



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

## **The IUGG Electronic Journal**

**Volume 21 No. 4 (1 April 2021)**

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 (XVII)**

**Joyce Penner, President of the International Association of Meteorology and Atmospheric Sciences (IAMAS), 2019-2023**



*Joyce Penner, IAMAS President, 2019-2023*

I am the Ralph J. Cicerone Distinguished University Professor of Atmospheric Science at the University of Michigan, Ann Arbor. I developed an early love for the atmosphere. I remember drawing pictures of clouds in grade school, so I find it amazing that I now work on aerosols and clouds and their interactions.

My formal degree is in Applied Mathematics (from Harvard), but during my graduate years I started taking courses centred on atmospheric sciences, with a focus on atmospheric chemistry. My advisor, Mike McElroy, thought it was useful to have students do a project examining one of the planets as well as one focussed on Earth. For my planetary project, I chose to examine the exosphere of Venus, trying to model the change in the H-atom

temperature profile as seen by the Mariner V fly-by mission. For the Earth's atmosphere I studied the sources and sinks of molecular hydrogen in the troposphere and stratosphere, using a 1-dimensional global average model of atmospheric chemistry.

(How the world has changed! Now my students and postdoctoral candidates add chemistry and physical updates to the complex 3-dimensional National Center for Atmospheric Research Community Atmospheric Model, while I advise on research topics and methods for analysis.)

Back to my student days. After graduating from Harvard, I went straight to a permanent position at the Lawrence Livermore National Laboratory (LLNL) in Livermore, California. While primarily known for its atomic and hydrogen bomb research (initially under Edward Teller), LLNL had a group of excellent atmospheric scientists to work with, including Julius Chang, Michael MacCracken and Don Wuebbles. I joined "T-Division" (T apparently stood for Teller) where I worked with Julius Chang prior to moving to "G-Division". While I was in G-Division, the Lab started a project to examine the environmental effects of a large-scale nuclear war – a topic called "nuclear winter" and made popular by Carl Sagan and his co-authors. Mike MacCracken led the effort to improve the climate model representations, while I led the effort to develop the smoke emissions that were to be input to the climate model. As a part of this work, my team examined the clouds formed above a blast and the interaction of the smoke from burning cities with the clouds.

Soon after that project ended, the "CLAW hypothesis" publicised by Charlson, Lovelock, Andreae and Warren, was published, outlining a negative feedback mechanism in the Earth's atmosphere whereby certain phytoplankton in the ocean produce dimethylsulfide (DMS) which oxidises to form sulfuric acid particles in the atmosphere. These particles cool the climate inducing less DMS formation, and thereby regulate the Earth's atmosphere. The climate model developed by the Lab under MacCracken was perfect for studying this problem more thoroughly, and I set about trying to do so, ultimately producing the first published estimate of the climate response to increased fossil fuel sulfur emissions with Karl Taylor in 1994.

In 1996, I found myself looking for another place of employment, as a result of a change in my husband's situation at the Lab, and we landed at the University of Michigan. While I was initially trepidatious of taking on teaching responsibilities, I found teaching extremely rewarding. And the students and post-docs that I have had the pleasure to work with at Michigan have been extraordinary. They keep me thinking about new projects and ways to solve new problems. Together we have explored the impacts of the profile of soot within the atmosphere on atmospheric temperature profiles, the formation of ozone in the troposphere, the formation of secondary organic aerosols, and the interactions of aerosols with warm-phase, mixed phase and cirrus clouds. Having worked on these topics for more than 20 years now, I sometimes feel that we will never be able to narrow the uncertainties associated with the effects of aerosol particles on climate. Nevertheless, I am frequently buoyed by my interactions with students who remain optimistic and are full of ideas!

I have been described by my previous co-authors as always being willing to serve the community, but for the last several years I have especially been keen on service, first as one of the Vice-President's of IAMAS, then as President of the Atmospheric Science Section of the American Geophysical Union, and now as President of IAMAS. I enjoy being able to give back to the science community which has so enriched my life. I remember the first IUGG conference I attended in Hamburg. It was so exciting to be introduced to all the different aspects of Earth Science! I am proud to be continuing the ability of IAMAS and IUGG to continue their outreach. In addition to service, I find it satisfying that the community has honoured me with various awards, such as the Atmospheric Meteorological Society's Syukuro Manabe Climate Research Award which I received this past January.

As IAMAS president, I have worked to help establish an Early Career Medal, and we have just recently invited Jing Li of Peking University to serve on our Bureau as a representative of Early Career Scientists. She and her Vice-Chair Sarah Perkins-Kirkpatrick, from the Climate Change Research Centre, Sydney, have established an Early Career Committee to represent all of the 10 IAMAS Commissions in a set of activities aimed at supporting these scientists. In addition, our Past President, John Turner, led the development of a IAMAS Strategy document which has a set of goals for current and future Bureaus to carry out, which we are attempting to make progress on. These promise to keep IAMAS healthy, strong and growing, so are important to continue to work on.

I enclose a picture from our DACA-2013 Atmosphere and Cryosphere Assembly meeting in Davos, remembering fondly past in-person meetings which were so pleasurable and rewarding. Let's hope for a future where we can all meet in person again!



*At the Davos Atmosphere and Cryosphere Assembly DACA-13, 8-12 July 2013*

## 2. IUGG2023 – Welcome to Berlin!



### *Welcome from the Local Organizing Committee (LOC)*



The 28th IUGG General Assembly ([IUGG2023](#)) will be held from 11 to 20 July 2023 at the CityCube in Berlin, Germany.

This General Assembly is a special opportunity for participants from around the world to come together and discuss the full range of geodetic and geophysical themes, and further enhance the important interdisciplinary collaboration for a better understanding of our Earth System.

*Harald Schuh, Chair LOC IUGG2023*

IUGG2023 will provide a platform for personal meetings, exchange of ideas and developing new concepts for international science collaboration, all of which have suffered a setback during this pandemic crisis. IUGG2023 will help to create a new spirit to address pressing large societal challenges such as global environmental change and natural hazards and to stimulate novel geoscience research.

The Berlin-Brandenburg region has one of the largest geoscientific clusters in the world. Participants will have a unique opportunity to meet their scientific partners from many projects in person, here in Berlin, or to combine this with a visit to the research organisations GFZ, AWI or DLR. We are planning an exciting excursion program. In particular an attractive program for young scientists to provide them opportunities for exchange, presentation and discussion beyond the sessions.

After the fall of the Berlin Wall in 1989, the city of Berlin changed significantly, transforming into the dynamic, creative and highly innovative cosmopolitan capital of today's Germany. As a visitor you come to understand why Berlin is ranked as one of the most liveable cities, with its many sights, attractions and UNESCO World Heritage Sites, and experience its extensive, fast and secure public transportation system and its lush natural environment. Summer in Berlin offers the best conditions to enjoy the city after an exciting conference day, with July temperatures averaging around 20-24 °C. The local organisers of IUGG2023 consider, irrespective of the further development of the COVID19 pandemic situation, will organise a hybrid assembly taking place both in Berlin and online so that the advantages of the current development of digital conferencing can be shared by many more colleagues in the scientific community.

On behalf of the LOC of IUGG2023, I welcome you to Berlin.

Harald Schuh, Chair LOC IUGG2023

***Welcome from the Science Program Committee (SPC)***

On behalf of the German National Committee of Geodesy and Geophysics (NKGG), and as Chair of the Science Program Committee (SPC), I welcome you to the 28th IUGG General Assembly in Berlin ([IUGG2023](#)). The General Assembly will give us the opportunity to present Germany and the Berlin-Brandenburg region as a showcase of an innovative research community.



Geosciences explore the complex Earth System through interdisciplinary and international cooperation. Since its formation in 1919, the IUGG has sought to foster international collaboration between the geoscience disciplines. From the time when Germany joined the IUGG in 1951, the country has actively worked on the realisation of joint international activities. Today, Germany is an excellent location for science that offers outstanding research infrastructure and many opportunities for scientists from all around the world. All eight associations of the IUGG have a strong anchor in German research institutes. Of the multitude of institutions, I would just like to mention a few here: the Helmholtz Centre Potsdam – GFZ German Research Centre for Geosciences, the Helmholtz Centre for Polar and Marine Research – Alfred Wegener Institute (AWI), the GEOMAR Helmholtz Centre for Ocean Research Kiel, the German Aerospace Centre (DLR), a large number of German universities, and, last but not least, some federal agencies such as the Federal Institute for Geosciences and Resources (BGR).

I wish to draw attention to one example of fruitful cooperation between the various geoscience disciplines. German geodesy has taken a lead role in developing and realising gravimetry satellite missions such as GOCE, GRACE and GRACE-FO. Their data have contributed remarkably to globally determine the Earth's gravity field with unprecedented accuracy and resolution. In collaboration with all other geosciences, such as the hydrologic, oceanographic, cryospheric sciences and geophysics, mass variations and interactions in the Earth System could be studied and better understood, including critical phenomena such as ice melting in Greenland and Antarctica, regional sea level variations, and ground water loss due to climate change.

On behalf of the NKGG and as Chair of the SPC, I believe that the IUGG2023 in Berlin will further enhance the interdisciplinary collaboration necessary for a better understanding of our Earth System. It will help create a new spirit to address pressing societal challenges such as global environmental change and natural hazards, and to stimulate novel geoscience research. In addition, Berlin is especially attractive for early career geoscientists.

Looking forward to meeting you in Berlin in 2023.

Jürgen Müller, Chair SPC IUGG2023

### 3. 4th Congress of China Geodesy and Geophysics (CCGG)



The 4th Congress of China Geodesy and Geophysics (CCGG) is an academic conference sponsored by the IUGG National Committee for China (CNC-IUGG), which is held every two years. It has a wide academic influence and is supported by major universities and research institutions in China. It has been held three times during the last decade. The 1st CCGG was held in August 2014 at the China University of

Geosciences in Beijing, with about 1,500 participants. The 2nd CCGG was held in September 2016 at the Nanjing University of Information Science & Technology, with about 2,000 participants. The 3rd CCGG was held in August 2018 at the Lanzhou University, with nearly 3,000 participants.

The 4th CCGG will be held on 17 and 18 July 2021, and the number of participants (on-site and video) is expected to exceed 3,000. CCGG plays an increasingly important role in promoting the academic development of geodesy, geophysics and related geosciences.

#### **Objective**

The aim of the 4th CCGG is to develop into an important international academic conference on Earth System science, and provide a platform for Chinese scientists to communicate, exchange and cooperate with international scientists in related fields.

#### **Theme and Scope**

The theme of the 4th CCGG focusses on the *Maritime Silk Road and Earth System Sciences*. The scope of soliciting contributions involves cryospheric science, geomagnetism and aeronomy, geodesy, hydrology, meteorology and atmospheric science, physical oceanography, seismology and physics of the Earth's interior, volcanology and chemistry of the Earth's interior, and aforementioned interdisciplinarity.

#### **Sponsors and Organisers**

Sponsor: IUGG National Committee for China.

Organiser: China University of Petroleum (HUADONG).

#### **Dates**

17-18 July 2021

#### **Venue**

No.66, West Changjiang Road, Huangdao District, Qingdao, China, 266580

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#### 4. IUGG National Committee for the UK – Annual Report 2020

UK-based scientists continue to play an active role in IUGG. Brexit has only served to highlight the importance of international scientific networks and collaborations. The IUGG National Committee for the UK, comprising representatives of all eight IUGG Associations, helps coordinate and promote IUGG activities with the associated UK learned societies. UK-based scientists hold IUGG leadership roles and posts, including IUGG President (Kathryn Whaler), IACS Secretary General (Richard Essery), IAPSO Early Career Scientist Working Group Chair (Alejandra Sanchez-Franks), and IUGG Liaison Officers (Denise Smythe-Wright, John Turner and Kathryn Whaler). The UK also hosts a number of IUGG Association and related services for the international science community. These include the Permanent Service for Mean Sea Level (PSMSL) of IAG responsible for the collection, publication, analysis and interpretation of sea level data from the global network of tide gauges; the IAPSO Standard Seawater Service - the only internationally recognised standard for the calibration of salinity measurement devices; the IAHS office based at the UK Centre for Ecology & Hydrology (Wallingford); and the International Seismological Centre (ISC) which has strong links with IASPEI. More information about the activities of the IUGG National Committee for the UK is in our [2020 annual report](#).

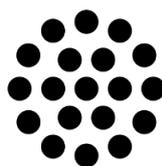
Kate Heal, Chair IUGG National Committee for the UK

*IUGG National Committees are invited to [submit](#) their annual/quadrennial reports at any time.*

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#### 5. ISC Governing Board 2021-2024 – Call for Nominations

The ISC Members, which includes IUGG, are now invited to nominate candidates for the [ISC Governing Board](#) 2021-2024. This includes the President-elect, Vice-President for Outreach and Engagement, Vice-President for Freedom and Responsibility in Science, Vice-President for Finance, and the 10 Ordinary Members.



**International  
Science Council**

More information about the ISC Governing Board can be found [here](#).

Please let [us](#) know by **25 April 2021** of any high-profile scientists who are willing to be nominated, and for which position(s). The pool of candidates will then be discussed by the IUGG Bureau.

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#### 6. Awards and Honours

*International Association of Hydrological Sciences (IAHS)*

IAHS is pleased to announce that the 2020 Tison award goes to *Eleni Maria Michailidi* (Greece) and *Sylvia Antoniadis* (Greece) for their work on the 2018 Hydrological Sciences Journal (HSJ) paper:

Eleni Maria Michailidi, Sylvia Antoniadis, Antonis Koukouvinos, Baldassare Bacchi & Andreas Efstratiadis (2018) Timing the time of concentration: shedding light on a paradox, Hydrological Sciences Journal, 63:5, 721-740, [DOI: 10.1080/02626667.2018.1450985](https://doi.org/10.1080/02626667.2018.1450985)

*The IAHS Tison Award, established in 1982, aims to promote excellence in research by young hydrologists. The Award is granted for an outstanding paper published by IAHS in a period of two years previous to the deadline for nominations. The description of the award is available [here](#).*

***Congratulations!***

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## **7. Meeting Calendar**

### ***April***

- 19-30, EGU, Online, [EGU General Assembly 2021](#)

### ***May***

- 17-21, CCEC, Online, [25th International Clean Air and Environment conference \(CASANZ 2021\)](#)
- 26-28, IAG, Online, [EUREF 2021 Symposium](#)

### ***June***

- 8-18, IACS, McCarthy AK, USA, [International Summer School in Glaciology](#)
- 12-15, ISC, Brisbane, Australia and Online, [Sustainability Research & Innovation Congress 2021](#)
- 21-25, IAMAS, Columbus OH, USA and Online, 16th Workshop on Antarctic Meteorology and Climate
- 22-26, IAG, Wuhan, China, [19th International Symposium on Geodynamics and Earth Tides](#)
- 27-2 July, IAG, Beijing, China and Online, IAG Scientific Assembly
- 28-2 July, CTBTO, Vienna, Austria and Online, [CTBT Science and Technology 2021 Conference](#)
- 28-23 July, IASPEI, Les Houches, France, [2021 Summer School on "Core-Mantle Interactions through time"](#)

### ***Association Scientific Assemblies 2021/2022***

- 27 June - 2 July 2021, IAG, Online and Beijing, China, IAG Scientific Assembly
- 19-23 July 2021, IACS, IAMAS, IAPSO, Online, [Seminar Series](#) (replaces the IACS-IAMAS-IAPSO Joint Scientific Assembly planned to be held in Busan, Rep. of Korea, from 18-23 July)
- 21-27 August 2021, IAGA, IASPEI, Online and Hyderabad, India, [IAGA-IASPEI Joint Scientific Assembly](#)
- 20-24 January 2022, IAVCEI, Rotorua, New Zealand, [IAVCEI Scientific Assembly](#)
- 30 May - 3 June 2022, IAHS, Montpellier, France, [IAHS Scientific Assembly](#)

The full IUGG Events Calendar 2021 can be found [here](#).

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Editors: Tom Beer, Franz Kuglitsch, Chris Rizos, and Alexander Rudloff (Editor-in-Chief).

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