



**INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS  
UNION GEODESIQUE ET GEOPHYSIQUE INTERNATIONALE**

***IUGG Centennial | 1919-2019 | Centenaire de l'UGGI***

## **The IUGG Electronic Journal**

**Volume 19 No. 11 (1 November 2019)**

This monthly newsletter is intended to keep IUGG Members and individual scientists informed about the activities of the Union, its Associations and interdisciplinary bodies, and the actions of the IUGG Secretariat, Bureau, and Executive Committee. Past issues are posted on the IUGG [website](#). E-Journals may be forwarded to those who will benefit from the information. Your comments are welcome.

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### **1. IUGG – The People at the Forefront (II)**

#### **Chris Rizos, President-Elect 2019-2023**

Kathryn Whaler, our IUGG President, confessed in the last IUGG newsletter that she studied geography, physics and mathematics at high school. Coincidentally, so did I, but I added to that the subject of geology, and so it was obvious that I would be drawn to the geosciences. However, I had a stronger pull to the discipline of map-making and the challenge of exploring new lands. The latter is ingrained into the Australian psyche because, from an early age at school, we learn the deeds of the pantheon of white explorers that “opened up” the vast continent of Australia (brushing aside Australia was actually home to our indigenous people over 60,000 years). Later (much later) I was to learn about the crucial role played by surveyors who followed those explorers, and who undertook their own more methodical examination of the Australian terrain, its soils, vegetation, and agricultural potential. I identified with these quiet professionals, rather than the vainglorious (often woefully ill-prepared) explorers. The upshot of my high school education was that the order of preference for university study were the disciplines of Surveying, Geophysics and Geology. I was granted my first preference.

I studied for a Bachelor of Surveying at the University of New South Wales (UNSW), in Sydney, Australia, and graduated in 1975. I immediately enrolled, again at UNSW, in the PhD program and graduated in 1980. During my PhD studies I focused on Satellite Geodesy, and learned about precise orbit determination, physical geodesy, gravity and geoid computation, and satellite altimetry/oceanography studies. I enjoyed the mix of computing, applied mathematics, physics and technology. Although my professional education is Surveying, which is closely aligned with civil engineering and land development, my scientific career was built researching and advocating the principles, technologies and applications of Geodesy, and especially the techniques of Precise Positioning using GPS. After spending two years as a post-doctoral fellow funded by the Alexander von Humboldt Foundation at the Deutsches Geodätisches Forschungsinstitut (DGFI) in Munich, Germany, I returned to UNSW. In 1987 I joined the academic staff of the School of Surveying, was promoted to the rank of Professor in 2000, and finally retired as an Emeritus Professor in February 2018. I maintain a close link with UNSW, continuing to supervise graduate students, as well as being an investigator on several research projects.

In the mid-1980s I became interested in a new geodetic technology based on signals from the just launched Global Positioning System (GPS) satellite constellation. Geodesists took advantage of GPS signals to develop new precise positioning methods capable of centimetre accuracy in 3D by using relative positioning between GPS instruments set up hundreds of kilometres apart. GPS was the ideal technology for measuring continental drift and regional geodynamics. It was relatively (compared with other geodetic technologies) inexpensive, portable, and versatile. By the early 1990s GPS had become the premier geodetic tool. Around this time I became involved with the International Association of Geodesy (IAG). The International GPS Service (IGS) was established in 1994. It is today the IAG's most important service, and I am proud to have been involved since the very start. Nowadays we speak of "GNSS" – Global Navigation Satellite System – because in addition to GPS, we can use signals from the Russian GLONASS, the Chinese BeiDou and the EU's Galileo constellations. My own research, undertaken over a period of 30 years in partnership with very talented graduate students, researchers and collaborators, has focussed on improving the techniques and algorithms for generating Precise Positioning information from GNSS to support Geodesy, Surveying, and more recently Machine Automation. This has meant that I had to learn, and research, the full spectrum of positioning technologies and applications, from ultra-precise Geodesy at one end, through to Human and Machine Navigation at the other end of the spectrum. I am proud to say that I am a Fellow of the IAG, but also a Fellow of the US Institute of Navigation and the Australian Institute of Navigation.

My involvement with IAG affairs started at the Boulder IUGG General Assembly in 1995. I was recruited to lead a Study Group. This was my first exposure to international science, and was excited about what could be done to further the mission of Geodesy, through the IAG, with international cooperation and the sharing of resources and expertise. I have attended every IUGG General Assembly since, and progressed my way within the IAG organisation, to finally becoming IAG President for the period 2011-2015. This was a great honour, as I was only the second Australian to hold such a post. Amongst the highlights of my presidency was the celebration in 2013 of the 150th anniversary of the founding of the IAG, in Potsdam, Germany. It was in 1866 that the Central Bureau of the Geodetic Institute, what came to be the IAG, was established in Potsdam, on the Telegrafenberg. Potsdam is now the home of the world renowned German Research Centre for Geosciences (GFZ – GeoForschungsZentrum). The GFZ hosts a world leading geodetic department. Such a delightful historical symmetry!

I was elected to the IUGG Bureau 2015-2019, and am currently the IUGG President-elect. When I look back on my professional and scientific career, I cannot believe that I am so fortunate as to be now serving the IUGG. The Earth faces unprecedented challenges to its fragile environment. As a

scientist I am confident that the tools and expertise of the geo- and space sciences will contribute to the mitigation of geohazards of both anthropogenic and natural causes. Is that enough to avert the catastrophic effects of out-of-control climate change? I cannot say. But we are guided by the IUGG's Vision "... a future Earth that is environmentally sustainable and where societies are resilient against natural hazards".



*Presidents of the IAG: Ivan Mueller (1987-1991), Chris Rizos (2011-2015), Wolfgang Torge (1991-1995), Michael Sideris (2007-2011), Gerhard Beutler (2003-2007), at 150th anniversary of the IAG, Potsdam, Germany, 2013, and in the Library of the Geodetic Institute German Research Centre for Geosciences (GFZ), 2013 (right)*

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## **2. IUGG Yearbook 2020 – in preparation**

Corrections and updates to the information contained in the [IUGG Yearbook](#) for 2020 are now being finalised. Please contact [Franz Kuglitsch](#), IUGG Executive Secretary, by 1 December 2019 with additions and corrections.

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## **3. IUGG Partner Organizations – calls for nominations**

### ***Call for Nominations: Scientific Committee of the World Data System (WDS-SC)***

The WDS-SC for the period 2018–2021 now has three vacancies. IUGG is eligible to nominate new members of the WDS-SC. More information regarding the roles and responsibilities of SC members, as well as the Nomination Form, can be downloaded [here](#). If you would like to nominate new members of the WDS-SC, please send completed nomination forms to the [IUGG Secretariat](#) by **24 November 2019**. The nominations received will be considered by the IUGG Bureau and submitted to the WDS International Programme Office.

### ***Call for Nominations: Committee on Space Research (COSPAR) Awards***

COSPAR looks forward to receiving your nominations for COSPAR awards to be presented in 2020 by **30 November 2019**. Your assistance in identifying outstanding candidates from the international space research community is greatly appreciated. Completed nomination materials should be sent as a single .pdf file to the [COSPAR Secretariat](#). Please keep files as compact as possible. The nomination

form including details about the awards and some information about past COSPAR awardees can be downloaded [here](#).

### ***Expert Review: Intergovernmental Panel on Climate Change (IPCC) 6th Assessment Report***

The IPCC, currently working on its next comprehensive report, the 6th Assessment Report, will open the Working Group II (Impacts, Adaptation and Vulnerability) contribution for a first expert review from **18 October to 13 December 2019**. More information can be found [here](#) and at <https://www.ipcc.ch/2019/10/11/wg2-ar6-first-order-draft-expert-review/>. Interested experts who want to take part can now register at <https://apps.ipcc.ch/comments/ar6wg2/fod/register.php>.

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### **4. [TROP ICSU](#): Trans-disciplinary Research Oriented Pedagogy for Improving Climate Studies and Understanding – Working Group Meeting**

Keith Alverson represented the IUGG at a TROP ICSU working group meeting at the Acedemie des Science, Institut de France, 14-15 October 2019. TROP ICSU is an ISC funded three-year project to integrate climate change education across the core curricula at High School and University level globally. The project is led by the International Union of Biological Sciences, with participation of several international unions, including IUGG, national academies and national research centers, and United Nations agencies. It aims to improve awareness of climate change and the science behind it among students by developing teaching aids for teachers at the secondary and undergraduate levels. These educational resources are locally rooted but globally relevant and designed to promote interdisciplinary thinking.

The TROP-ICSU project portal ([www.tropicsu.org](http://www.tropicsu.org) and <https://climatescienceteaching.org/>) contains a suite of teaching resources that integrate climate studies within the curriculum in various disciplines and subjects. The use of these teaching resources enables educators to teach a topic in a particular discipline with the help of examples, case studies, and exercises related to climate change. These resources can be used globally by educators in the classroom or by students for independent learning. This integrated approach will help increase climate awareness among students. The goal is not to introduce climate education as a stand-alone topic, but to integrate it within core curricula in science, mathematics, social sciences and humanities, thereby exposing a wider range of students to climate change information.

IUGG also participated in the two previous (2017 and 2018) meetings of the group, though remotely by Skype in order to avoid greenhouse gas emissions. This was the final meeting of the group, and discussions therefore focused on finalization of the educational tools, including translation into local languages, future dissemination and maintenance of the website and portal as well as possible support mechanisms for the project beyond 2019.

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### **5. Association Scientific Assemblies 2021**

In 2021, our eight Union Associations will organise the following Scientific Assemblies in chronological order:

- [IAVCEI \(Volcanology\)](#): Rotorua, New Zealand, 15-19 February 2021
- IAHS (Hydrology): Montpellier, France, 28 June - 2 July 2021
- IAG (Geodesy): Beijing, China, 28 June - 5 July 2021

- [IACS \(Cryospheric Sciences\)-IAMAS \(Atmospheric Sciences\)-IAPSO \(Oceanography\) Joint Assembly](#): Busan, Rep. Korea, 18-23 July 2021
  - [IAGA \(Geomagnetism\)-IASPEI \(Seismology\) Joint Assembly](#): Hyderabad, India, 22-27 August 2021
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## **6. Italian National Committee Announcement: Workshop on “State of the art and perspectives on the prediction of natural events”**

A workshop on the “State of the art and perspectives on the prediction of natural events” (*Stato dell’arte e prospettive della prevedibilità degli eventi naturali*) will be organised by the Italian National Committee for Geodesy and Geophysics at the CNR Headquarters in Rome, on 26 and 27 November 2019.

The scope of the workshop is to bring together experts on the prediction of natural hazards to assess their methods, techniques, tools, expectations and even their personal understanding and feelings on our current collective ability to predict natural hazards, and on perspectives for the future. The workshop will be centered around 16 talks on eight main hazards or phenomena. For each hazard/phenomena, two speakers were selected by one of the eight Union Associations. The talks will be accompanied by ample periods for collective discussion, which will be the real focus of the workshop.

The workshop will be held in Italian. For further information, please contact [fausto.guzzetti@cnr.it](mailto:fausto.guzzetti@cnr.it).

Fausto Guzzetti, President of the IUGG National Committee for Italy and  
organiser of the workshop

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## **7. News from the U.S. National Committee**

In honour of the Centennial year 2019 which they both shared, AGU and IUGG co-organised two successful interdisciplinary symposia **with the collaboration of the U.S. National Committee for IUGG**: the AGU-IUGG Centennial Symposium on Disaster Science at the December 2018 AGU Fall Meeting in Washington DC, USA, and the Centennial Symposium on Georisk Reduction: Science, Resources, and Governmental Action at the IUGG General Assembly in Montreal, Canada. AGU leadership also attended the IUGG Centennial Ceremony at UNESCO in Paris, France, on 29 July 2019. Like IUGG, AGU is committed to fostering scientific discovery for the benefit of humanity, and supports global cooperation to promote a sustainable and resilient future. The AGU leaders said that they are honored to be working alongside IUGG and other scientific organisations around the globe to collectively advance the Earth and space science community. Preliminary indications are that almost 50 percent of the abstracts for the AGU Fall Meeting 9-13 December in San Francisco have been submitted by scientists from outside the United States. Hope to see many IUGG representatives in San Francisco!

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## 8. ISC - News from the International Science Council

### *ISC Governing Board meets in Beijing, China*

The ISC Governing Board gathered in Beijing, China, for their fifth meeting held on 14-15 October. As part of discussions, they participated in a special session on developments in China related to international science, together with representatives of the Bureau of International Co-operation at the Chinese Academy of Sciences (CAS), the Chinese Association for Science and Technology (CAST), and the Alliance of International Scientific Organizations (ANSO). ISC Members will receive a communique related to the Governing Board meeting in due course.

China is today a scientific superpower, backed by major investments in research and development and a national strategy for innovation-driven economic development. China has overtaken the United States as the world's largest producer of scientific articles, according to the latest statistics compiled by the US National Science Foundation, publishing 426,000 articles in 2016. Beijing is therefore a fitting backdrop for two major events that took place on 16-17 October: the World Forum on Science and Technology Development (WFSTD), and the 2019 World Conference on Science Literacy (WCSL). At the WFSTD, ISC President Daya Reddy gave the opening address, followed by a keynote speech by ISC Chief Executive Officer Heide Hackmann. Reddy also delivered a keynote speech at the subsequent Conference of Science Literacy (WCSL). The ISC Governing Board Members participated in the international workshop on SDGs organised by the China National Natural Science Foundation.

### *World Science Forum*

The 2019 World Science Forum (WSF) will take place between 20-23 November in Budapest, Hungary, under the title "Science, Ethics and Responsibility". The Forum is a joint effort of UNESCO, the International Science Council (ISC), the American Association for the Advancement of Science (AAAS), the InterAcademy Partnership (IAP), TWAS – the World Academy of Sciences, the European Academies Science Advisory Council (EASAC) and the Hungarian Academy of Sciences (MTA) as the host of the 2019 event and the organisation that initiated the WSF series. WSF2019 will highlight the increasing importance of the ethical considerations that underlie decisions about the conduct, funding, utilisation and communication of scientific research in an era of transformative technological, environmental and social developments. The program aims to provide an opportunity for scientists, policy-makers, society, industry, and science communicators to participate in six plenary sessions, 20 thematic sessions and many more special sessions and side events. One of the thematic sessions is dedicated to the centennial anniversary of international scientific cooperation and is organised by the ISC and seven international scientific unions including IUGG. The information on the session can be found [here](#). Another session of IUGG's interests is a side event organised by the Hungarian Academy of Sciences and dedicated to the 100<sup>th</sup> anniversary year of the death of Roland Eötvös (in Hungarian Eötvös Loránd, 1848-1919), a pioneer of high precision gravitational physics, founding father of applied geophysics and innovator of higher education. More information on the [side event](#).

To see the program of the WSF2019 and to request an invitation click [here](#).

Submitted by Alik Ismail-Zadeh (source: ISC news)

## 9. Awards and Honours

### *American Geophysical Union (AGU)*

On 7 October 2019, **Priscilla Grew**, Member of the IUGG Finance Committee, celebrated 50 years as a member of AGU with the AGU leadership at the AGU Headquarters in Washington DC, USA.

*AGU Program Manager/Global Outreach Mark Shimamoto; AGU Executive Director/CEO Christine McEntee; Priscilla Grew, 50-year member of AGU; AGU Executive Vice President/Global Outreach Janice Lachance (from left to right).*

### *European Geosciences Union (EGU)*

The EGU announced the recipients of its Union Medals and Awards, Division Medals, and Division Outstanding Early Career Scientists Awards, who will be honoured for their important contributions to the Earth, planetary and space sciences. They will receive their prizes at the 2020 EGU General Assembly in Vienna, Austria, from 3 to 8 May 2020. Among the 2020 medallists are the following scientists who have been active in IUGG: **Donald B. Dingwell** (Germany), former IAVCEI President, was awarded the Arthur Holmes Medal; **Valérie Masson-Delmotte** (France), former IACS Division Head, was awarded the Milutin Milankovic Medal; **Claire J. Horwell** (United Kingdom), Leader of the IAVCEI International Volcanic Health Hazard Network (IVHHN), was awarded the Plinius Medal. [More information](#)

### *Mexican Geophysical Union (UGM)*

**Hugo Delgado Granados**, President of the Mexican IUGG National Committee, receives the 2019 Manuel Maldonado Koerdell Medal of the UGM. The medal is bestowed on him for his long academic and research career and for the impact of his scientific research and teaching. The medal will be presented to him at the 2019 Annual Meeting of the UGM, Puerto Vallarta, Mexico, 27 October - 1 November 2019. [More information](#)

### *European Research Council (ERC)*

The ERC has awarded 2 of its current 37 prestigious research prizes to: (i) **Veronique Dehant**, Vice-President of the Belgian IUGG National Committee, **Anne Cazenave**, IUGG Fellow, and **Mioara**

**Manda**, IAGA President, for “*GRACEFUL - Probing the deep Earth's interior by synergistic use of observations of the magnetic and gravity fields, and of the rotation of the Earth*”, and (ii) **Domenico Giardini**, IASPEI Past President, **Massimo Cocco**, IASPEI National Correspondent for Italy, and colleagues for “*FEAR – Fault Activation and Earthquake Rupture*”. [More information](#)

***Congratulations to all awardees!***

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## **10. Meeting calendar**

### ***November 2019***

- 4-8, COSPAR, IAMAS, Herzliya, Israel, [4th Symposium of the Committee on Space Research. Small satellites for sustainable Science and Development](#).
- 6-8, IAMAS, Santiago, Chile, [19th GEIA Conference – The Global Emission Initiative’s efforts to accelerate societal transformations](#).
- 11-14, IAG, Rio de Janeiro, Brazil, [GGOS Days 2019 and SIRGAS Symposium 2019](#).
- 11-15, IAGA, Pilar and Cordoba, Argentina, III Pan-American Workshop on Geomagnetism.
- 18-22, IAGA, Rancagua, Chile, [6th biennial LATINMAG 2019](#).
- 18-20, IAMAS, Boulder CO, USA, [Atmospheric Tomography Mission \(ATom\) Science Team Meeting](#).
- 20-23, ISC, UNESCO, Budapest, Hungary, [World Science Forum 2019](#).
- 26-27, Italian National Committee for IUGG, Rome, Italy, Workshop on “State of the art and perspectives on the prediction of natural events”.

### ***December 2019***

- 2-6, IUGG, ICTP, Manila, Philippines, [Workshop on Distilling Climate Information for Sectoral Applications](#).
- 7-13, WCRP, San Francisco CA, USA, [WCRP Climate Science Week](#).
- 9-13, AGU, San Francisco CA, USA, [American Geophysical Union 2019 Fall Meeting](#).
- 11-13, IAHS, Paris, France, Sécheresses, étiages et déficits en eau.

### ***January 2020***

- 5-9, AGU, Washington DC, USA, [Chapman Conference on the Evolution of the Monsoon, Biosphere and Mountain Building in Cenozoic Asia](#).
  - 7-10, UNESCO-IOC, Halifax, Canada, [UN Decade of Ocean Science for Sustainable Development 2021-2030: North Atlantic Workshop](#).
  - 8-10, UNESCO-IOC, Chennai, India, [UN Decade of Ocean Science for Sustainable Development 2021-2030: North and Central Indian Ocean Workshop](#).
  - 21-23, UNESCO-IOC, Venice, Italy, [UN Decade of Ocean Science for Sustainable Development 2021-2030: Mediterranean](#).
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