



INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS
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This informal newsletter is intended to keep IUGG Member National Committees informed about the activities of the IUGG Associations, and actions of the IUGG Secretariat. Past issues are posted on the IUGG website (<http://www.iugg.org/publications/ejournals/>). Please forward this message to those who will benefit from the information. Your comments are welcome.

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1. Milestone for global geodesy

The United Nations call for enhanced cooperation on global geodesy. At the sixth session of the U.N. Committee of Experts of Global Geospatial Information Management (UN-GGIM) in New York in August 2016, the UN-GGIM endorsed the Roadmap of the Global Geodetic Reference Frame (GGRF) and decided to establish a permanent Sub-Committee on Geodesy.

“This is a significant milestone for global geodesy. It sends a very clear message to member states, and other global geodetic entities, that the focus on enhancement of geodetic reference frames should be a long term strategic priority for governments,” says Gary Johnston, co-chair of the UN-GGIM Working Group on the GGRF. The suggestion to elevate the Working Group’s mandate through the establishment of a UN-GGIM Sub-Committee on Geodesy was put forward by New Zealand at the UN-GGIM sixth session. The proposal was supported by the Member States. The UN-GGIM Working Group on the GGRF consists today of 32 Member States and two organizations; the World Health Organization and the International Association of Geodesy (IAG) of IUGG. IAG welcomes and unreservedly appreciates the establishment of a United Nations Sub-Committee on Geodesy. This advancement will augment the impacts of geodesy on the political level as well as its visibility in society. IAG and its Global Geodetic Observing System (GGOS) as promoting geodetic science and coordinating the international geodetic services will strongly support the new Sub-Committee whenever necessary and wherever possible.

At the UN-GGIM session, the member states endorsed also the Roadmap for the GGRF as a principle based briefing document for national governments. The Roadmap aims to enhance the GGRF and make it more sustainable. The GGRF was among the highlights at the UN-GGIM session where 260 delegates from 86 Member States participated.



The UN has decided to establish a permanent sub-committee on geodesy to provide stability and longer-term planning for the GGRF (photo: Anne Jørgensen)

The Fijian Minister for Land and Mineral Resources Mereseini Vuniwaqa was a keynote speaker at a UN-GGIM Side Event on the GGRF. Fiji led the adoption on the UN resolution on GGRF at the General Assembly, 26 February 2015. “This resolution calls for more cooperation, and we are pleased to see that the Working Group has come up with the Roadmap on GGRF so quickly. The implementation of the Roadmap has top priority”, said the Minister. The engagement from the Fijian Minister was welcomed by co-chair Gary Johnston: “The development of the implementation plan will require close cooperation between National Mapping Agencies, Space Agencies, IAG, the International Federation of Surveyors (FIG), and other interested research institutions. Collectively we have an opportunity to utilize the momentum that has been created within UN-GGIM to establish a better future for the global geodetic community, and for our society which relies on our products and services,” said Johnston.

Harald Schuh, IAG President

2. Report on the WCRP Joint Scientific Committee Meeting

At the 37th session of the World Climate Research Programme (WCRP) Joint Scientific Committee in Geneva, Switzerland, on 25-27 April, Richard Essery (University of Edinburgh) stood in for Tom Beer as IUGG liaison (an outline of the history and structure of WCRP can be found in the IUGG Electronic Journal, Volume 15, Number 6, June 2015). The meeting consisted of presentations of reports from the WCRP core projects and grand challenges which can be viewed at <http://www.wcrp-climate.org/jsc37-agenda>.

Common themes were moves towards higher resolution modelling (for convection, clouds, precipitation, gravity waves and sea surface temperature) and progress of the 6th Coupled Model

Intercomparison Project (CMIP6), which is often thought of as part of IPCC but is actually a WCRP activity. It was decided that a working group should be set up to restructure the support for regional climate activities across WCRP. The meeting endorsed two new grand challenges on ‘Carbon Feedbacks in the Climate System’ and ‘Near-Term Climate Predictions’ in addition to the existing set of five (<http://wcrp-climate.org/grand-challenges>). For the challenge of predicting regional sea-level change and coastal impacts, it was noted that there are strong contributions, such as vertical land motion, which require interaction with communities beyond WCRP. The WCRP core projects on climate and ocean variability (CLIVAR), the cryosphere (CliC), energy and water (GEWEX), stratosphere-troposphere processes (SPARC) and regional climate downscaling (CORDEX) clearly have strongly overlapping interests with IACS, IAHS, IAMAS and IAPSO but relatively few formal links.

Upcoming joint WCRP and IUGG activities include the International Symposium on The Cryosphere in a Changing Climate (12-17 February in Wellington, New Zealand), which will bring together IACS with the WCRP Climate & Cryosphere project (CliC) and the International Glaciological Society. WCRP has noted that the IAPSO-IAMAS-IAGA 2017 Joint Assembly (27 August to 1 September 2017 in Cape Town, South Africa) will welcome submissions from the SPARC community, and SPARC has proposed a training school on atmospheric dynamics to follow the conference. A new GEWEX initiative on mountain hydrology (<http://www.usask.ca/inarch/>) is affiliated with IAHS.

The Young Earth System Scientists (YESS) community supported by WCRP provides a collaborative platform for early career researchers and students with, as the name suggests, interests across the remit of all of the IUGG associations (<http://www.yess-community.org/>).

Richard Essery, IUGG Liaison to WCRP

3. Report on the 34th SCAR Delegates Meeting

The Scientific Committee on Antarctic Research (SCAR) is an interdisciplinary committee of the International Council for Science (ICSU). SCAR is charged with initiating, developing and coordinating high quality international scientific research in the Antarctic region including the Southern Ocean, and on the role of the Antarctic region in the Earth system. IUGG has been one of the nine Union Members of SCAR since SCAR’s inception in 1958, and it entitled to send a voting delegate to SCAR Meetings.

The 34th Delegates’ Meeting of SCAR was held in Kuala Lumpur, Malaysia, 29-30 August 2016. In the week prior to the Delegates Meeting (23-26 August), and at the same venue, the 7th SCAR Open Science Conference (OSC) was held on the theme “Antarctica in the Global Earth System: from the Poles to the Tropics”. This attracted over 800 participants from 49 countries.

Over 60 side meetings of SCAR and related scientific groups were also held in the margins of the OSC and over the weekends before and afterwards. A new feature of the OSC was a poster session on “SCAR Activities”, which included activities of SCAR scientific groups and partners. A poster on the links between IUGG and SCAR (see the poster below) was contributed to this session, with other ICSU Union contributions from IUA, IUBS and IUGS. These posters were kept on display for the whole of the OSC, as well as during the Delegates’ Meeting, and received plenty of exposure.



International Union of Geodesy and Geophysics

Union Géodésique et Géophysique Internationale

and its constitutive Associations

www.iugg.org



- The International Union of Geodesy and Geophysics (IUGG) is the ICSU Union dedicated to advancing, promoting, and communicating knowledge of the Earth system, its space environment, and the dynamical processes causing change.
- IUGG has been one of the nine **Union Members of SCAR** since SCAR's inception in 1958.
- IUGG is comprised of eight semi-autonomous disciplinary-based Associations. Each of the IUGG Associations has had some past (since at least the IGY), and ongoing involvement in Antarctic science. Some of the areas of common scientific interest between SCAR and IUGG Associations are noted below.
- IUGG is currently developing its contribution to the ICSU Future Earth initiative. IUGG's Union Commission on Climatic and Environmental Change (CCEC) has responsibility for ensuring that this will be an all-Union perspective, it will also ensure that IUGG's contribution is regionally comprehensive, and includes the Antarctic and Southern Ocean.

International Association of Cryospheric Sciences

www.cryosphericciences.org

IACS



IACS is the youngest IUGG Association (est. 2007) and is concerned with ice and snow on Earth (and in the solar system). Common scientific interests between SCAR and IACS include investigations of ice sheets, snow, sea ice, and cryosphere-climate links.

IACS has a 3-party MoU on collaboration with SCAR and IACS [International Arctic Science Committee] that was developed following the International Polar Year 2007-2008. One area of closer cooperation could be between the SCAR Action Group Snow in Antarctica and the IACS Working Group on Microstructure-based modelling of snow and also with the IACS sponsored Snow Science Winter Schools, which might develop more focus on polar snow. IACS is actively involved in several Teams of the WMO initiative Global Cryosphere Watch (GCW) and provides IUGG liaison to GCW. GCW needs sustained observations in Antarctica.

Second IUGG/IACS-IASC-SCAR Snow Science Winter School, Preda - Davos, Switzerland, February 2016.

International Association of Meteorology and Atmospheric Sciences

www.iamas.org

IAMAS focuses on providing the scientific community with platforms to present, discuss and promote the newest achievements in meteorology, atmospheric science and related fields. It also facilitates and coordinates research that requires international cooperation, especially through its ten commissions. The IAMAS International Commission on Polar Meteorology has many areas of common interest with SCAR, including Antarctic meteorological observation, modelling and forecasting, polar clouds, and polar boundary layers.



International Association for the Physical Sciences of the Oceans

<http://iapso.iugg.org/>

IAPSO promotes the study of the physical sciences of the oceans and the interactions taking place at the sea floor, coastal, and atmospheric boundaries. IAPSO collaborates closely with UNESCO's Intergovernmental Oceanographic Commission (IOC) and ICSU's Scientific Committee on Oceanic Research (SCOR). A common area of interest is with the SCAR/SCOR Southern Ocean Observing System (SOOS).

International Association of Geomagnetism and Aeronomy

www.iaga-aiga.org

IAGA is concerned with the understanding and knowledge that result from studies of the magnetic and electrical properties of the Earth's core, mantle and crust, the middle and upper atmosphere; the ionosphere and the magnetosphere; and near-Earth space. IAGA scientists are active in Antarctica in research into polar wander, cosmic rays, etc.



International Association of Geodesy

www.iag-aig.org

IAG promotes scientific cooperation and research in geodesy on a global scale and contributes to it through its various research bodies. IAG research interests overlap with those of SCAR in gravity measurements, particularly to quantify ice sheet mass loss, and in development of positioning techniques and technologies.

International Association of Seismology and Physics of the Earth's Interior

www.iaspei.org

IASPEI promotes the study of earthquakes and other seismic sources, the propagation of seismic waves, and the Earth's internal structure, properties, and processes. IASPEI shares interests with SCAR in Earth structure and geodynamics, geothermal heat flow, and seismological observations and interpretation.



International Association of Hydrological Sciences



Present cooperation and exchange between SCAR and IUGG generally occurs at the level of individual scientists with involvement in both. This includes organization of Antarctic-related symposia at SCAR and IUGG conferences. There is scope to develop stronger formal links, particularly with activities of Action and Expert Groups of SCAR SSGs. These could include links with SCAR groups on clouds & aerosols, climate change & environment, sea ice processes & climate, GNSS research, ice cores, ice sheets, Sun-Earth relationships, Antarctic snow, magnetic anomaly mapping, Antarctic volcanism, and geodetic infrastructure.

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IUGG Delegate to SCAR; IACS Vice-President

International Association of Volcanology and Geochemistry of the Earth's Interior



SCAR had 31 full National Members, 9 Associate National Members and 9 ICSU Union members at the start of the meeting. At this 34th meeting, Austria, Thailand, Colombia and Turkey were accepted as new Associate Members. Associate members are those countries that are still developing an independent Antarctic research program or that are planning a research program in the future. The

Czech Republic and Portugal intend to apply to move from Associate to full membership in 2018. SCAR Delegates' Meetings are held every two years to conduct administrative business and to formulate SCAR scientific policy and strategy. Ongoing SCAR science is managed by three Standing Scientific Groups (SSG) on Physical, Geo-, and Life Sciences. SCAR focuses its internationally collaborative science efforts on high priority topics through Scientific Research Programmes (SRPs), which are often multi-disciplinary and are approved by Delegates. These receive management funding (not implementation funding) from SCAR for four years, and can be extended for a further period. There are currently six SRPs, three of which are relevant to IUGG (broadly on: past ice sheet dynamics, present Antarctic climate evolution and ice sheet-solid earth interaction. See <http://www.scar.org/srp>). Three of the SRPs were externally reviewed before the meeting, all receiving very high ranking for relevance and science excellence. The existing SRPs are all continuing for at least several more years and this, because of funding limitations, precludes adoption of new research programs and directions until one or more of the existing ones are terminated.

The interaction between SCAR and the different Union members varies quite substantially. To help reinforce connections, the SCAR Secretariat reached out to all the Union members and asked for a short update on activities to be shared with the SCAR community. Only IUGG and IUBS responded and submitted reports which were included in an ICSU Unions paper submitted to Delegates. Four unions however did contribute to the "SCAR Activities" poster session; and five Unions were represented throughout the Delegates' Meeting (IUGG, IUGS, IAU, IUBS and URSI). The 2016 ICSU Review of SCAR recommended that stronger ties be formed amongst the ICSU Union members and the SCAR community. At the Association level, the IUGG International Association of Cryospheric Sciences has a three-party MoU on collaboration with SCAR and the International Arctic Science Committee (IASC) that was developed following the International Polar Year 2007-2008. This is due for renegotiation in 2018.

The 2014 SCAR Antarctic and Southern Ocean Science Horizon Scan identified the 80 most important scientific questions that should be addressed by research in and from the southern Polar Regions over the next two decades. Following this, the Council of Managers of National Antarctic Programs (COMNAP) undertook the Antarctic Roadmap Challenges (ARC) project that identified the critical requirements to enabling and delivering these key science objectives. Their report (<https://www.comnap.aq/Projects/SitePages/ARC.aspx>) was considered at the meeting. Delegates also discussed and approved the draft SCAR Strategic Plan 2017-2022 in principle, agreed to suggest any necessary modifications in writing no later than the end of September 2016, and delegated to the Executive Committee the task of final approval.

A novel activity undertaken prior to and during the meeting was the promotion of the role of women in Antarctic science through a "Wikibomb". (*A Wikibomb is a coordinated effort to increase the number of Wikipedia entries on a specific topic. The SCAR effort saw the number of prominent female Antarctic scientists with bibliographic entries on Wikipedia increase from a handful to more than 115.*)

The newly elected President of SCAR for the next four years is Steven Chown, a conservation biologist from Australia. One new Vice President, Jefferson Simoes, a glaciologist from Brazil, was also elected. The 2018 SCAR Delegates' Meeting and Open Science Conference will take place in Davos, Switzerland. The Science Conference will be bi-polar, held in collaboration with IASC, which will hold its annual Arctic Science Summit Week at the same time. This will be the first major multidisciplinary conference covering both Arctic and Antarctic science since the 2012 International Polar Year Conference in Montreal, Canada. The 2020 SCAR Delegates' Meeting and Open Science Conference will be held in Hobart, Australia.

Liaison activities prior to and additional to representing IUGG at the Delegates' Meeting included commenting on the draft Strategic Plan 2017-2022, providing a report updating IUGG activities relevant to SCAR, nomination of several prominent female Antarctic scientists for the Wikibomb (<http://www.scar.org/women/wikibomb>), and preparation of the IUGG poster.

Ian Allison, IUGG Liaison Officer to SCAR

4. News from the International Council for Science (ICSU)

Science International launches new website

Science International is an initiative of four frontline world science organisations: the International Council for Science (ICSU); the InterAcademy Partnership (IAP); the International Social Science Council (ISSC); and The World Academy of Sciences for the advancement of science in developing countries (TWAS). Scientific organizations worldwide are invited to visit a new website to endorse 'Open Data in a Big Data World' – the accord, developed by Science International, for open access to publicly funded research data. Science International has launched a new website (<http://www.science-international.org>) to support its global campaign to promote open access to "big data".

ICSU Regional Office for Latin America and the Caribbean in El Salvador

A high-level ceremony involving several government ministers was held in El Salvador in August 2016 to officially inaugurate the ICSU Regional Office for Latin America and the Caribbean (ROLAC). Minister of Foreign Affairs Hugo Roger Martinez Bonilla, Minister of Education Carlos Mauricio Canjura Linares and Vice Minister for Science and Technology in the Education Ministry Erlinda Handal Vega joined with ICSU's Executive Director Heide Hackmann, Director of ROLAC Manuel Limonta, Secretary General David Black and Executive Board Member Nicole Moreau to celebrate the new office. "This is a historic day," said Education Minister Carlos Mauricio Canjura Linares. "This day marks a breakthrough for education and science in our country," Vice Minister for Science and Technology Erlinda Handal Vega said in her opening remarks. "ICSU has been impressed by El Salvador's commitment to science, despite the fact that it only recently became a member of ICSU in 2013," said ICSU's David Black in an interview with local media prior to the ceremony.

Source: ICSU website

5. Alexander von Humboldt Foundation's International Climate Protection Fellowships

Up to 20 fellowships will be awarded to prospective leaders from non-European transition or developing countries, who are active in any of the following areas: scientific, engineering-based, legal, economic, health-related or social aspects of climate change. The young climate experts will come to Germany for a year to work alongside a host of their own choosing on a research-related project. The closing date for applications is 1 March 2017. The fellowship will begin on 1 March 2018. Please visit www.humboldt-foundation.de/ICF for detailed information on the programme and the online application package. An information sheet (in German, English, Spanish and Portuguese) can be downloaded from www.humboldt-foundation.de/web/publications.html. The fellowships are funded under the Federal Environment Ministry's International Climate Initiative. Please note that

anyone who has already received sponsorship from the Humboldt Foundation is not entitled to apply for this fellowship.

Georg Scholl, A. von Humboldt Foundation

6. Meeting calendar

A calendar of meetings of interest to IUGG disciplines (especially those organized by IUGG Associations) is posted on the IUGG website (<http://www.iugg.org/calendar.php>). Individual Associations also list more meetings on their websites according to their disciplines.

October

- 3-9, IAVCEI, IUGG, Rhodes, Greece, Advanced International School on “Early Warning Systems for Geohazards”
- 5-6, IAG, Bonn, Germany, First International Workshop on VLBI Observations of Near-field Targets. Web: <http://www3.mpifr-bonn.mpg.de/div/meetings/vonft/>
- 9-14, GFZ, Potsdam, Germany, 20th International Workshop on Laser Ranging. Web: <http://iwslr2016.gfz-potsdam.de/international-workshop-on-laser-ranging/>
- 10-23, IAVCEI, Olot, Spain, 5th International Course on Volcanology (in Spanish). Web: http://www.gvb-csic.es/CURSO/CURSO_OLOT/Home.html
- 11-13, IAPSO, IUGG, Brest, France, ACO2016. A connected Ocean. Web: <http://aconectedocean.sciencesconf.org/>
- 21-22, CCEC, IAG, IUGG, Luxembourg, Luxembourg, 2nd Workshop of the IUGG Union Commission on Climatic and Environmental Change. Web: <http://ccec-iugg.org/content/ccec-2016-luxembourg>
- 24, ICSU, Oslo, Norway, Extraordinary General Assembly of the International Council for Science. Web: <http://www.icsu.org/events/ICSU%20Events/icsu-extraordinary-general-assembly>
- 24-28, IAG, Cambridge, MA, USA, GGOS Days. Web: <http://www.ggos.org/>
- 24-28, ICTP, IUGG, Trieste, Italy, School on Recent Advances in Analysis of Multivariate Ecological Data: Theory and Practice. Web: <http://indico.ictp.it/event/7617/>
- 26-28, IAHS, Gaborone, Botswana, Integrated Water Resources Management: Water Security, Sustainability and Development in Eastern and Southern Africa. Web: <http://www.waternetonline.org/>
- 31 October – 4 November, IAG, La Rochelle, France, International Doris Service Workshop (IDS). Web: <http://www.ostst-altimetry-2016.com/>

November

- 7-10, GEO, St. Petersburg, Russia, Plenary XIII of the Group on Earth Observations. Web: <https://www.earthobservations.org/geo13.php>
- 14-18, ICTP, IUGG, San Jose, Costa Rica, Second Workshop on Climate Change, Variability and Modeling over Central America and Mexico. Web: <http://indico.ictp.it/event/7621>
- 13-17, IAHS, Shenzhen and Wuhan, China, International Workshop on Hydrological Knowledge Innovation and its Practices in Developing Countries. Web: http://iahs.info/uploads/Meetings/Workshop%20Announcement_2016_HKIPDC.pdf
- 16-18, IAG, Quito, Ecuador, SIRGAS Symposium 2016. Web: <http://www.igm.gob.ec/sirgas/>
- 20-25, IAVCEI, Puerto Varas, Chile, Cities on Volcanoes 9. Web: <https://www.citiesonvolcanoes9.com/en/>

- 21, IAHS, Frascati, Italy, MOXXI 2016 – Measurements and Observations in the 21st Century Conference. Web: <http://iahs.info/Commissions--W-Groups/Working-Groups/MOXXI/Information/AGU-2015/>
- 21-25, IAG, Quito, Ecuador, SIRGAS School on Vertical Reference Systems. Web: <http://www.igm.gob.ec/sirgas/>
- 25-27, IASPEI, Melbourne, Australia, 11th General Assembly of the Asian Seismological Commission. URL: Web: <https://asc2016.asia>

December

- 12-16, AGU, San Francisco, CA, USA, Fall Meeting of the American Geophysical Union. Web: <https://fallmeeting.agu.org/2016/>

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Editors: Tom Beer, Alik Ismail-Zadeh (Editor-in-Chief), Franz Kuglitsch (Associate Editor), and Kathryn Whaler.