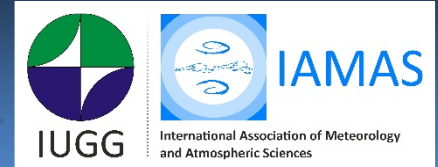


INFORMATION E-MAIL FROM THE IAMAS BUREAU



August 2018

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The XXVII IUGG General Assembly (IUGG2019) in Montreal, Canada

The 27th General Assembly of the International Union of Geodesy and Geophysics (IUGG) will take place from 8 to 18 July 2019 in Montréal, Québec, Canada.

2019 marks the 100th anniversary of IUGG; The conference will look back on the accomplishments of the previous century of Earth and space science research, and forward to the next century of scientific advancement. Please do attend!

The important deadlines are below.

October 1 2018

Online registration begins

Abstract submission begins

The online housing tool opens

Travel grant applications open

February 18 2019

Abstract submission closes

Travel grant applications closes

March 30 2019

Abstract decision sent to participants

April 5 2019

Early-bird registration closes

May 31 2019

Complete scientific programme details published

The list of provisional programs including complete schedule are available on the following website.

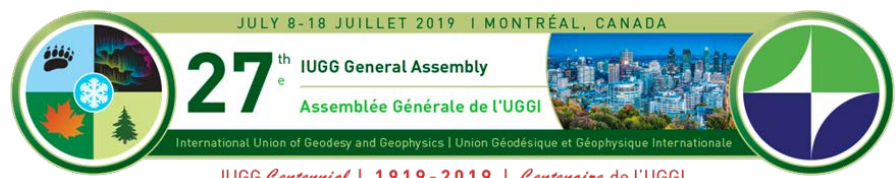
<http://www.iugg2019montreal.com/program.html>.

The list of Inter-Association and Association symposia will be added on the website.

The Scientific Program will be composed of Union, Inter-Association, and Association symposia, workshops, panels and special events.

Union Symposia List

| | |
|------------|--|
| U01 | Future Earth, Climate and Sustainability |
| U02 | Disaster Risk Science |
| U03 | Mathematics and Observations in Earth Science |
| U04 | Data Science, Big Data and Analytics in Geodesy and Geophysics |
| U05 | New Discoveries in Earth's Deep Interior |
| U06 | New Discoveries in Planetary Sciences |
| U07 | Centennial of International Cooperation in Earth Sciences |
| U08 | Earth and Space Observations |
| U09 | Early Career Scientists' Symposium |



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

The 4th ANtartic Gravity Wave Instruments Network (ANGWIN) Workshop



The 4th ANGWIN Workshop was held at the National Institute for Space Research (INPE) on April 24 - 26, 2018, in São José dos Campos-SP, Brazil. Thirty-five attendees came from thirteen different institutions (Universities and Research Institutes).

ANGWIN is a scientific program that utilizes a network of instrumentation operated at several international research stations around Antarctica with the primary research goal of quantifying and understanding the dominant sources, propagation and impact of such dynamical processes on a continental-wide scale. The goal of this workshop is to combine together new Antarctic and Arctic observations using optical and

radio-wave techniques, and results with modeling studies to gain fresh knowledge and insight of their large-scale effects on the general circulation of the polar-regions' lower, middle and upper atmosphere and ionosphere. Dynamical coupling processes between the Antarctic Peninsula and South American continent were another topic studied during the workshop. The workshop provided an ideal opportunity for early career scientists/students to become involved in international collaborations and work with some of the leading experts in this field of research.

Reporter: José Valentin Bageston

10th Workshop on Long-term Changes and Trends in the Atmosphere

The 10th Workshop on Long-Term Changes and Trends in the Atmosphere was held at Hefei, China on May 14-18 2018. There are about 130 participants from 12 countries of China, Germany, USA, Japan, Argentina, Czech Republic, Finland, Russia, Malaysia, India, UK, Australia, including many graduate students and young scientists. This highly successful meeting was the most attended in this trend workshop series with over 120 abstracts received. The six traditional sessions include trends and variability in the troposphere, stratosphere, mesosphere, thermosphere, ionosphere and modeling trends. In addition, three tutorials for students and young scientists were given on the history of trend

research, dynamics and modeling. Jan Lastovicka gave a special seminar on how to publish in scientific journals for early career scientists. This meeting was supported by IAMAS and IUGG. A special issue of Journal of Geophysical Research Space Physics is open for submission starting August 1 2018. The host institute of the next trend workshop is to be announced soon. Slides of oral presentations will be available at <http://trends2018.ustc.edu.cn/programs.html>.

Tao Li,
University of Science and Technology of China, China
Jia Yue,
Hampton University, USA



Aerosol-cloud-precipitation-climate workshop

The goal of the Aerosols-Clouds-Precipitation-and-Climate (ACPC; acpcinitiative.org) initiative is to improve the understanding of the mechanisms by which aerosol perturbations may modify clouds and precipitation, and to quantify the impact this may have on climate. The focus is at a cloud-field scale. Observational studies are supported by simulations with cloud-resolving and cloud-system resolving models. On the basis of progress discussed in a series of meetings, the ACPC group gathered at the University of Colorado, Boulder, USA, 3 - 6 April 2018.

Two cloud regimes to be studied were selected at the earlier meetings: deep convection and marine stratocumulus regimes. In both cases, specific strategies were chosen aimed at detecting and attributing signatures of aerosol effects on cloud- and precipitation properties; in both regimes, a combination of modeling and analysis of observations is used.

For the deep convective case, the region of Houston, Texas, for weather conditions with onshore flow, was selected to potentially distinguish between deep convection influenced by emissions from the city and its surrounding industry, and others, in the vicinity, that are not. In terms of observations, a strong focus was put on the analysis of polarimetric radar data. The methods already sketched out at the 2017 meeting have been refined for application to track cells and identify how processes (such as the microphysics in the updraft shafts) are affected by various drivers. In accord with the plan to make use of models for insights into how to optimize the strategy for an observational identification of aerosol - convection interactions, radar forward simulations on the basis of large-eddy simulations have been performed. On the basis of the results, and on the basis of the ancillary observational information gathered by the ACPC group, a pre-proposal was submitted to the Department of Energy's Atmospheric Radiation Program (DOE/ARM) shortly after the Boulder workshop to deploy instrumentation in the Houston area in an extensive field campaign.

On the cloud-system resolving modeling side, the investigations for deep clouds made substantial progress. With a very specific and tested simulation set-up definition, and now six different groups contributing results to the modeling study, some emerging results about the aerosol-perturbation impact on the convection were identified across models (e.g. shifts in precipitation intensity), despite substantial differences between the models.

With regard to the shallow marine clouds, the group decided to shift the geographical region of interest to the South East Atlantic ocean. Recent field campaigns in this area provide new insights, and within as well as outside the ACPC group, these campaigns are gathering



significant interest. On the basis of science performed by several teams participating in ACPC, a few testable hypotheses have emerged. On the one hand, model research has shown that the cloud adjustments to aerosol-radiation interactions (also called the semi-direct effect) might lead to a net increase in low-cloud liquid water path (a net negative effect on the radiation budget). Due to the strong absorption of the biomass burning aerosol in the South East Atlantic region, a combination of modeling and observations may allow to investigate and test this hypothesis. On the other hand, large-eddy simulations suggest a strong impact of aerosol mixed into the boundary-layer clouds from the free troposphere on the cloud persistence and the life cycle of liquid water path. The group now plans to pursue studies already started for the South East Pacific, the former focus of the group, on identifying trajectories along the cloud-system life cycle, derived from cloud-resolving models, to drive reference large-eddy simulations. In combination with the field campaign measurements and satellite observations, the aim is to corroborate or falsify the described hypotheses.

Insight into co-variation of aerosols, clouds and precipitation can be gleaned from satellite retrievals. With regard to liquid-water clouds, the droplet number concentration, N_d , is a key parameter, central to the quantification of effects of aerosol perturbations on cloud properties. However, the retrieval of N_d from satellite data is prone to uncertainties, and in this regard it was a major achievement of the ACPC group to initiate a comprehensive review that quantifies these uncertainties, and proposes avenues towards better measurements.

A new initiative in the group interested in shallow clouds is the joint investigation of warm-rain processes from satellite data. The idea is to combine the constraints on warm rain from radar reflectivity vs. cloud optical depth-joint histogram, the probability-of-precipitation metric and the occurrence of warm rain fraction.

A follow-up workshop is planned for 24 - 26 April 2019 at Nanjing University (China). The ACPC group welcomes interested persons or groups to join the activities.

Johannes Quaas and Daniel Rosenfeld, co-chairs



International Workshop on Polar Climate Changes and Extreme Events

The polar climate systems have experienced various dramatic changes which may have strongly influenced climatic conditions across over the rest of the globe through large-scale atmospheric and oceanic teleconnections. Furthermore, the mass balance of polar ice sheets in a warming world may significantly control future global sea level change. However, processes associated with these changes, linkages, and impacts have not been fully understood due to complex interactions among atmosphere, ocean, and ice. To review the progress achieved recently, identify existing problems and future research priorities, and, in particular, promote collaborations between Chinese and international researchers, an international workshop on Arctic and Antarctic climate system and their global linkages was convened during 23-24 October 2017, at Hohai University, Nanjing, China.

More than 130 participants from eight countries attended the workshop, including a noticeably good number of early career scientists and graduate students, to present their latest research accomplishments and results. The workshop presentations covered many recent cutting-edge topics, ranging from the amplified Arctic warming, accelerated retreat of Arctic sea ice, Arctic-midlatitude linkages, to Antarctic extreme events and ice shelf-ocean interactions.

It was the first time that such an international workshop on polar climate change and extreme events was held in China. Many participants thought this workshop was enlightening and informative and suggested to hold another one in the future. Considering the rapid growth of the Chinese polar research program and to promote international collaborations between graduate students and early career polar researchers, an international summer

school on the polar climate system took place in late May 2018.

The workshop made the following recommendations:

- 1) We need to enhance the coordination and collaboration of fieldwork and modeling activities for MOSAiC between Chinese and international polar researchers. The aim is to arrive at improved Arctic process and feedback understanding.
- 2) A high-resolution horizontal field of the Antarctic near-surface winds should be created. We need to study how the Antarctic coastal extreme wind events have changed since the 1950s, and how these extreme wind events interact with ocean and ice.
- 3) To enhance our capability in simulating ocean-ice shelf interactions, we need to advance the inter-comparison of glacier and ocean models including coupled and uncoupled. Several participants were suggested to participate in a workshop in Abu Dhabi during May 7 - 9, 2018 for such purpose.
- 4) The formation of the Weddell Polynya reflects the occurrence of deep convection in the Weddell Sea, and may have important impacts on local and global ocean circulation. The Weddell Polynya started to appear again in 2016 and 2017. We need to pay great attentions to the evolution of the Weddell Polynya in the next few years by coordinating in situ observations and modeling activities.

Acknowledgements

This workshop was funded by "the Fundamental Research Funds for the Central Universities" (2017B04814, 2017B20714), Hohai University, and State Key Laboratory of Satellite Ocean Environment Dynamics.

Zhaomin Wang, Xiangdong Zhang,
John Turner, Annette Rinke



The Second Article of a series featuring *Early Career Scientists*

“Airborne field science in Antarctica”

I am a PhD student at the British Antarctic Survey (BAS)/University of East Anglia studying the atmospheric processes that drive melt over the Larsen C ice shelf on the Antarctic Peninsula, a part of the world that is changing very rapidly.

Recently, my work has focused on the effect of cloud microphysics on the balance of energy fluxes received at the ice shelf surface, so I have been working extensively with data collected during aircraft measurement campaigns in the Antarctic. I therefore leapt at the chance to get my hands dirty on an airborne field campaign this season, which was part of an ongoing five-year project examining the role of the Southern Ocean in heat and carbon uptake, ORCHESTRA.

The Southern Ocean has global significance for climate. Oceans worldwide have absorbed ~30% of the anthropogenic CO₂ emitted since the pre-Industrial era and more than 93% of the additional heat associated with global temperature rise. The Southern Ocean absorbs a disproportionate amount, accounting for half of oceanic carbon uptake, and more than 75% of the heat stored by the world's oceans.

Unfortunately, we know comparatively little about the Southern Ocean. It is a vast area in a part of the world where it is challenging to conduct observational campaigns. The processes that control the rate of uptake are poorly constrained in climate models and reanalyses because in situ observations are so scarce. Further, precisely how large a sink of heat and carbon the Southern Ocean is may be changing, so it is crucial that we improve our knowledge of these processes.

Enter ORCHESTRA. The project is designed to combat these challenges, and is a collaboration between multiple institutions involving a comprehensive range of data collection methods, including ocean gliders, ship-based observations, and of course aircraft measurements.

The airborne element of the project contributes to understanding of air-sea exchange rates. We were flying at low level (15 - 30 m above the surface) over regions of solid pack-ice, partially ice-covered areas and open water, collecting data on the transfer of energy and gases at high temporal resolution (up to 50 Hz). This high resolution was important for calculating fluxes using the eddy covariance method, which is useful for accurately and precisely constraining ocean-atmosphere exchange.

During the field season I was involved with, we were primarily based at Rothera research station on the Antarctic Peninsula, which meant we could fly east or west to sample fluxes in either the Weddell or Bellingshausen Seas. However, the aircraft also conducted several flights coordinated with either ocean gliders or the British Antarctic Survey's research vessel, which were sampling further north, in a region where ocean fronts are present.

In total, we clocked up around 60 hours of flight time, and managed to collect data in several different parts of

the Southern Ocean. We were also able to measure fluxes in the region of water newly exposed by the calving of an enormous iceberg from the Larsen C ice shelf in July 2017. For me, that was particularly

momentous because it meant I got to see the subject of my PhD research ‘in-the-flesh’ for the first time, which helped bring together everything I've learned so far.

People say that your first visit to Antarctica sticks with you forever, and I can see why. Spending six weeks ‘down South’ was an otherworldly experience, but more importantly I learned things first-hand about the polar environment that I would never have been able to from my desk, and which reinvigorated my passion for polar atmospheric science.



Figure 1 - The team involved in the field campaign (left to right): Russ Ladkin, Tom Lachlan-Cope, Jon Bowland, Eila Gilbert and Alexandra Weiss



Figure 2 - A view of some of the islands on the Antarctic Peninsula from the cockpit of the aircraft during a research flight, complete with nose boom

Author: Eila Gilbert

Introduced by ICPM Member: Thomas Lachlan-Cope

The International Science Council

On 5 July 2018, the International Science Council (ISC) was launched, a new global non-governmental organization representing more than 180 scientific academies and research councils, international scientific unions and associations from around the globe. The new organization is the only global body representing both the natural and social sciences and results from the historic merger of the International Social Science Council (ISSC) with the International Council for Science (ICSU). The founding of the ISC was celebrated with a high-level inaugural event. Leading international scientists such as Cedric Villani, Ismail Serageldin and Esther Duflo provided keynote addresses at the event, which was moderated by Craig Calhoun and Nick Ishmael-Perkins. The program included addresses by Catherine Brechignac, Secrétaire

Perpetuel of the French Academy of Sciences, Prince Albert II. of Monaco, and Daya Reddy, the first ISC President.

The inaugural General Assembly of the ISC was held at the Maison des Océans in Paris, France from 3 to 4 July 2018. At the Assembly, the Council elected its first Governing Board. Alik Ismail-Zadeh, IUGG Secretary General was elected as ISC Secretary General.

Congratulations!

Further information can be found at <https://council.science/>.



**International
Science Council**

IUGG is a member of the
International Science Council (ISC)

The IAMAS Facebook Page is now available!



IAMAS SG Office is pleased to announce the launch of IAMAS Facebook "Page".

<https://www.facebook.com/IntAssociationMeteorologyAtmosphericSciencesIAMAS/>

As you know, IAMAS President, John Turner has managed an IAMAS Facebook "Group", which you can join at

<https://www.facebook.com/groups/894638217243596/>

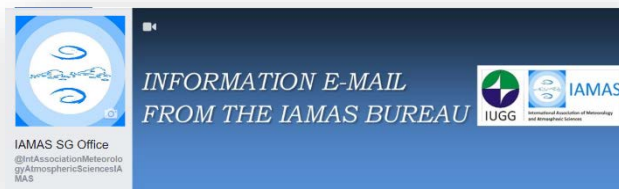
. This Group page provides the important information and is the best place to discuss any theme online.

On the other hand, the IAMAS Facebook "Page" managed by the IAMAS SG Office will also provide valuable information including the latest issue of IAMAS Newsletter, introduction of Early Career Scientists, their activity report and upcoming events more frequently.

Especially, we would like to have a series of articles

featuring Early Career Scientists in parallel with the IAMAS Info-Email. We have gathered some articles from young scientists who were introduced by the commission officers. The IAMAS SG Office would like to post an article on the Facebook Page each month and summarize these articles on the IAMAS Info-Emails after that. We have announced the second call for an article from ECS.

Please follow and like the Facebook Page "IAMAS SG Office" and join IAMAS "Group". And you can spread this news and share our posts!



Upcoming IAMAS-related meetings

✧ 25-29 September 2018

2018 joint iCACGP 14th Quadrennial Symposium and IGAC 15th Science Conference (iCACGP)

Takamatsu, Japan

Web: <http://icacgp-igac2018.org/>

✧ 12-18 September 2018

Aerosol Training School as part of the Caribbean Aerosol-Health Network (CAHN)

Puerto Rico

Web: TBA

The IAMAS INFORMATION E-MAIL



We welcome short reports from the Commissions at any time.

IAMAS, General Secretariat

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