



Quadrennial Report of the International Association of Meteorology and Atmospheric Sciences (IAMAS) 2019-2022

www.IAMAS.org

INTRODUCTION

IAMAS is the specialized association of the International Union of Geodesy and Geophysics (IUGG) that deals with all aspects of the gaseous envelope around the Earth and other planets. The main research work is carried out, coordinated and communicated through IAMAS's ten International Commissions (IC), which are in alphabetical order:

- International Commission on Atmospheric Chemistry and Global Pollution (ICACGP)
- International Commission on Atmospheric Electricity (ICAE)
- International Commission on Climate (ICCL)
- International Commission on Clouds and Precipitation (ICCP) including the Committee on Nucleation and Atmospheric Aerosols (CNAA)
- International Commission on Dynamical Meteorology (ICDM)
- International Commission on the Middle Atmosphere (ICMA)
- International Commission on Planetary Atmospheres and their Evolution (ICPAE)
- International Commission on Polar Meteorology (ICPM)
- International Ozone Commission (IOC)
- International Radiation Commission (IRC)

IAMAS and all the IAMAS commissions play a leading role in global coordination, communication and discussion of the latest research through organization of and participation in a wide range of scientific meetings that are open to all scientists.

ADMINISTRATION

For the term 2019-2023, the IAMAS Executive Committee consists of the following officers:

President	Joyce Penner	United States of America
Vice-Presidents	John Burrows Mary Scholes	Germany South Africa
Immediate Past President	John Turner	United Kingdom
Secretary General	Steven Ackerman	United States of America
Deputy Secretary General		
Members at large	Lisa Alexander	Australia
	Keith Alverson	Japan
	Iracema Cavalcanti	Brazil
	Mu Mu	China
	Michiel van den Broeke	Netherlands
Commission presidents (ex officio)		
ICACGP	Melita Keywood	Australia
ICAE	Xiushu Qie	China
ICCL	Jianping Li	China
ICCP	Greg McFarquhar	United States of America
ICDM	Thomas Spengler	Norway
ICMA	Bernd Funke	Spain
ICPAE	Feng Tian	China
ICPM	Matthew Lazzara	United States of America
IO3C	Sophie Godin-Beekmann	France
IRC	Peter Pilewski	United States of America

Dr. Jing Li of Peking University, China joined the IAMAS Bureau as the Chair of the IAMAS Early Career Committee. Dr. Li participated in Bureau meetings of the association and promotes the activities of IAMAS and its commissions amongst the next generation of atmospheric scientists. She also coordinated Early Career virtual meetings and seminars.

With the global impact of COVID-19, Bureau meetings were held on-line. Due to COVID-19, BACO-21 was postponed to in 2025.

A new website design was developed for IAMAS to modernize the look and support user needs and migrated to a secure web server. Newsletters are available on that site at <https://www.iamas.org/newsletters/>

A new email address was also set up (iamas.org@gmail.com).

ACTIVITIES

2019:

The 27th General Assembly of IUGG was held in Montréal, Quebec, Canada, from 8 July to 18 July 2019. The meeting was a great success with over 4,300 participants taking part, of which around 550 were associated with IAMAS. There were more than 5,300 presentations given in 202 symposia. IAMAS provided 22 scientific programs.

At that Assembly, IAMAS celebrated its 100th anniversary by holding a half day symposium that reflected on the remarkable advances that have taken place in the atmospheric sciences over that century, as well as current outstanding questions and future developments. The symposium consisted of keynote presentations by world-leading experts in various branches of the atmospheric sciences:

- The International Association of Meteorology and Atmospheric Science: One Hundred Years of Research Challenges and Accomplishments: J. Fleming
- Satellite remote sensing: Achievements, challenges, and future progress: B.J. Sohn
- The Changing Atmospheric Pollution and Chemistry, observed from Space in the Anthropocene:

J.P. Burrows

- Climate Change: From Knowledge to Action: T. Stocker
- Atmospheres of planetary bodies other than the Earth: A. Coustenis
- Weather Prediction: Progress and Prospects: A. Brown

The IAMAS Early Career Scientist Medal was presented to Dr. Lei Bi, Department of Atmospheric Sciences School of Earth Sciences, Zhejiang University.

IUGG Honorary Membership (Fellowship) was conferred on:

- John Turner, the President of IAMAS,
- Teruyuki Nakajima, the Secretary-General of IAMAS,
- Athena Coustenis, the former President of IAMAS, and
- Hans Volkert, the former Secretary-General of IAMAS.

The 2019 Bureau and Executive Committee meetings were held during the 27th General Assembly. The Bureau and Executive Committees reviewed the IAMAS financial status and activities and discussed and approved a new strategic plan. The financial audit was discussed and approved. The IAMAS Executive Committee agreed that the term of the Secretary General should be four years, instead of eight years.

Planning began for the IAMAS-IACS-IAPSO (International Association of Cryospheric Sciences, IACS; the International Association for the Physical Sciences of the Oceans, IAPSO) joint assembly to be held in the city of Busan, Republic of Korea, during the period of 18-23 July 2021 (BACO-21); although as noted below this meeting went virtual.

A 100 Year History of IAMAS was written by Michael C. MacCracken and Hans Volkert and published in *History of Geo- and Space Sciences*, 2019. Available at: <https://www.iamas.org/wp-content/uploads/2020/08/IAMAS-100.pdf>

2020:

Due to the COVID-19 pandemic, all meetings of the IAMAS bureau were held virtually and several planned meetings were postponed, including:

- The IAMAS-sponsored Quadrennial International Radiation Symposium planned to be held in Thessaloniki, Greece, from 6-10 July 2020 was postponed until from 4-8 July 2022.
- The IAMAS-sponsored International Conference on Clouds and Precipitation planned to be held in Pune, India, from 3-7 August 2020 was postponed to 2-6 August 2021.
- The International Global Atmospheric Chemistry Conference planned to be held in Manchester, UK, from 14-18 September 2020 was postponed to 13-17 September 2021.
- The IAMAS-sponsored International Ozone Commission Quadrennial Ozone Symposium QOS2020 planned to be held in Seoul, Rep. of Korea, from 4-10 October 2020 was postponed to 3-9 October 2021.

Congratulations to Prof. Joyce Penner, IAMAS President, who was the 2020 recipient of the American Meteorological Society's Syukuro Manabe Climate Research Award.

2021:

IAMAS-IACS-IAPSO planned to convene a joint assembly for summer 2021 in Busan, South Korea (BACO-21). With the cancellation of many face-to-face meetings due to COVID-19, BACO-21 was postponed, and we convened the Virtual Atmosphere-Cryosphere-Ocean seminar series (VACO-21), held 19-23 July 2021. The online seminar series of VACO-21 featured presentations by the Association early career award winners for 2021 and invited speakers on the broad topics of remote sensing, field observations, modelling and coupled process of change in the atmosphere, cryosphere, and oceans. The presentations were:

Monday 19 July, 15:00-17:00 UTC. Remote sensing of the atmosphere, ocean and cryosphere

- Pepijn Veefkind (Royal Netherlands Meteorological Institute): The impact of COVID-19 policy measures on air quality and climate: the view from space

- Paolo Cipollini (European Space Agency): Essential Climate Variables over oceans and ice: a view from space
- Byongjun Hwang (University of Huddersfield): Satellite observation of the floe size distribution of Arctic sea ice: implications for sea ice models

Tuesday 20 July, 15:00-17:00 UTC. Field observations of the atmosphere, ocean and cryosphere

- Laura Stevens (University of Oxford): Stress coupling between Greenland supraglacial lakes during rapid drainage
- Markus Frey (British Antarctic Survey): Sea salt aerosol from blowing snow above sea ice – observations, modelling and atmospheric impacts
- Joellen Russell (University of Arizona): Designing the required Southern Ocean observing system for predicting climate change: robot floats, satellites and supercomputers

Wednesday 21 July, 15:00-17:00 UTC. IAMAS-IACS-IAPSO Early Career Scientist Awards

- Giulia Mazzotti (WSL Institute for Snow and Avalanche Research SLF): Forest snow modelling from tree to regional scales
- Marta Abalos (Universidad Complutense de Madrid): Human impacts on the stratospheric circulation
- Thomas Wahl (University of Central Florida): Bigger ships or less flooding? How tidal changes affect flooding along the U.S. coast
- Jessica Fitzsimmons (Texas A&M University): Micronutrient trace metal dynamics in the Arctic Ocean
- David Bigelow (Minerva Intelligence): The role of englacial hydrology in the filling and drainage of an ice-dammed lake

Wednesday 21 July, 17:00-17:30 UTC. Coupled changes and variability in the atmosphere, ocean and cryosphere.

- Elizabeth Barnes (Colorado State University): Machine learning and climate projections

Thursday 22 July, 12:00-13:30 UTC. Coupled changes and variability in the atmosphere, ocean and cryosphere.

- Ruzica Dacic (University of Wellington): How much does spatial variability of the sea ice surface (SSL/snow) influence sea ice thickness?
- Matthew England (University of New South Wales): Global ocean-atmosphere climate teleconnections

Friday 23 July, 15:00-17:00 UTC. Modelling atmosphere, ocean and cryosphere interactions

- Cécile Agosta (LSCE): Antarctic surface mass balance: local and large-scale drivers, present and future
- Jenny Mecking (National Oceanography Centre): Predicting the 2015 North Atlantic Cold Blob
- Doug Smith (Met Office): Robust but weak multi-model atmospheric response to future Arctic Sea ice loss

The IAMAS Early Career Scientist (ECS) monthly webinar series began in June 2021, with the first webinar held on 22 June 2021. Speakers are all ECS, mostly young faculty and postdocs. The topics of the webinars were organized according to the IAMAS commissions, and the IAMAS ECS representative from each commission took a turn hosting the webinar.

2022:

Planning for the IUGG General Assembly in Berlin, Germany during 11-20 July 2023 occurred throughout 2022. There are no plans for this 28th Assembly to include a virtual format.

We legally incorporated IAMAS in the US and acquired a not-for-profit status. Following that designation, a bank account was opened in the US to facilitate the distribution of IAMAS funds to our commissions in support of their approved scientific activities; the account in the US was opened in August 2022. Funds were then moved from the IAMAS bank account in Germany to the US. A transfer of funds from Germany to US was made in October 2022, in the amount of \$207,727.63. We express our appreciation to Hans Volkert and John Burrows for their long-term support of the IAMAS bank account in Germany.

IAMAS Publications in Advances in Atmospheric Sciences (AAS):

IAMAS has an MOU with AAS, a journal co-published by Springer and Science Press and hosted by the Institute of Atmospheric Physics, China. AAS has published the IAMAS related articles:

- Li, J., Jiang, Z., Dong, Y. *et al.* The IAMAS-CNC Early Career Scientists Nobel Prize Online Interpretation Workshop. *Adv. Atmos. Sci.* **39**, 1012–1015 (2022). <https://doi.org/10.1007/s00376-021-1455-6>.
- Lazzara, M.A., Orendorf, S.A., Norton, T.P. *et al.* The 13th and 14th Workshops on Antarctic Meteorology and Climate. *Adv. Atmos. Sci.* **37**, 423–430 (2020). <https://doi.org/10.1007/s00376-019-9215-6>.
- Tian, W., Huang, J., Zhang, J. *et al.* Role of Stratospheric Processes in Climate Change: Advances and Challenges. *Adv. Atmos. Sci.* (2023). <https://doi.org/10.1007/s00376-023-2341-1> (Part of the collection National Reports to the IUGG by Chinese National Committee for IAMAS).
- Lyu, W., Zheng, D., Zhang, Y. *et al.* A Review of Atmospheric Electricity Research in China from 2019 to 2022. *Adv. Atmos. Sci.* (2023). <https://doi.org/10.1007/s00376-023-2280-x> (Part of the collection National Report to the IUGG Centennial by Chinese National Committee IAMAS).
- Bromwich, David H., Matthew A. Lazzara, Arthur M. Cayette, Jordan G. Powers, Kirstin Werner, John J. Cassano, Steven R. Colwell, Scott Carpentier & Xun Zou. The 16th Workshop on Antarctic Meteorology and Climate and 6th Year of Polar Prediction in the Southern Hemisphere Meeting. *Adv. Atmos. Sci.*, **39**, 536–542 (2022).

Some Highlights from the IAMAS International Commissions

ICACGP (<http://www.icacgp.org/>)

iCACGP convened several sessions at the 27th IUGG Assembly in Montreal in July 2019. As the pandemic continued, iCACGP, like many other groups, modified activities to adapt to restrictions. The Paul J. Crutzen Award for Early Career Scientists 2022 was awarded to Dr Sarah S. Petters from Aarhus University, Denmark in recognition of her contribution to a better understanding of aerosol chemical composition, phase state and aerosol-water interactions. The award was presented at the 2022 iCACGP-IGAC Joint Conference in Manchester, UK.

ICAE (<http://icae.jp/>)

The 17th ICAE meeting was held successfully in Tel-Aviv, Israel, 19-24 June 2022. The venue at Tel-Aviv University's Porter School for Environmental Science hosted 120 participants from 30 countries. After a series of procedures, Barcelona, Spain has been chosen as the venue for the 18th ICAE conference, which will be held in 2026. Newsletters are available at <https://www.iamas.org/icae/newsletter/>.

ICCL (<http://www.iccl-iamas.net/>)

The ICCL biennial meeting was held on 22 July 2021 as a virtual meeting. Prof. Ayako Abe-Ouch was awarded the Milutin Milankovitch Medal at EGU 2021.

ICCP (<http://www.iccp-iamas.org/>)

The ICCP has released a statement that summarizes the position of the ICCP Executive Committee on the role of clouds and precipitation on climate change (https://www.iamas.org/iccp/wp-content/uploads/sites/3/2022/01/Letter_Climate_fin.pdf). There were some meetings associated with the ICCP Conference. The International cloud modelling workshop (26-30 July 2021), held virtually, was attended by over 120 participants from around the world. The 21st International Conference on Nucleation and Atmospheric Aerosols (ICNAA), which has been delayed since 2021, will now occur 27-30 June 2023 at the Queensland University of Technology (QUT), Brisbane, Australia. ICCP hosted a short course on radar on 7 August 2021 that introduced the principles of Doppler and polarimetric radar and its application to observing cloud microphysical processes. The course was attended by nearly 160 participants from around the world.

ICDM (<https://www.iamas.org/icdm/>)

Formed in late 1967, ICDM celebrated its 50th Anniversary at the 2019 Montreal Assembly with a small reception, a memento, and dinner at a local restaurant. A new web page was developed and moved to the IAMAS sponsored website: <https://www.iamas.org/icdm/>.

ICMA (<https://www.iamas.org/icda/>)

ICMA was a co-sponsor of the 8th IAGA/ICMA/SCOSTEP Workshop on “Vertical Coupling in the Atmosphere-Ionosphere System,” a hybrid workshop conducted in Sopron, Hungary. The ICMA website was restructured and hosted at the IAMAS website as noted above. ICMA nominated the successful candidate Dr. Marta Abalos (Spain) for the IAMAS ECS Medal Award 2021.

IO3C (<http://www.io3c.org/>)

Due to the Covid-19 crisis, the Quadrennial Ozone Symposium QOS2020 was postponed to 3-9 October 2021 and held online. There were 341 registered participants from various countries around the world. September 16th was the International Day for the Preservation of the Ozone Layer, celebrating the 35th signing anniversary of the 1987 Montreal Protocol treaty on Substances that Deplete the Ozone Layer. The 2021 *Dobson Award for Young Scientists* was awarded to William Bell, who sadly passed away in April 2022.

ICPAE (<https://www.iamas.org/icpae>)

ICPAE focused on increasing its membership. As a result of the pandemic, ICPAE did not organize meetings or workshops in 2020, but increased the number of active members by 70%. ICPAE launched a new website, hosted by IAMAS.

ICPM (<http://www.icpm-iamas.aq/>)

The 14th Workshop on Antarctic Meteorology and Climate was held on 25–28 Jun 2019 in Charleston,

South Carolina, USA (<https://amrc.ssec.wisc.edu/meetings/meeting2019/>). The 15th and 16th Workshop on Antarctic Meteorology and Climate were held virtually due to the pandemic.

IRC (<http://www.irc-iamas.org/>)

After two postponements due to the COVID-19 pandemic, the quadrennial International Radiation Symposium (IRS 2022) was held in Thessaloniki, Greece, from 4-8 July 2022. For many, IRS 2022 marked the first in-person event they had attended since the start of the pandemic in 2020.

Future Activities

IAMAS will be a full participant in the upcoming IUGG 2023 General Assembly in Berlin, Germany (<https://www.iugg2023berlin.org/>).

IAMAS Bureau meetings will be held on 12 and 14 July 2023.

The IAMAS Scientific Assembly in 2025 is planned to be held in Busan, South Korea in collaboration with IAPSO and IACS.

Submitted by
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IAMAS Secretary-General