 participants; during this week the dedication of the new VLBI radio-telescope on Mount Pleasant, Hobart was celebrated. A special issue on the continuous VLBI-session "CONT08" will be published in Journal of Geodesy. A very large Astrometry session was organized on Nov. 18, 2009 with 33 radio telescopes (a new 'world record') observing 243 quasars (almost all ICRF2 defining sources); a dynamic webpage was set up at Bordeaux Observatory and an IVS press release was published and linked on hundreds of websites worldwide. There are two new Working Groups within the IVS: Working Group 5 on Space Science Applications (chair: *L. Gurvits*) and Working Group 6 on VLBI Education and Training (chair: *R. Haas*). The Progress Report on the IVS VLBI2010 system was published (<ftp://ivscc.gsfc.nasa.gov/pub/misc/V2C/TM-2009-214180.pdf>).

7. Report on developing countries

In his report, *K. Heki* concentrated on activities in Asia. He informed about the release of the SELENE lunar topography/gravity models. One year after the end of the nominal mission of the Japanese lunar explorer "Kaguya/SELENE", the lunar topography and gravity models were released to public in November, 2009. They are currently the most accurate models. The launch of a Japanese GNSS satellite this summer is part of the quasi-zenith satellite system. There were several different series of geodetic meetings in Asia, e.g. biannual Western Pacific Geophysics Meeting (WPGM), operated by AGU since 1990 (2010 June venue in Taipei/Taiwan), annual Asia Oceania Geoscience Society (AOGS) meeting, operated by earth scientists in Asia and Oceania since 2004 (2010 July venue in Hyderabad/India). These conferences normally include geodesy sessions. Asia-Pacific Space Geodynamics (APSG) workshops are held annually (2010 August venue in

Shanghai during the world EXPO), these workshops are mainly dedicated to space geodetic studies.

8. Report of the Journal of Geodesy (JoG)

By proxy of *R. Klees*, *H. Drewes* informed that the number of pages for the last three JoG 2009-volumes had been increased, so the former very long time delays between the submission and real publication of an article could be reduced considerably. Moreover two special issues per year are now planned to be edited. All colleagues are asked to advertise the subscription of the JoG as the yearly fee for individual IAG-members is rather low. He then reported about the plans of Springer Publishers to scan all older volumes of the Bulletin Géodésique (BG) in order to make the texts available for the public. There are also plans to do the same with the whole edition of the former Manuscripta Geodaetica (mg). *F. Sansò* said that this would be very helpful for the public to get access to the complete edition of the BG as well as the mg.

9. IAG-FIG Relationship

C. Rizos presented a video on the XXIV FIG International Congress, April 11-15, 2010, Sidney/Australia. A form for future Action/Project Plans has been set up on the basis of the "Memorandum of Understanding (MoU) between FIG and IAG" and the document "Linkages between the FIG and IAG, Hanoi Oct 2009". It was stated that FIG plays a much more visible role than IAG. The Sydney General Assembly, e.g., held 2200 participants, in Munich in 2006 even 7000 while the last IAG Scientific Assembly 2009 in Buenos Aires held 360 participants. Thus IAG has to keep intensive contacts to FIG or ISPRS in order to be known to the public.

10. Report on JB-GIS

C. Rizos reported on the Joint Board of Spatial Information Societies (JB-GIS) as a linkage between several associations. The JB-GIS met on occasion of the XXIV FIG International Congress on April 13. One of the main aspects of the meeting was focussed on disaster management. *H. Drewes* commented that this item is absolutely important to demonstrate the necessity of geodetic research to the public and in particular to decision makers. The next JB-GIS-Meeting will take place on July 2, 2010 in Vienna. It was stated that the FIG is highly interested in the aspects of reference frame; this topic offers an excellent opportunity for a contacts between IAG and FIG. *Z. Altamimi* recommended advertising the IAG Symposia and other events in the FIG and other Newsletters.

11. Status of the Proceedings of the IAG Scientific Assembly 2009

S. Kenyon presented a list of the papers submitted to the proceedings of the 2009 IAG Scientific Assembly in Buenos Aires. The accepted contributions will be published as usual in the Springer IAG-series and will comprise more than 600 pages. *H. Drewes* mentioned that the price of the volume is already fixed, thus the printing costs have to be held fixed. It therefore was concluded to charge the authors with an extra fee of 70 EURO per extra page and 50 EURO per coloured page, respectively.

12. Status of the IUGG General Assembly Melbourne 2011

H. Drewes reported on the planning meeting (October 08-13, 2009) for the XXV IUGG General Assembly in Melbourne, Australia, June 27 - July 08, 2011 and presented several overviews on the event. About 4000 to 5000 participants are expected. The scientific meetings will be limited to 10 days instead of hitherto 12. Those of the IAG are proposed to be scheduled for 6 days (June 30 - July 6). The meeting of the present IAG-EC is proposed for June 29, a further meeting e.g. on the weekend. Altogether 9 Union Symposia will be held, each one organized by the 8 IUGG-Associations and one by the IUGG. IAG is involved in several of them. *M. Rothacher* was invited to give one of the Union lectures. Moreover the IAG will lead and participate in several Inter-Association Symposia and hold seven IAG symposia on "Reference frames from regional to global scales", "Monitoring and modelling mass displacements", "Monitoring and modelling Earth rotation", "Multi-sensor systems for engineering geodesy", "Geodetic imaging techniques", "Towards a unified World Height System", and "High precision GNSS". All geodesists are asked to advertise the IUGG General Assembly and possible travel awards for young scientists from developing countries in their surroundings.

13. Nomination for IAG and IUGG officers 2011-2015

M. Sideris informed that *G. Beutler* in his property as chairman of the Nomination Committee (*G. Beutler*, *R. Wonnacott*, *W. Featherstone*) will send out an according letter in December this year. The deadline for proposals

is February 2011; the election will take place in March. *G. Beutler* will contact the IAG-Council in this matter. The IUGG General Secretary has sent out a letter for nominations for the relevant IUGG positions.

14. Sponsorship of symposia and workshops

H. Drewes presented a list of upcoming symposia. He explained that all symposia and workshops of IAG components are generally taken as adopted by the EC according to a former decision of the EC. If the sponsorship of another meeting by the EC is requested, the respective application has to be sent according to the corresponding rules (<http://iag.dgfi.badw.de/fileadmin/handbook/1-6-rules-scientific-meetings.pdf>). The coming COSPAR Conference (38th) has already often been sponsored. The IUGG has decided to support financially this conference on behalf of several concerned IUGG Associations. *J. Adam* recommended that for each IAG-meeting a summarizing article should be compiled by a concerned officer of the meeting to be published in the IAG Newsletter. The plenary unanimously welcomes this plan.

15. Next IAG EC Meeting

The next Meeting of the IAG-EC will take place in San Francisco in connection with the Annual Assembly of the AGU. Then the EC will meet again on occasion of the IUGG 2011 General Assembly in Melbourne/Australia. There is no meeting planned on occasion of the EGU Annual Assembly end April/begin May 2011 in Vienna.

16. Any other business

An invitation letter to support the e.motion proposal to ESA's Earth Explorer Opportunity Mission EE-8 call has been submitted by *J. Johannessen* (Primary Investigator of e.motion) and others. *M. Sideris* presented the letter and explained the aims of e.motion (**Earth System Mass Transport Mission**). *M. Sideris* moved to agree to this activity, the proposal was supported by *N. Sneeuw* and unanimously accepted.

Z. Altamimi informed on a activity of *C. Boucher* to establish a Working Group on standards for GGOS with reference to the Working Group for ISO-Standards. The standards should strictly be compatible with the ISO-Standards. Although this procedure is obviously rather complicated, the application of defined standards offers great advantages for future use especially for GNSS providers. The activity is supported financially by the French government. In November 2010 the decision on the future work will be made, therefore the ISO-Members should declare their scientific support. *C. Boucher* already contacted some relevant IAG-Services. The IERS has declared to support this activity and nominated *B. Richter* as representative. The IAG is invited to send a delegate to the Working Group. *H. Drewes* added that the IAG is the official partner of ISO, the representatives are *J. Ihde* and *H. Drewes* from IAG to ISO, and *L. Hothem* from ISO to IAG. Therefore the requested letter should be signed by the IAG. *M. Sideris* proposed that this topic should be discussed within the GGOS community and the conclusion be submitted to the IAG EC in order to start the relevant activities. *Z. Altamimi* agreed and will discuss the topic again with *C. Boucher*.

17. Adjourn

M. Sideris thanked all participants for their contributions and closed the session at 16:15 (4:15 pm).

Respectfully submitted
Hermann Drewes, Secretary General
Helmut Hornik, Assistant Secretary