

## Summary of the Seventh Meeting of the IAG EC 2011-2015

Place: Marriott Marquis Hotel, room Sierra J, 5th floor, San Francisco, CA, USA

Time: Monday, December 15, 2014, 13:00 – 19:00

**Attendees (voting):** Ch. Rizos (IAG President), H. Schuh (IAG Vice-President), H. Drewes (IAG Secretary General), T. van Dam (President Commission 1), U. Marti (President Commission 2), R. Gross (President Commission 3), D. Grejner-Brzezinska (President Commission 4), H. Kutterer (Chair of GGOS), T. Herring, R. Neilan (Representatives of the Services)

**Attendees (non-voting):** P. Novak (ICCT Vice-President, stand-in for N. Sneeuw), H. Hornik (IAG Assistant Secretary)

**Guests:** P. Willis (IAG Symposia Series Assistant Editor), F. Kuglitsch (IUGG Executive Secretary)

**Regrets:** M. Sideris (Past-President), J. Ádám (COB President), R. Barzaghi (Representative of the Services), C. Brunini, R. Wonnacott (Members at Large), N. Sneeuw (ICCT President)

### Summary of Agenda Items:

#### 1. Welcome and adoption of agenda

*Ch. Rizos* welcomed the members of the IAG Executive Committee (10 out of 15 voting members, 2 non-voting members, and 2 guests). The meeting took place on the occasion of the 47th AGU Fall Meeting, San Francisco, California, 15-19 December 2014. He mentioned that this meeting was mainly dedicated to prepare the IAG part of the 26th IUGG General Assembly, Prague, Czech Republic, June 22 to July 02, 2015. Another main topic was the assessment of the IAG Services. The agenda had been distributed previously by e-mail and was unanimously adopted. *Ch. Rizos* emphasised to discuss the topics such that in Prague definite decisions can be made.

#### 2. Report of the Commissions

##### Commission 1 – Reference Frames

*T. van Dam* presented a summarising overview on the Commission 1 “Reference Frames”. In a few subcomponents the chairperson has been replaced due to various reasons. Further she mentioned a series of events organised or sponsored by the Commission, especially the Unified Analysis Workshop concentrating on loading effects in the ITRF. The Symposium “Reference Frames for Applications in Geosciences (REFAG2014)” took place in Luxembourg in October 2014 with 100 participants from 24 countries. 60 oral lectures and various posters were presented in six sessions (Theory, Geodetic Techniques, ICRF-TRF and Earth Rotation Parameters, Regional Reference Frames, Reference Frames in the Geosciences, and Georeferencing in Practice). The proceedings will be published in the Springer IAG Symposia Series.

##### Commission 2 – Gravity Field

The main event highlighted by *U. Marti* was the “3rd International Gravity Field Service (IGFS) General Assembly”, held from June 30 to July 6, 2014 in Shanghai, China (<http://202.127.29.4/meetings/igfs2014>). He further informed that the proceedings of the Symposium “Terrestrial Gravimetry: Static and Mobile Measurements” (TG-SMM2013, St. Petersburg, September 2013) were published in July 2014, those of the Gravity, Geoid and Height Systems Symposium (GGHS, Venice, October 2012) are planned to be issued in February 2015 as Vol. 141 of the Springer Series. On behalf of Commission 2 the first 25 articles have been submitted to the “Encyclopaedia of Geodesy” which is planned to be published by Springer in 2016.

Then *U. Marti* reported on various activities of Commission 2 subcomponents, in particular on the CCM-IAG strategy paper on absolute gravimetry, which recently has been sent to the IAG-Bureau for approval. This work is based on an intensive cooperation between metrology and geosciences in order to achieve the highest scientific quality in gravity determination. The activities will go on for the near future. *H. Drewes* emphasised that the old IGSN71 has to be replaced by a modern gravity reference system because numerous sites cannot be used or even do not exist anymore. Other activities concern the extension and the development of new features for the Absolute Gravity Database (AGrav) and the preparation of future dedicated Satellite Gravity Missions, especially GRACE-FO, and the European Gravity Service for Improved Emergency Management (EGSIEM). Among the Commission 2 Sub-commissions he mentioned the SC 2.4c “Gravity and Geoid in North and Central America” which was rather active in the North American Comparison of Absolute Gravimeters (NACAG) Project and the SC 2.4d “Gravity and Geoid in Africa” which presented the final report of the IUGG sponsored project “Detailed Geoid Model for Africa”. A follow-on project is proposed.

### **Commission 3 – Earth Rotation and Geodynamics**

*R. Gross* reported that the Sub-commissions were involved in a series of conferences, such as the Symposium on Geodesy for Earthquake and Natural Hazards, July 2014 in Matsushima, Japan (SC 3.2), and the Wegener Symposium on Measuring and Modelling our Dynamic Planet, September 2014 in Leeds, UK (SC 3.5). Planned Symposia are the Symposium on Cryosphere Deformation and GIA Modelling, May 2015 in Fairbanks, USA (SC 3.4), the 18th International Symposium on Geodynamics and Earth Tides, June 2016 in Trieste, Italy (SC 3.1), and the Symposium on Earth Rotation (joint with IAU Commission 19 and IERS), June 2016 in Wuhan, China (SC 3.3). He then presented the new IAG-IAU Joint Working Group 3.1 “Theory of Earth Rotation”. Concluding his report he presented the newly arranged Commission website (<http://euler.jpl.nasa.gov/IAG-C3>).

### **Commission 4: Positioning and Applications**

*D. Brzezinska* stated that the Commission is in permanent close contact not only with the relevant IAG entities but also with ISPRS, FIG, ION and others. Concerning the Commission’s activities since the last EC meeting, several conferences took place in 2014, such as the 2nd International Summer School on Mobile Mapping Technology in Tainan, Taiwan, a Symposium at the PECORA meeting in Denver, USA, and the ION GNSS++ International meeting, in Tampa, USA. As upcoming conferences in 2015 the G05 Symposium: “GNSS++: Emerging Technologies and Applications” at the IUGG General Assembly in Prague, the 3<sup>rd</sup> International Mobile Mapping School in Xiamen, China, and the 9<sup>th</sup> International Symposium on Mobile Mapping Technology (MMT2015) in Sydney, Australia were mentioned. Furthermore she gave a detailed presentation on the activities of the Sub-commissions and the other subcomponents. In particular two newly issued books were mentioned, i.e. Jin, S. G. (Ed.): Planetary Geodesy and Remote Sensing and Jin, S. G., E. Cardellach, Xie F.: GNSS Remote Sensing: Theory, Methods and Applications. In the discussion *H. Drewes* stated that the SG 4.1 “New Technologies for Disaster Monitoring and Management” was shifted to GGOS and shall report there and not to Commission 4. *D. Brzezinska* promised to take care of this matter.

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

*P. Novak* presented a summarising report by proxy of *N. Sneeuw*. All ICCT Study Groups except one are quite active. A detailed report had been given at the EC meeting in Vienna, 2014. In the discussion *H. Schuh* mentioned the ongoing discussion to transform the ICCT to a “permanent component” of the IAG. A proposal is already prepared for submission to the Cassinis Committee to be approved in the revised IAG Bylaws at the IUGG 2015 General Assembly. *H. Drewes* mentioned that in case of adoption the ICCT President has to be elected by the IAG Council and not

be appointed by the EC as at present. *H. Kutterer* complained that the interaction between ICCT and GGOS is not as intensive as it should be. Because of manifold aspects common to both entities the co-operation should be enforced.

#### **4. Report of the Global Geodetic Observing System (GGOS)**

*H. Kutterer* gave a summarising overview on the recent activities of GGOS. The meetings at regular intervals are the monthly EC telecons, the semi-annual CB meetings, and the annual Consortium meetings. A Unified Analysis Workshop (UAW) was held in Pasadena, June 27 and 28, 2014, and a meeting of the United Nations Global Geospatial Information Management (UN GGIM) Working Group on a Global Geodetic Reference Frame (GGRF), New York, August 6-8, 2014. In a revision of the GGOS Strategic Plan four major themes were defined: (1) Geodetic Information and Expertise, (2) Global Geodetic Infrastructure, (3) Services, Standardisation and Support, (4) Communication, Education and Outreach. The intensification of the interaction between GGOS and IAG Services was emphasised as a highly relevant aspect. Another important topic is to make GGOS more visible to the public in order to demonstrate the importance of the original ideas of GGOS for science.

*H. Kutterer* presented then the “Inventory of Standards and Conventions” prepared by the GGOS Bureau on Products and Standards. The formal approval has to be defined. He proposed an external review process. The text should then be published in a document accessible for the public, e.g. in the IAG Geodesist’s Handbook or a special issue of the JoG. Moreover it is highly important to consider the inventory not as a finalised work but as a “living document”, which shall regularly be updated and each new version should be published in the Internet comparable to the updates of the IERS Conventions. *T. van Dam* proposed to publish it together with the IERS Conventions. *H. Drewes* commented that the IERS Conventions represent mainly the geometric aspects; as GGOS has to integrate all components of geodesy, the IGFS has to get involved in order to include gravity. *R. Gross* and *H. Schuh* supported the idea to put both conventions together with emphasis that both texts are regularly peer reviewed by external experts.

#### **5. GGOS Theme 1 Position Paper**

*H. Drewes* presented a Position Paper “Proposal for the Definition and Realisation of an International Height Reference System (IHRS)” submitted by *J. Ihde* on behalf of GGOS Theme 1 ([http://iag.dgfi.badw.de/fileadmin/IAG-docs/2014\\_11\\_13\\_Concept\\_IHRS\\_Actions\\_Proposal.pdf](http://iag.dgfi.badw.de/fileadmin/IAG-docs/2014_11_13_Concept_IHRS_Actions_Proposal.pdf)). The need for an IHRS comprising geometrical and gravity components is quite urgent because various methods of physical height determination using GNSS positioning and gravity field models are presently in use. Most countries are using their own national height systems based on local tide gauges and spirit levelling. As these cannot be combined with the global geometrical reference frame (ITRF) and global gravity models (GGM) because of different datums, standards and conventions (e.g. tide systems) an IHRS has to be installed with a clearly defined reference to each national system. GGOS Theme 1, Commission 2 and the IGFS were asked to form a group to prepare a draft resolution to be adopted at the coming IUGG General Assembly 2015. The option of a new Geodetic Reference System to replace the GRS80 should be included in the discussion. The group is formed by *U. Marti* (chair), *M. Sideris*, *J. Ihde*, *L. Sanchez* and *R. Barzaghi*. *H. Drewes* moved this proposal seconded by *H. Schuh*. It was unanimously approved.

#### **6. Reports of the Services**

By proxy of *R. Barzaghi*, *H. Drewes* presented some viewgraphs on the activities of the gravity-related Services. According to long discussions at the preceding EC meetings, the IAG International

Digital Elevation Model Service (IDEMS) has been resolved. The International Geoid Service (IGeS) has changed the name into International Geoid Service for the Geoid (ISG). Main activities of the International Gravity Field Service (IGFS) were the co-ordination of all services related to the gravity field, the participation in the GGOS meetings, and the organisation of the 3rd IGFS General Assembly (Shanghai, June 30 - July 6, 2014). Together with various other institutions, IGFS, BGI and ISG have submitted a project for the estimation of a detailed geoid in the Mediterranean (GEOMED II) to ESA and prepared a special issue of Newton's Bulletin on the evaluation of the GOCE GGMs. The Bureau Gravimetric International (BGI) Absolute Gravity Database (AGrav) was developed and maintained in particular by the BKG in Germany. The ISG and the International Centre for Global Earth Models (ICGEM) have been involved in various activities on regional geoid estimates and the evaluation of global gravity models. The International Centre on Earth Tides (ICET) prepared the merging with the Global Geodynamics Project (GGP) to a new International Geodynamics and Earth Tides Service (IGETS). Concerning the future of the IDEMS, two proposals to reactivate this service have been developed by Curtin University, Australia, and ESRI, USA. As soon as a feasible plan is completed, a formal proposal could be presented to the IAG EC at the next IUGG General Assembly.

With reference to the last report in Vienna, *T. Herring* gave an oral report on the geometry-related Services. He mentioned in particular the IERS with its good progress in the modelling and the co-operation with GGOS.

Another report was given by *R. Neilan* referring also to the detailed information given at the Vienna meeting. The International Altimetry Service (IAS) seems to be inactive; there are no contacts at present. The International GNSS Service (IGS) has received the official accreditation of the World Data System (WDS). In June 2014 the IGS celebrated its 20th anniversary.

## **7. Report of the COB and developing countries**

*H. Drewes* presented the written short report by *J. Adam* ([http://iag.dgfi.badw.de/fileadmin/IAG-docs/Latin\\_America\\_and\\_the\\_Caribbean\\_report.pdf](http://iag.dgfi.badw.de/fileadmin/IAG-docs/Latin_America_and_the_Caribbean_report.pdf)). The IAG Newsletter is issued monthly and sent to approximately 900 addresses. Moreover, selected parts are published in the JoG. The IAG Website is continuously maintained. *J. Adam* urges again all colleagues to submit any kind of useful information to the COB in order to keep the Newsletter up to date.

By proxy of *C. Brunini* ([http://iag.dgfi.badw.de/fileadmin/IAG-docs/Latin\\_America\\_and\\_the\\_Caribbean\\_report.pdf](http://iag.dgfi.badw.de/fileadmin/IAG-docs/Latin_America_and_the_Caribbean_report.pdf)), *H. Drewes* reported on the activities in Central and South America (Reference Frames, Geoid and Gravity). In November 2014, the SIRGAS School on Vertical Reference Systems and the SIRGAS Symposium were held in La Paz, Bolivia. The events were attended by a large number of participants (260 in the Symposium). In order to face the problem of developing a modern geodetic infrastructure by adequate spatial data infrastructure, the contract "2013 – 2015 Joint Action Plan to Expedite the Development of Spatial Data Infrastructure of the Americas" has been signed in November 2012 by IAG SC1.3b (SIRGAS), PAIGH and UN-GGIM-A. The Transportable Integrated Geodetic Observatory (TIGO), at present installed in Concepcion, Chile, will be moved in February 2015 to Buenos Aires, Argentina. The system, re-named AGGO (Argentine – German Geodetic Observatory), will be operated corporately by the Argentine CONICET and the German BKG. A strong impetus to geodesy in Latin America is expected from AGGO. To improve the gravimetric activities, the Sao Paulo University, Brazil, acquired an A-10 absolute gravity meter. At present, 34 points in Argentina and 1 in Uruguay have been observed.

## **8. Report of the Nomination Committee for IAG Officers 2015-2019**

The IAG Officers are elected every four years by e-mail before the IUGG General Assembly. The IAG community (Council, Officers, Fellows and individual members) may propose colleagues to be

nominated. *H. Drewes* presented on behalf of the Nomination Committee under the chairmanship of the IAG Past-President *M. Sideris* the actual list of candidates. According to the Bylaws this list will be sent to the Council for eventual additions. *H. Drewes* pointed out that only those persons are eligible as IAG Officers whose country is a member of the IUGG and has paid its fee for 2014.

## **9. Report from IUGG**

*H. Drewes* informed on the time schedule and the principal agenda for the coming IUGG General Assembly in Prague 2015 and presented the IAG-related activities. The IAG is engaged in 11 Union Symposia, 16 Inter-Association Symposia, and 8 IAG Symposia. As usual there will also be Union Lectures with invited presentations from IUGG and each of its Associations. On behalf of the IAG, *H. Schuh* has been nominated as speaker. About 5000 participants are expected. The IUGG also installed various new awards (Gold Medal, Early Career Scientists, and Honorary Members). *H. Drewes* pointed out that various travel grants are available; the deadlines for application have strictly to be observed. All colleagues should be informed on this item, e-mails will be sent out. The EC will meet on Tuesday, June 23 (whole day), Friday, June 26, 6-8 pm (optional), and Monday, June 29, 6-8 pm. The Council sessions are planned for Wednesday, June 24, 8:30-10 am and Tuesday, June 30, 6-8 pm. He emphasised that the Bylaws clearly specify that the Steering Committee of each IAG component (Commissions, Services, GGOS, COB) must hold at least one meeting at the General Assembly. The IAG Opening Ceremony will be held on Thursday, June 25, 6-8 pm followed by a reception. A dinner is planned for Sunday, June 28, 7 pm. Finally *H. Drewes* presented a list of IAG representatives in IUGG entities, i.e. the IUGG Union Commissions and the IUGG liaisons that have to be nominated for the period 2015-2019, and he asked for proposals.

## **10. Report of the IAG Symposia Series**

*P. Willis* gave an overview on the status of the IAG Symposia Series. Volume 140 is online at <<http://www.springer.com/earth+sciences+and+geography/geophysics/book/978-3-319-10827-8>>; the volumes 142 - 144 are in preparation. Volumes 145 - 147 are under review. As usual, it is planned to publish the most important geodetic contributions at the next IUGG General Assembly. Concluding his report, *P. Willis* stated that the review process can be considered as fully operational whereas the production by Springer could still be improved. Finally he recommended to reflect whether it might be preferable to publish those proceedings with only a small number of papers as a special issue of a journal (preferably the JoG) instead of an own volume in the Springer Series.

## **11. IAG Services Assessment**

With reference to the previous EC Meetings, in particular the last one in Vienna 2014, *Ch. Rizos* presented an overview of the assessment process:

- Questionnaire returned by the Services;
- Assessment Teams to consider and comment on the questionnaire;
- IAG EC to consider issues and recommendations with guidelines on way-forward;
- Assessment Teams to engage with Services to address issues, etc;
- Any major recommendations to be considered at next IAG EC meeting (IUGG2015).

As special issues to be considered, *Ch. Rizos* mentioned:

- Services not returning questionnaire;
- Minor and major issues / small and large Services;
- Data depositories and product generation;
- Mergers and closures;
- Services with multiple “parents”;
- Problematic Services.

For each Service, two members of the EC and one other IAG Officer were nominated to take care of the assessment. In the following, the analyses of the questionnaires were presented: IDS and PSMSL (*Ch. Rizos*), IGFS (*H. Kutterer*), IVS and IGeS (*T. Herring*), BGI, IAS and IGS (*H. Drewes*), BIPM (*R. Neilan*), ICET and ILRS (*H. Schuh*), ICGEM and IDEMS (*H. Drewes by proxy of R. Barzaghi*), IERS (*R. Gross*). The EC concluded the reports asking the IAG Office to make all the presented service evaluations available to the EC requesting all engaged evaluators to harmonise / complete their findings based on these presentations. The new complete texts should be sent to the IAG Office within one month.

## **12. Letter of concerns w.r.t. gravity data**

*H. Drewes* referred to the short discussion at the last EC meeting on a letter of some participants of the IAG Scientific Assembly 2013 concerning the availability of gravity data. There is a great progress in global gravity field models based on satellite and ground data and there exist many datasets of regional gravity. Those data should be publicly released through the BGI. If they are not made available, presentations or papers in IAG publications based on such data should be barred, because the results cannot be independently verified by other scientists. According to the decision at the last EC meeting, *H. Drewes* has sent a request to BGI how to include such data in the data base. The answer is quite difficult because no owner of gravity data can be forced to make them public, but the results are of interest for the geodetic community. The EC was not in favour of barring all publications with non-public data.

## **13. Sponsorship of symposia**

All IAG sponsored meetings may be seen in the calendar <http://iag.dgfi.badw.de/index.php?id=291>. *H. Drewes* presented the actual list.

## **14. Any other business**

The next EC shall be held on the occasion of the 26<sup>th</sup> IUGG General Assembly in Prague, June 22 – July 2, 2015.

*H. Schuh* reported that more than 100 proposals for changes of the IAG Statutes and Bylaws have been submitted to the Cassinis Committee. Therefore the committee has to meet in time in order to assort the texts and to prepare clear proposals to be approved by the IAG Council in Prague.

According to the IAG Bylaws which limit the number in the Editorial Board of the JoG to two terms, i.e. 8 years, a successor for the present Editor in Chief of the JoG, *R. Klees*, has to be nominated. Also the majority of editors have to be replaced. All proposals are to be submitted to the acting Editor in Chief.

Concerning the nominations for the IAG Officers, the necessity of at least two candidates for each position was mentioned. The EC was asked to send nominations to their national correspondent.

## **15. Adjourn**

*Ch. Rizos* thanked all EC members for their contributions and closed the meeting at 19:15 h.

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