IAGA News
International Assotiation of Geomagnetism and Aeronomie
IUGG
December 2021
IAGA News No. 58

IAGA, the International Association of Geomagnetism and Aeronomy,
is the premier international scientific association promoting the study of terrestrial and planetary magnetism and space physics

Contents

Foreword

This issue of IAGA News contains information about IAGA activities throughout 2021, with the main event being the IAGA-IASPEI Joint Scientific Assembly in August. It should have been held in Hyderabad, India, but had to be turned into full virtual format due to the ongoing COVID-19 pandemic. Read about the amazing efforts of our strong international community and our dedicated hosts in India to make the best of the difficult circumstances and have a successful virtual exchange of scientific ideas, accompanied by the IAGA School, a GIFT workshop (Geosciences Information For Teachers), an awards ceremony and business meetings. This newsletter contains further reports on IAGA activities of different kinds and provides information about deceased IAGA scientists. The reader is also referred to the IAGA website and social media (see below) for more on IAGA and for updates between the annual Newsletters.

***

IAGA News is distributed – in its electronic form – to the National Correspondents in the Member Countries, to all IAGA officers and to IAGA scientists who have attended recent IAGA assemblies. Please feel free to distribute IAGA news around, mainly to the national policy makers and leaders, whose decisions can affect the activities of IAGA.

Monika Korte
(Secretary-General)

IAGA on the Web
Information on IAGA is regularly updated at the IAGA site: **http://www.iaga-aiga.org**

www.facebook.com/IAGAandAIGA

www.twitter.com/IAGA__AIGA

www.instagram.com/iaga_aiga

1 Message from the President

Each of us is continuing to struggle in a world that has been turned upside down for the past 2 years. The pandemic situation has forced all of us in our research field to confront unprecedented challenges. We have seen the virtual break of so many of our activities. Yet in the midst of this set of challenges, our association has pivoted to meet the needs of our members throughout this period of turbulence and isolation. The main event of this year was the Joint Scientific Assembly 2021 of two Associations of the International Union of Geodesy and Geophysics: IAGA and IASPEI (the International Association of Seismology and Physics of the Earth's Interior), which was "hosted" by the CSIR National Geophysical Research Institute (CSIR-NGRI) in Hyderabad, India.

- This Scientific Assembly was remarkable in many ways. Most important was that our community realized that in order to understand the Earth's system, we need to take advantage of all disciplines and make an effort to combine them in new ways, not only within our own association but also across IUGG Associations, as it was the case for this meeting. This virtual meeting was also made remarkable by the exceptionally high quality of the science and the "Associations Lectures".
- However, this meeting served many roles even beyond the science. The administrative business of our association was conducted here. To organize this Joint Scientific Assembly in this specific format, many people have worked a great deal, and I would like to thank them. I am not able to name here all IAGA officers, conveners, and co-conveners, but I would like to thank them deeply for the work they have done. Also, I would like to thank each of you involved in the National Advisory Committee, Scientific Program Committee, Local Organizing Committee, and Operational Committee. I would like also to express my warm thanks to Monika Korte, IAGA Secretary General and Kusumita Arora, who were both deeply involved in organizing this meeting.
- The IAGA Awards were also presented during this meeting: the Shen Kuo medal for interdisciplinary achievements was given to Jay Johnson, the IAGA Long Service medal to Natalia Sergeyava, and the IAGA Early Career Award to Man Hua. I would like to congratulate them once more, and hope to see them in person in Berlin, during the next General Assembly in 2023!
- Finally, our 5th IAGA School was held in a virtual form and it was a great success.

The last statement shows that our association is very sensitive to the early career scientists. In the same line, IAGA has established a formal collaboration with the International Association of Physics Students, IAPS, a student-run educational association which aims to encourage students in the academic and professional growth. Our early career scientists are very active, and due to their efforts IAGA is also present on social media. Take a tour on Facebook, Twitter, Instagram, Blog, and share your research or enjoy the latest news! Finally, I sincerely hope that this message finds you and your loved ones in good health. Thank you for the superb support that you have given to IAGA throughout the past year. Wishing you a wonderful new year!

Mioara Mandea
(President)

2 The IAGA-IASPEI Joint Assembly 2021

2.1 General report

The International Association of Geomagnetism and Aeronomy (IAGA) and the International Association of Seismology and Physics of the Earth's Interior (IASPEI) had planned to have a joint scientific assembly in August 2021 in Hyderabad, India. In the midst of the preparations in 2020 it became clear that a normal in-person meeting would likely not be possible in summer 2021 due to the COVID-19 pandemic. The two associations and the local organisers decided together to organize the meeting as a virtual event on the originally planned dates.

Thus, the virtual Joint IAGA-IASPEI Scientific Assembly was held August 21-27, 2021 hosted by the Indian National Academy (INSA) and the CSIR-NGRI with support from other Earth science institutes of the Department of Science & Technology, GoI, CSIR and the Ministry of Earth Sciences, GoI. Our Indian colleagues have done a tremendous job in working with a professional conference organizer to set up the fully virtual environment in less than a year. The meeting attracted 828 participants, over 500 from IAGA and nearly 300 from IASPEI. The participants came

The opening ceremony of the IAGA-IASPEI Joint Assembly 2021 was attended in person by selected local participants and streamed online for all others.

from 56 countries and included over 200 students. These numbers are quite satisfying, although a somewhat higher participation was originally expected for a normal meeting. The program did not differ much from the originally planned one, and included 3 plenary talks, 8 joint sessions and 27 IAGA and 17 IASPEI symposia. It was preceded by the NGRI-CSIR Diamond Jubilee Symposium which celebrated the 60th anniversary of the institute with 8 invited lectures. Moreover, IAGA held its award ceremony where this year's Shen Kuo Medalist, Jay Johnson, gave a well-received lecture entitled "From microphysics to system science: approaches to understanding dynamics from the sun to Saturn". The Joint Assembly was preceded by the IAGA and IASPEI Schools for early career scientists and a GIFT workshop to educate teachers from India and surrounding countries on IAGA and IASPEI topics. All these also were organized for the first time in virtual formats. The International Association of Physics Students, IAPS, that signed a memorandum of understanding for collaborations with IAGA earlier this year, organized another virtual event (IAPS@IAGA) where early career scientists could discuss in small groups with international experts in different fields of IAGA sciences.

The challenge to accommodate all global local times for the presentations at the Joint Assembly led to a concentration of sessions in the interval 16:45 – 22:15 IST (10:45 – 16:45 UT) which resulted in some unfortunate overlaps of sessions. However, all presentations were recorded (either pre-recorded or recorded during live session) and available for later viewing. The live oral sessions included some lively discussions despite the online limitations, and after some initial difficulties the association business meeting, an important part of the IAGA and IASPEI scientific assemblies, also went well. The only aspect that was less satisfactorily solved were the posters. However, overall the technical arrangements worked very well, and we sincerely thank the Local Organisers and the personnel from the professional conference organizing company for their dedication, in particular their immediate response to real-time requests for improvements during the first days of the assembly. We thank all who made this first virtual IAGA-IASPEI assembly a great success, including the IAGA and IASPEI officers, symposium organisers, session conveners and chairpersons, who all faced new challenges with the conversion to the virtual format. IAGA and IASPEI plan another joint assembly for 2025, likely to be held in Lisbon, Portugal. We are looking forward to hopefully have this, as well as the IUGG General Assembly before in 2023 in Berlin, Germany, as regular meetings with in-person participation.

Monika Korte, IAGA Secretary General

2.2 Report from the Meetings of the IAGA Conference of Delegates

Two Conferences of Delegates (CoD) took place during the General Assembly.

2.2.1 First Conference of Delegates, August 22, 19:00-20:15 IST

The Secretary General conducted a Roll Call of the Chief Delegates from all IAGA member countries. This established that 14 Chief Delegates with voting rights were present. According to the IAGA Statutes and By-Laws this number was therefore not enough to hold binding votes at this meeting.

The agenda was approved and the President called the meeting to order and welcomed all the delegates.

Moment of remembrance for IAGA members deceased

Given the unusual nature of this online-only meeting, this traditional item was postponed until the next meeting when physical attendance would be possible.

Approval of the Minutes of the 2019 Conference of Delegates

The minutes of the 2019 COD were approved unanimously.

Reports

Report of the President (Mioara Mandea)

The President's report included the following items and activities:

IAGA activities

- The President provided advice regarding various IAGA matters
- The President coordinated the creation of the regular IAGA News newsletter
- On behalf of the EC, the President signed a Memorandum of Understanding (MoU) between IAGA and the International Association of Physics Students (IAPS)

IUGG activities

- Following the IUGG centennial in 2019, the president together with the past president authored a paper about IAGA: M. Mandea and E. Petrovsky: "IAGA: A major role in understanding our magnetic planet" (Hist. Geo Space. Sci., 10, 163–172
- The president coordinated the IAGA contribution to the IUGG centennial book series: M. Mandea, M. Korte, A. Yau and E. Petrovsky (Eds): "Geomagnetism, Aeronomy and Space Weather – A Journey from Earth's Core to the Sun", Cambridge University Press, 2020
- The President provided advice concerning scientific meetings
- The President provided comments/suggestions for revision/additions to the IUGG E-Journal (monthly issues)
- On behalf of the EC, the president provided suggestions for IAGA members to several IUGG Ad-hoc Committees 2022-2023: Nominating Committee, Site Comparison Committee, Resolution Committee, Gold Medal Committee, Fellow Selection Committee, Early Career Scientist Award Committee
- Status report on the preparations for the IUGG 2023 meeting, noted the signature of the MoU between IUGG and GFZ and the preparation and contents of the IUGG executive committee meeting 2021/09

The President's Report was approved by the Delegates.

Report of the Secretary General (Monika Korte)

In addition to the activities reported by the president, the SG reported on the following

- First two years of operation with new Executive Committee structure including two vice presidents, a treasurer and an early career representative member

- Changes in scientific structure, i.e. new working groups established after the IUGG General Assembly in 2019
- Activities of the new IAGA Social Media Working group on Facebook, Twitter, Instagram and on a new IAGA Blog
- EC meetings and sponsored topical meetings
- IAGA Awards 2021

Secretary General specific activities in the past two years also include the annual production of the IAGA News; preparation of the IAGA-IASPEI Joint Scientific Assembly, in which the contributions of symposium conveners and division leaders are much appreciated.

The Secretary General's Report was approved by the Delegates.

Report of the Finance Committee (Harald Böhnel)

The Finance Committee consists of Archana Bhattacharyya, Harald Böhnel, Pavel Hejda and Dominique Jault. It was mandated to analyse the way the budget is managed by the EC in terms of priorities.

The report covers the period of January 1, 2019 to June 31, 2021, and was prepared based on documentation provided by the IAGA Treasurer. This consists of the IAGA bank accounts for 2019 and 2021.

The Finance Committee stated the following facts about budget management and reserves:

- The fact that during 2019-2021 most IAGA decisions have been made via e-mail exchange or teleconference and only one face to face EC meeting was held during the 2019 IUGG Assembly led to a continued low level of expenditure related to the IAGA administration.
- The IAGA reserves increased by nearly 26% in the period 2019-2021, which is to a large part due to cancellations of most IAGA activities (workshops) since 2020 due to the COVID-19 pandemic.

The recommendations and overall conclusions from the Finance Committee are as follows

- Continuing the current policy of reducing administration related expenditures
- Increasing the support to science and education and outreach activities to avoid growing yearly reserves
- For the near future, larger support of IAGA Assemblies, IAGA Schools and other IAGA related meetings could be considered, in view of the currently record reserves
- The Finance Committee considers that the IAGA Executive Committee and Treasurer should be commended by the CoD for their excellent management of IAGA finances during the years 2019-2021

The National Delegates approved the financial statements and gave discharge the Executive Committee for the period 01/01/2019 to 31/06/2021.

Report on the 5th IAGA School and GIFT Workshop (Monika Korte)

The Secretary General reported on the 5th IAGA School (see section 4 for details) and the GIFT Workshop (see section 5).

Report on the preparation of the 2023 IUGG General Assembly (Monika Korte)

Preparations for this meeting appear to be on time and going well and a hybrid preparation meeting will be held in Berlin September 15-16, 2021, for which the Secretary General will be able to attend in person.

Business

Resolutions Committee

The National Delegates unanimously approved the nomination of Ciaran Beggan (UK), Eduard Petrovsky (Czech Republic) and Nicolas Gillet (France) for the Resolution Committee.

2.2.2 Second Conference of Delegates, August 26, 19:00 - 20:10 IST

The Secretary General conducted a Roll Call of the Chief Delegates from all IAGA member coun-

tries. This established that 16 Chief Delegates with voting rights were present.

The agenda was approved and the President called the meeting to order.

Reports

Portuguese bid for IAGA-IASPEI 2025

On behalf of the Portuguese bid team Pedro Silva presented the proposal for Lisbon as location for another joint IAGA-IASPEI assembly in 2025. His presentation contained all relevant points like venue, accommodation and transportation, outreach and sponsorship, fees, and social events. After some discussion on several aspects, in particular regarding registration fees, the IAGA president and Secretary General proposed to accept the Lisbon bid for 2025. They noted that the IAGA CoD had already voted for Lisbon for 2021 back in 2017, and that it is the only bid IAGA received.

Report of the EC meetings during the Joint Assembly

The Secretary General reported on the EC meetings during the General Assembly (see 2.3).

Scientific Programme for the IUGG 2023

In preparation for the IUGG General Assembly the Secretary General presented the sessions proposed by the IAGA Divisions and Commissions, which will be coordinated and finalized over the next months.

Business

Resolutions of the 2021 Joint Assembly (Eduard Petrovsky)

Eduard Petrovsky presented two resolutions, that had been suggested by Divisions / Commissions and deliberated by the resolutions committee consisting of Ciaran Beggan, Eduard Petrovsky and Nicolas Gillet. A third resolution of thanks to the local organisers of the Joint Assembly came from the IAGA EC.

All three resolutions were approved unanimously by the National Delegates without discussion (see section 7 for the resolution texts).

Preparation of Election of Officers for the 2023 - 2027 Quadrennium

The Secretary General outlined the IAGA Statutes and By-Laws that governed the preparation of new office-holders in 2023. The EC is therefore tasked to create a Nomination Committee and to prepare for the election of new EC officers and Division Leaders, to run IAGA during the 2023-2027 Quadrennium.

The second Conference of Delegates ended with Secretary General Monika Korte thanking the EC, Division and Commission leaders and the National Delegates for their involvement in IAGA activities.

2.3 Report from the IAGA Executive Committee Meetings

The Executive Committee had three meetings, on August 21, 25 and 27.

The first EC meetings was mainly devoted to preparing the reports for the first CoD and setting up the Resolution Committee. The second EC meeting dealt with preparing the proposed resolutions, the Portuguese bid for the 2025 Scientific Assembly, the suggested sessions for IUGG 2023 and reports from other Division activities for the second CoD. In the third meeting, the EC looked back at the meeting and discussed the lessons learnt for the future from the first virtual assembly and IAGA School. The EC started ot discuss topics like the future format of assemblies and how to implement the recommendations from the Finance Committee. These topics will be discussed further in future videoconferences of the EC.

3 IAGA Awards

Screenshot from the virtual IAGA Award Ceremony: IAGA president Mioara Mandea (top left), Secretary General Monika Korte (top right) with Shen Kuo medalist Jay Johnson (bottom left) and Long Service Award winner Nataliya Sergeyeva (bottom right).

3.1 IAGA Award for Interdisciplinary Achievements - Shen Kuo

The Award aims at recognizing and acknowledging outstanding scientists whose activities and achievements cross several fields of research covered by IAGA.

The Shen Kuo Medal for interdisciplinary achievements was given to Jay Johnson (USA).

3.2 IAGA Long Service Award

The IAGA Long Service Award in recognition of valued services to the IAGA community over many years was given to Nataliya Sergeyeva (Russia).

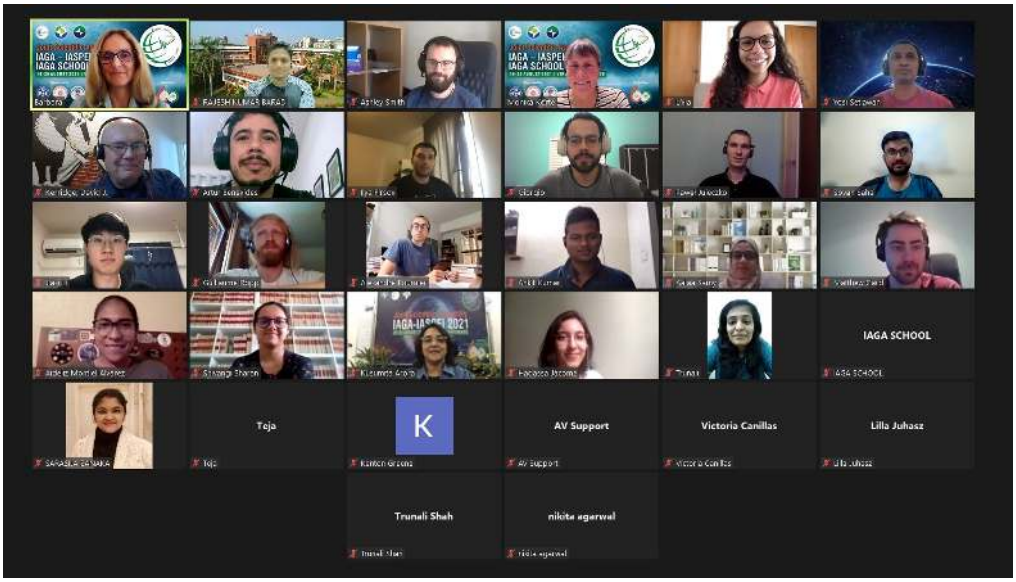
3.3 IAGA Early Carreer Award

The IAGA Early Career Award is given to early career scientists who have made outstanding contributions at specialist meetings and topical workshops for which IAGA is a sponsor. Due to the fact that most of the regular topical workshops from 2020 were cancelled or postponed to 2022, there is only one recipient of the IAGA Early Career Scientist Award this time.

Man Hua (China)

Nominated from the VERSIM (VLF/ELF Remote Sensing of Ionosphere and Magnetosphere) workshop held online November 15-20, 2020.

4 The 5th IAGA School



Virtual group photo from the IAGA School 2021.

The IAGA Schools, organised by the International Association of Geomagnetism and Aeronomy, aim at providing excellent early career scientists with a good basic understanding of a wide range of the scientific topics covered by IAGA. The fifth IAGA School was planned in the week before the IAGA-IASPEI Joint Assembly in Hyderabad, but like this Scientific Assembly had to be turned into a fully virtual format due to the COVID-19 pandemic.

The 5th IAGA School thus was held August 16-20, organized by IAGA's Interdivisional Commission on Education and Outreach (ICEO) with assistance from the Joint Assembly local organisers. For lectures and part of the practicals the main conference software was used. However, in addition to gaining scientific knowledge, networking among the participants has always been an important aspect of the IAGA Schools. To mimic as best as possible the usual personal interactions, the Gather software (https://gather.town) was used for a social event and during breaks, and for distribution of information and further interactions an instant messenger group was set up. This combination of virtual tools worked well and the participants mostly gave quite a positive feedback.

The 5th IAGA School was attended by 34 students from 16 countries. Seven international lecturers provided 10 lectures of 90 minutes each, and practicals on three topics using, e.g., Jupyter notebooks with Python programs.

We sincerely thank all who made the 5th IAGA School a success under difficult circumstances, in particular ICEO chair Barbara Leichter, Kusumita Arora from the Local Organising Committee, all the expert lecturers and especially Ashley Smith, who suggested and managed the combination of the different virtual tools.

Monika Korte, IAGA Secretary General

---

5 The GIFT Workshop at the IAGA-IASPEI Joint Assembly 2021

GIFT stands for Geosciences Information for Teachers. The IAGA Interdivisional Commission on Education and Outreach (ICEO) has started to organize GIFT Workshops following the example of such workshops organized at the meetings of the European Geosciences Union (EGU). On

the occasion of the IAGA-IASPEI Joint Assembly, the GIFT workshop planned for Hyderabad, India, had to be turned into fully virtual format due to the COVID-19 pandemic. It was held August 19-21, 2021. 54 teachers from India, Nepal and one from Morocco were registered. Twelve international experts delivered lectures in three topical sessions and had organized six hands-on activities. The topics covered Earth's history through space and time; climate forcing, feedback and responses; and a general session on Earth science. We sincerely thank the organisers of the GIFT workshop 2021, i.e. Carlo Laj, Jayashree Bulusu and Barbara Leichter from the IAGA ICEO and Kusumita Arora from the Local Organising Committee, for organizing this important outreach event under difficult circumstances.

Monika Korte, IAGA Secretary General

---

6 Further IAGA Activities

6.1 EC activities

In addition to the three EC meetings at the 27th IUGG General Assembly, IAGA EC activities were coordinated by e-mail discussions and three videoconferences. An important decision was the signing of a memorandum of understanding with the International Association of Physics Students (IAPS), see below. Further topics included the discussion and decision on the 2021 IAGA awardees, on IAGA support for topical workshops in 2022 and on the first preparations for the IUGG General Assembly 2023.

6.1.1 Memorandum of Understanding with IAPS

On 18th of May 2021 IAGA has established a formal collaboration with the International Association of Physics Students, IAPS. IAPS, as its Charter states, is an international, student-run educational association, which aims to encourage physics students in their academic and professional growth by developing an ever-growing worldwide community within which peaceful relations are established in a collaborative, diverse and friendly social environment. The objective of the Memorandum of Understanding is to promote and strengthen collaboration between the two international associations, by, e.g. organizing common online seminars or workshops at conferences. The first collaborative activities included a talk by IAGA's 2015 Shen Kuo medalist Dan Baker at the 2021 PLANCKS (Physics league across numerous countries for kick-ass students) event, an exam-based physics competition for bachelor's and master's students, and a virtual meeting event for physics students with IAGA experts related to the Joint IAGA-IASPEI Scientific Assembly.

6.2 Some Division and Commission activities

6.2.1 Division III: Magnetospheric Phenomena

- The Geospace Data Assimilation Working Group (GeoDaWG) established in 2019 and led by Larry Kepko and Claudia Borries is an exciting Joint Div. III and II WG. They now have a website and plan for a regular virtual seminar series, and a workshop in 2022.

- The Van Allen Probe mission, which has been successful, ended in 2019, after observing the radiation belts for 7 years since 2012. Sasha Ukhorskiy reviewed the discoveries in Session 3.1 Reporter Review in the IAGA-IASPEI Joint Assembly 2021.

- The MMS mission is ongoing and has been returning fantastic science on reconnection on the dayside magnetopause and in the magnetotail. Some of the mission accomplishments have been reviewed by Misha Sitnov in Session 3.1 Reporter Review in the IAGA-IASPEI Joint Assembly 2021.

- NASA organized the Heliophysics 2050 workshop in spring 2021, which helps the

community to prepare for the next Solar and Space Physics Decadal Survey.

Simon Wing, Div III Chair

6.2.2 Division V

Working Group V-OBS is working on the geomagnetic observatory workshop in Kazan, Russia in 2022 and the next one in Vassouras, Brazil, in 2024. There are on-going actions regarding magnetic field data and products in WG V-DAT, which include a DOI task force and digitization of historical analogue data (magnetogram). Working Group V-MOD has been active regarding reference geomagnetic field models: International Geomagnetic Reference Field (IGRF) and World Digital Magnetic Anomaly Map (WDMAM). IGRF-13 as well as individual candidates were documented in a special issue of Earth, Planets, Space: International Geomagnetic Reference Field: The Thirteenth Generation. (https://earth-planets-space.springeropen.com/igrf13)

Masahito Nosé, Div V Chair

6.2.3 Division VI: Electromagnetic induction in the Earth and planetary bodies

The Division elected Widodo from Indonesia to the previously vacant Division Committee position for the region of Asia. The Division is preparing for the EM induction workshop 2022 in Turkey.

Ute Weckmann, Div VI Chair

6.2.4 Interdivisional Commission on History

The WDC team for Solar-Terrestrial Physics in Moscow is working on the "Preservation of Old Data" project, aimed at digitizing analog data on geomagnetism into electronic documents.

- Digital images of historical magnetograms.
- Historical data on Cosmic Rays.
- A revised catalogue of K-index data from 44 observatories of the former USSR since 1957.
- Digital archives of geophysical data for the Arctic and Antarctic regions.
- A digital archive of USSR satellite magnetic measurements.
- 19th century data archives from the Russian observatories have been preserved and currently are being converted into digital form. Data are available at the Finnish Meteorological Institute and IZMIRAN Database Server.

Analoly Soloviev and Roman Krasnoperov, ICH Chairs

An article on the emergence of ionospheric physics as a research specialty was recently published in the international open access journal History of Geo- and Space Sciences, which may be of interest for the IAGA community. It is entitled "The formation of ionospheric physics – confluence of traditions and threads of continuity" by Aitor Anduaga. The article can be downloaded free of charge from the journal's home page.

Kristian Schlegel

7 IAGA Resolutions - 2021

These resolutions were adopted during the virtual IAGA-IASPEI Joint Scientific Assembly, Hyderabad, India, August 21-27, 2021

Resolution No. 1 (2021): Historical data rescue

IAGA

Considering

the need for access to historical data in Earth sciences, and the risk of loss of large volumes of historical data;

Noting

that many scientific communities face significant challenges in digitizing historical data, and important historical data have already been irretrievably lost;

Recognising

the interdisciplinary consensus that all Earth science data should be accessible to the scientific community;

Urges

the scientific community to identify, digitize, archive and make accessible all Earth science data, and the International Science Council, UNESCO, WMO and other relevant international bodies to support national authorities in efforts to identify, digitize, archive and make accessible all Earth science data.

Resolution n° 1 (2021): Sauvetage des données historiques

AIGA,

Considérant

la nécessité d'avoir accès aux données historiques en sciences de la Terre, et le risque de disparition de larges volumes de données historiques;

Notant

les difficultés importantes rencontrées par de nombreuses communautés scientifiques pour digitaliser les données historiques, et le fait que des données historiques importantes ont déjà été perdues de manière irrévocable;

Reconnaissant

le consensus interdisciplinaire selon lequel toutes les données en sciences de la Terre devraient être accessibles à la communauté scientifique;

Presse

la communauté scientifique d'identifier, digitaliser, archiver et rendre accessibles toutes les données en sciences de la Terre, et le Conseil Scientifique International, l'UNESCO, l'Organisation Météorologique Mondiale et les autres instances internationales de supporter les pouvoirs publics nationaux dans l'effort d'identifier, digitaliser, archiver et rendre accessibles toutes les données en sciences de la Terre.

Resolution No. 2 (2021): Polar Cap (PC) index

IAGA

Noting

that polar cap magnetic activity is not yet described by existing IAGA geomagnetic indices;

Considering

that the Polar Cap (PC) index constitutes a quantitative estimate of geomagnetic activity at polar latitudes and serves as a proxy for energy that enters into the magnetosphere during solar wind-magnetosphere coupling;

Emphasising

that the usefulness of such an index is dependent on having a continuous data series;

Recommends

use of the PC index by the international scientific community, and

Urges

that all possible efforts be made to maintain continuous operation of all geomagnetic observatories contributing to the PC index.

[Note 1: Renewal of Resolution No. 4 (1997) after a long-term dispute about the method to derive the PC index has been settled in 2013]
Note 2: Amendment of Resolution No. 3 (2013) for the purpose of clarification. The words "in its near real time and definitive forms" have been removed. "Note" has been renamed to "Note 1" and the words "in 2013" added to Note 1

Résolution n° 2 (2021): L'indice « Polar Cap » (PC)

AIGA,

Notant

que l'activité magnétique dans les cornets polaires n'est pas couverte à ce jour par les indices géomagnétiques de IAGA

Considérant

que l'indice PC ("Polar Cap") constitue une mesure quantitative de l'activité géomagnétique aux latitudes polaires, et sert de proxy pour l'énergie qui rentre dans la magnétosphère lors du couplage entre cette dernière avec le vent solaire;

Soulignant

que l'utilité d'un tel indice dépend de l'accès à des séries de données continues;

Reconnaissant

que l'indice PC est délivré en partenariat entre l'Institut de Recherche Arctique et Antarctique (AARI, Fédération de Russie) l'Institut National de l'Espace de l'Université Technique du Danemark (DTU, Danemark);

Recommende

l'utilisation de l'indice PC par la communauté scientifique internationale, et

Exhorte

que tous les efforts possibles soient faits pour maintenir le fonctionnement continu de tous les observatoires géomagnétiques qui contribuent à l'indice PC.

[Note 1: reconduction de la Résolution No. 4 (1997), après qu'un différend de longue date sur la méthode de calcul de l'indice PC a été réglé en 2013]
Note 2: Amendement à la Résolution No. 3 (2013), dans un but de clarification. La formulation "en temps réel et sous sa forme définitive" a été enlevée. "Note" a été renommée "Note 1", avec ajout des mots "en 2013" à la Note 1

Resolution No. 3 (2021): Resolution of Thanks

IAGA

Noting

the successful scientific outcomes, organisation and excellent atmosphere of the IAGA-IASPEI Joint Scientific Assembly, and

Appreciating

the enormous amount of work required to organise this first virtual meeting, which should have been held in physical form in Hyderabad, India,

Expresses

its deep gratitude to the Local Organisers and the staff in India, in particular our main contact person Kusumita Arora, CSIR-NGRI, Hyderabad, for their hard work and unfailing courtesy, helpfulness, enthusiasm and energy, which have made the Joint Scientific Assembly a great success.

Résolution n° 3 (2021): Remerciements

AIGA,

Notant

le succès de l'organisation, des résultats scientifiques et l'excellente atmosphère de l'assemblée scientifique commune IAGA-IASPEI, et

Reconnaissant

l'énorme quantité de travail requise pour organiser ce premier meeting virtuel, qui aurait dû avoir lieu en présentiel à Hyderabad (Inde),

Exprime

sa profonde reconnaissance au comité d'organisation local et au personnel en Inde, en

particulier notre principal contact Kusumita Arora (CSIR-NGRI, Hyderabad), pour leur lourde tâche et leur courtoisie sans faille, leur obligeance, leur enthousiasme et leur énergie, qui ont permis que cette assemblée jointe soit un grand succès.

---

8 Swarm mission – probing the geomagnetic field

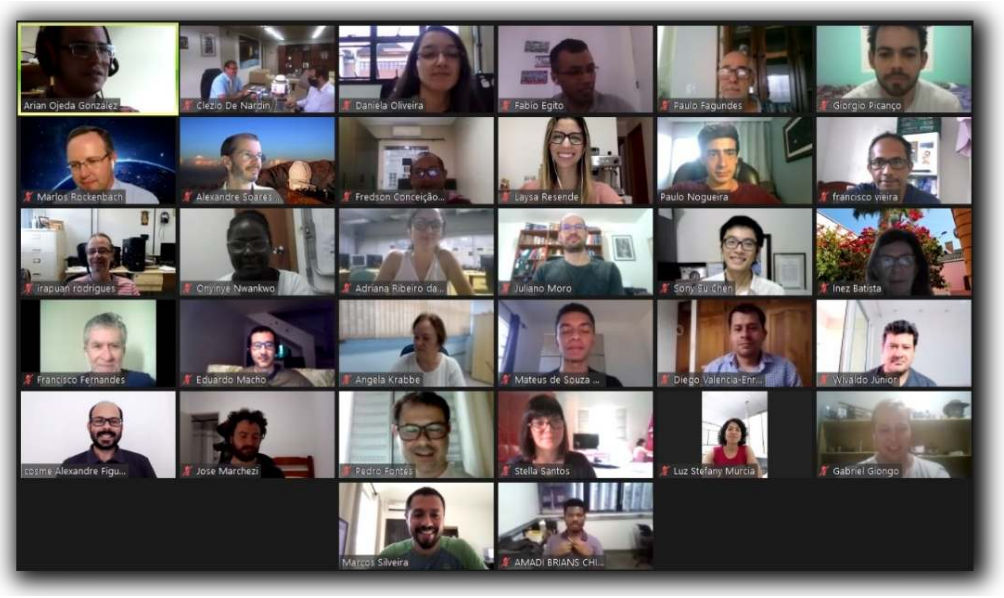
The Swarm low-Earth-orbiting mission, launched in November 2013, is the fourth of the Earth Explorer missions of the European Space Agency, and the first constellation mission for Earth Observation. The three Swarm satellites are performing well, and the orbital geometry of the constellation evolves in line with expectations. The following is the current status and future status of the constellation: in 2018 Swarm B was perpendicular to the lower A/C pair and in 2021 Swarm B will be counter-rotating to the lower A/C pair every 47 minutes. Currently, all with three platform and payload units active. In November 2017, the mission was granted a four-year extension to 2021. In March 2018, the CASSIOPE/ e-POP mission was formally integrated into the Swarm Constellation as the fourth element (Swarm-Echo) under ESA's Earthnet Third Party Mission Programme. Scientific studies based on Swarm data span a wide range of spatial and temporal scales, from the long-term variations of the core dynamo, through the induction processes in the mantle and oceans, the detailed mapping of the lithospheric field, to the small-scale ionospheric events. Important 2021 Swarm-related events are: 1) Numerous talks on scientific achievements obtained with Swarm data were presented at the international meetings as EGU, IAGA and AGU (virtual and hybrid mode). 2) The 11th Swarm Data Quality Workshop was a hybrid event, hosted by the Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing (IAASARS) at the National Observatory of Athens (NOA), Greece, from 11 to 15 October 2021, with the purpose of bringing together Swarm multi-disciplinary scientists and instruments' experts to collect innovative ideas for future Swarm-based activities and products, targeting new processing algorithms, correction improvements, emerging applications and multi-mission synergy. The workshop was instrumental in addressing the processing and use of Swarm data and defining a road map for the following:

- Verifying the newly mission wide reprocessed L1B dataset
- Identifying and selecting new Swarm data products and services
- Enhancing synergy with other satellite missions
- Prioritising future Swarm-related research activities in view of the upcoming mission extension
- Collecting input for the optimisation of the long term orbital constellation in view of addressing a wide spectrum of applications

With more than 200 attendees (of which 65 attended in person and the rest remotely), 98 contributions in 8 thematic sessions, and dedicated time slots for discussion, the workshop gave the user community a unique opportunity to interact with the ESA Swarm teams on future scientific challenges, mission planning, and data product refinements.

George Balasis (National Observatory of Athens)
Mioara Mandea (CNES)

9 Reports on Meetings: IAGA-Sponsored or of IAGA interest



Screenshot of some participants of the online session the III Brazilian Symposium on Space Geophysics and Aeronomy & VIII Symposium on Physics and Astronomy.

9.1 Brief Report on the VIII Brazilian Symposium on Space Geophysics and Aeronomy & VIII Symposium on Physics and Astronomy

The Brazilian Symposium on Space Geophysics and Aeronomy (SBGEA) is a biennial scientific event that has taken place since 2006. The SBGEA is organized by the Brazilian Society of Space Geophysics and Aeronomy. In 2021 the 8th edition (VIII SBGEA) of the symposium was held in conjunction with the 8th Symposium on Physics and Astronomy (VIII SimFAST), an event organized annually by the graduate program in Physics and Astronomy at University of Vale do Paraíba (UNIVAP). The VIII SBGEA & VIII SimFAST Joint Symposium was held in São José dos Campos, Brazil, between 22-26 March, 2021. However, due to the COVID-19 pandemic the event was convened entirely online. About 175 representatives of 11 countries attended the virtual meeting. In the Opening Ceremony, the Rector of the UNIVAP Prof. Milton Beltrame welcomed all the attendees. The President of the SBGEA Marlos Rockenbach spoke on the importance of the meeting by promoting a fruitful interchange of ideas and experiences between the participants, and on the importance of research cooperation in space science. The participants of the online meeting were addressed by Marcio Muella, Chair of the Local Organizing Committee (LOC). The SBGEA & SimFAST 2021 covered a wide range of research topics in space science and physics: ionospheric physics, physics and chemistry of the neutral atmosphere, space weather, physics of plasmas, solar physics, geodesy, and astronomy and astrophysics. A total of 13 invited speakers delivered plenary talks during the event. In addition, a special session named "Women in Geosciences and Astronomy" honored five women researchers that promoted relevant contributions in the areas of space science. 64 online talks and 69 video posters were presented and intensively discussed during the symposia. The oral presentations were organized throughout the event in morning and afternoon sessions, whereas the poster presentations were distributed in three online sessions. In recognition of students' contributions to excellent posters, four students from different areas were awarded with certificates of best online poster presentations, and two students were awarded with certificates of honorable mention. The the book of abstracts and recorded presentations are available online. The meeting was supported by FVE, CAPES and FAPESP, and co-sponsored by IAGA and COSPAR.

10 In Memorium

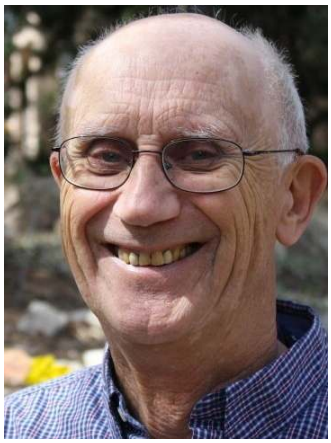
Francis Xavier Bostick Jr. (1932 - 2021)

Professor Francis X. Bostick, Jr. passed away peacefully on October 20, 2021 (Dignity Memorial Website). He will be remembered affectionately by his many students and colleagues for being an excellent and passionate instructor and for his brilliant mind tackling challenging electromagnetic (EM) engineering problems, including those associated with subsurface exploration. Francis was original and creative in his research projects and in his way of thinking, looking always for simplicity and efficiency. He had a peculiar and uncanny ability to solve problems with strong physical intuition and with abundant sense of practicality. He often invoked circuit analogies or approximations thereof to understand and approach every single scientific challenge that crossed his way, from satellite navigation and GPS, to wireless power delivery. Even after retiring from the University of Texas at Austin, he could often be found learning about new EM sensors and systems, and never stopped programming algorithms to simulate EM wave propagation. During his last few months alive, he was avidly revisiting the so-called magnetotelluric "tipper" method, developing new measurement acquisition and interpretation methods. It was a great pleasure to hold conversations with him. He was unassuming, humble, and comfortable with himself, never voicing a bad comment about anyone and always discovering the positive side of everything. Francis' family was his greatest pride and his wife, sons, daughter, and grandsons/daughters adored him.

We have lost a beautiful mind. His heart, soul, smile, and friendly Texas drawl will remain many years thence with those of us who had the great fortune to be guided and mentored by him.

Carlos Torres-Verdín, PhD, Professor
University of Texas at Austin

Stephen Peter Gary (1939 - 2021)



Laboratory Fellow Stephen Peter Gary, a highly regarded theoretical space plasma physicist, passed away on April 21, 2021, in Santa Fe. He was 81. Gary was well known for his study of plasma waves and instabilities in the space environment. Early in his career he was one of the first to use linear Vlasov theory to derive dispersion equations for wave properties and solve them numerically without approximations. It remains a well-known methodology.

Over the years Gary used this technique to investigate a wide variety of electrostatic and electromagnetic waves in space. Particularly, he was known for his studies of ion-beam-driven instabilities in the Earth's foreshock, various unstable waves in the solar wind and in the vicinity of comets, as well as low-frequency waves in the magnetosphere, especially the magnetosheath (a region of magnetic turbulence).

A summary of his methodology and early work are found in his monograph "Theory of Space Plasma Microinstabilities," published in the Cambridge Atmospheric and Space Science Series in 1993. Overall, he authored and coauthored almost 500 journal articles.

Gary was born in Cleveland in 1939, graduated from Case Institute of Technology with a bachelor's in physics in 1961 and obtained a doctorate in physics from Washington University in St. Louis in 1967. He was on the faculty at the College of William and Mary for six years.

He spent most of his career at Los Alamos National Laboratory in the space physics group, from 1977 until his 2012 retirement. He served as group leader from 1987 to 1992. For his many accomplishments, he was named a fellow of the Laboratory in 2002.

After retirement, Gary continued his work through the Space Science Institute in Boulder,

Colorado, as a senior research scientist. In these years he turned his attention to the global issue of solar wind turbulence, investigating plasma dissipation at short wavelengths.

When named a fellow of the American Geophysical Union (AGU) in 2018, his citation read: "For fundamental advances in space plasma physics and sustained contribution to understanding the implications of plasma physics in space observations." He served as an associate editor of the Journal of Geophysical Research: Space Physics. He was also a fellow of the American Physical Society (APS).

He will be remembered for his sound theoretical work and physical insight as well as his boundless energy and enthusiasm. His legacy is reflected in the many students and postdocs he mentored, and the many colleagues and friends who benefited from his great generosity and kindness. Outside of work, he was an energetic hiker, skier and member of several church choirs. He will be greatly missed in Northern New Mexico, as well as throughout the international scientific community.

Gary is survived by his wife, Carol Ann Mullaney, his two children and two grandchildren. Funeral arrangements are pending.

adapted from
Los Alamos In Memoriam Archive

Chris Hall (1953 - 2021)

It is with a heavy heart we pass on the news that our colleague, Professor Dr. Chris Hall passed away on the 9th of August 2021. He was born the 31st of May 1953 in Bury, England where he also grew up. After bachelor studies at the University in Edinburgh, where he met his first wife, he worked for some years for British Aerospace and as a selfemployed software developer. He came to Norway and Tromsø in 1984 with his wife, who started work as a scientist at EISCAT in Tromsø. The same year Chris was employed by the Royal Norwegian Council for Scientific and Industrial Research (NTNF) to work at the Auroral Observatory, operarting the Partial Reflection Radar and taking on various programming tasks. He finished his Cand.Scient. degree at the University in Tromsø in 1988 and his Dr.Philos. degree in 1990 at this university.

In 1993, during the development of the University Studies in Svalbard, Chris was a course coordinator. His stay there sparked his love for Svalbard. From 1995 Chris worked as a scientist at the Auroral Observatory. From 2001 to 2013 he was deputy head of Tromsø Geophysical Observatory (TGO). He was head of TGO from 2013 until his death.

As a geophysicist Chris mainly worked with ionospheric physics and processes in the middle atmosphere. His main tools were radar systems such as EISCAT, PRE, meteor radars and ionosondes. His accomplishments in this field are impressive, with more than 150 published papers. He was first author of about 90 of these. His work was a natural part of a rich international tradition within ionospheric science, and in fact one of the pioneers in this field, Dr W.R. Piggott from the UK, was called in as first examiner at the Dr. Philos. disputation in Tromsø.

Through his work at the Auroral Observatory Chris met Marit and they had a son, Eric, together. Chris and Marit were married in 2015. Chris also leaves behind two children from his first marriage, Robert and Michael.

Up to his last days Chris talked about his burning wish to return to his work at Tromsø Geophysical Observatory and, not least, to his work with and travel to his favorite tool, the SOUSY radar at Svalbard. Chris will be deeply missed by his friends and colleagues in Tromsø and by his extensive network of colleagues all over the world. Rest in peace Chris,

Magnar Gullikstad Johnsen
Tromsø Geophysical Observatory

Yosuke Kamide (1943-2021)

With deep regret I inform that Dr. Yosuke Kamide, a Nagoya University Professor Emeritus and the Director of the Rikubetsu Space Earth Science Museum (Galaxy Forest Observatory), passed away on 09th December 2021 at 78 years old. He was a brilliant scientist in the physics of aurora and ionosphere-magnetosphere coupling processes. He was born in 1943 in Otaru, Japan, graduated Hokkaido University in 1966, and got Ph.D in the University of Tokyo (Graduate School of Science) in 1972. Then he became a Postdoctoral Fellow in the Geophysical Institute of University of Alaska Fairbanks in 1973-1975, and Senior Research Associate in University of Colorado Boulder in 1975-1977. During his stay in US, he started his pioneering studies of geomagnetic storm and substorm and modeling of ionospheric electric fields, ionospheric currents, and field-aligned currents from ground magnetic field variations in the auroral zone, which is known as the Kamide-Richmond-Matsushita (KRM) model. This model is one of the origins of the widely-used Thermosphere Ionosphere Electrodynamics General Circulation Model (TIEGCM) of the National Center for Atmospheric Research (NCAR). After finishing these terms in US, he joined Kyoto Sangyo University in 1977 as an associate professor and promoted to a full professor in 1981. Then he moved to the Solar-Terrestrial Environmental Laboratory (STEL), Nagoya University, as a full professor for 1992-2007, including the term served as the director of STEL in 1999-2005. In STEL, he conducted state-of-art space weather research with a new facility called Geospace Environment Data Analysis System (GEDAS). He has also contributed to make this new STEL, which was established in 1990, to an international institution, by inviting many top-class scientists to STEL and by organizing several important international conferences, such as the International Conference on Substorms-4 (ICS-4) at Lake Hamana on March 1998, the first STEP-Results, Applications, and Modeling Phase (S-RAMP) conference at Sapporo on October 2000, and the 23rd General Assembly of International Union of Geodesy and Geophysics (IUGG) in Sapporo on June-July 2003. He was also one of three major founders of Asia Oceania Geosciences Society (AOGS). The award for early career scientist at AOGS is named the "Kamide Lecture Award" in honor of him. He was a Vice President of the International Association of Geomagnetism and Aeronomy (IAGA) for 2003-2007 and member of several international committees, i.e. Committee on Space Research (COSPAR) and Scientific Committee on Solar-Terrestrial Physics (SCOSTEP). He acted as the editor of the Journal of Geophysical Research – Space Physics and Geophysical Research Letters for total eleven years. According to all these international activities, he was recognized as an Associate of Royal Astronomical Society, London, and received its Price Medal, a Fellow of American Geophysical Union, a Member (Corresponding) of International Academy of Astronautics, an Honorary Member of Asia Oceania Geosciences Society, and a Fellow of Japan Geoscience Union.

Prof. Kamide was also enthusiastic for outreach of auroral sciences by publishing many public books and by editing a comic-book series of solar-terrestrial physics. The comic-book series are being further translated to more than ten languages in the world in collaboration with SCOSTEP. This translation activity is still going on, contributing widely to the public outreach of solar-terrestrial physics. After retiring STEL in 2007, he became a Designated Professor of the Research Institute for Sustainable Humanosphere (RISH), Kyoto University, in 2008-2010, and then the Director of the Rikubetsu Space Earth Science Museum (Galaxy Forest Observatory) until he passed away, further acting for outreach of the space physics to general public including kids.

Prof. Kamide was loved for his kindness, humor, fruitful debate ability, and lightness to serve for community. Being an outstanding scientist and a generous friend, he will be sorely missed.

Kazuo Shiokawa
Vice Director of the Institute for Space-Earth Environmental Research (former STEL), Nagoya University

Stanislav Sazykin (1972 - 2021)

Stanislav Sazykin, an associate research professor of physics and astronomy who was highly respected in his field of space science, died suddenly on May 3 at 49. The cause of his death has not yet been determined.

Sazykin joined Rice in 2000 as a postdoctoral researcher, rising quickly to associate research professor.

"Stan was a distinguished computational physicist and a well-established and highly respected member of the space plasma physics community," said Richard Wolf, a professor emeritus and research professor of physics and astronomy at Rice. "He was one of the smartest people any of us have ever encountered, with an extraordinarily rigorous and penetrating mind. He was particularly adept at finding weak points in arguments, putting him in high demand as a reviewer." After completing bachelor's and master's degrees at the Moscow Institute of Physics and Technology, Sazykin came to the United States in 1993 as an exchange student as part of the Bush-Gorbachev Exchange Program. He earned an additional bachelor's degree and a Ph.D. from Utah State University under the direction of Bela Fejer.

At Utah State, Sazykin initially worked on equatorial and low-latitude thermospheric winds, but later shifted to theoretical studies of the penetration of magnetospheric electric fields in the ionosphere under the guidance of Fejer, as well as Wolf and Robert Spiro at Rice.

As a graduate student, Sazykin reprogrammed most of the Rice Convection Model (RCM) of the Earth's inner magnetosphere. At Rice, he led the continued development and use of the RCM, extending its usefulness by participating in multiple code-coupling projects with other large-scale models.

"It is largely through Stan's efforts that the RCM is being used by several research groups around the country and is available for scientific use through NASA's Community Coordinated Modeling Center," Wolf said. "When anyone had questions about the RCM and its implementation, Stan was the person to consult." He also played an important role in the development of the Space Weather Modeling Framework, a University of Michigan-led effort that, coupled with the RCM, continues to provide a comprehensive picture of the space environment near Earth for commercial, government and private customers.

"Stan was an active member of the space science community, convening sessions at meetings and focus groups, chairing sessions with good humor and penetrating comments," said Frank Toffoletto, a professor of physics and astronomy. For five years, he was a member of the steering committee of the National Science Foundation's Geospace Environment Modeling program.

He was a member of Rice's committee on faculty and staff benefits and served for seven years on the Faculty Senate, where he helped developed policies for research and teaching professors.

Sazykin leaves his wife, Ying, and three sons, Andrew, Logan and Victor. For more about Sazykin, visit Rice University Physics & Astronomy Department on Facebook.

adapted from the
Rice University News and Media Relations and Space Institute

Koichiro Tsuruda (1937 - 2020)

Professor Koichiro Tsuruda passed away on the morning of December 3, 2020, at the age of 83.

Dr. Tsuruda's career began by studying Very Low Frequency (VLF) radio waves. Whistler-mode VLF waves are an important phenomenon for understanding the characteristics of the Earth's magnetosphere and ionosphere. He developed a method for detecting the direction of arrival of VLF waves and also realized multi-point observations are a powerful tool in exploring the characteristics of VLF waves. Coordinated ground-based observations using these two methods led to many important discoveries about the wave transmission region and attenuation rate of VLF waves.

After conducting research using VLF observations, Dr. Tsuruda developed a new method of electric field measurement, which is difficult to observe at high precision, by utilizing Time of Flight (TOF) measurement of emitted ions/electrons from spacecraft (called the "Boomerang method"). Equipment for this study was installed on the S-520-9 sounding rocket, the Akebono satellite and Geotail satellite, which was a major break-through in solar system plasma science research. The S-520-9 sounding rocket experiment successfully made electric field measurements using the Boomerang method for the first time ever worldwide. This properly-evaluated electric field data has been used by many researchers and contributed to the elucidation of various phenomena in the Earth's magnetosphere, advancing the field significantly. Following these early successes, the advanced Boomerang method was later used on Cluster II, MMS spacecraft, etc. in later years.

Dr. Tsuruda planned and led Japan's first planetary exploration mission, "Nozomi" (PLANET-B), as a program manager, and he was at the forefront of the development of satellite technologies for subsequent solar system exploration missions. Later his students led Japan's Venus exploration "Akatsuki" (PLANET-C) and Mercury exploration BepiColombo MMO.

He served as Director of the Institute of Space and Astronautical Science (ISAS) from 2003 to 2005 and guided the Institute through a difficult period just after it was integrated into the Japan Aerospace Exploration Agency (JAXA). Dr. Tsuruda had both a gentle personality and a strong resilience in his spirit, and many people loved him. He suffered from Parkinson's disease in his later years, but he passed away peacefully at home with his family watching over him.

Masato Nakamura
Institute of Space and Astronautical Science/
Japan Aerospace Exploration Agency

Abdulkhai Zhamaletdinov (1940 - 2021)

On January 19, 2021, the outstanding Russian geophysicist Abdulkhai Zhamaletdinov died of Covid-19. He devoted more than 50 years of his life to electromagnetic studies at the East-European Platform with the focus in Fennoscandia. His scientific interests were primarily concentrated on the study of the nature and structure of the electrical conductivity of the lithosphere using powerful controlled sources of the electromagnetic field in concurrence with the MT method.

He fruitfully participated practically in all substantial Soviet, Russian and international EM experiments carried out in Fennoscandia and the wider Baltic Region.

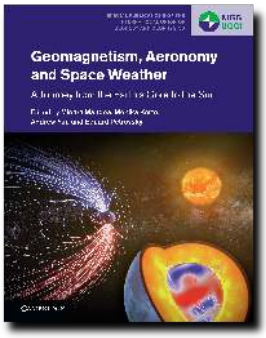
Abdulkhai Zhamaletdinov created a new scientific center for deep EM studies in the city of Apatity, Kola Peninsula. He also was giving lectures in several universities and had a number of prominent students.

He was a keen explorer, light and cheerful person extending interests and skills much wider than geophysics. We will always miss him.

Nick Palshin, Ivan Varentsov and Toivo Korja
on behalf of IAGA Division VI

11 General information about IAGA

11.1 Book: Geomagnetism, Aeronomy and Space Weather



On the occasion of the IUGG centennial IAGA published a book with Cambridge University Press providing a comprehensive overview of the IAGA fields of research. The volume, edited by M. Mandea, M. Korte, A. Yau and E. Petrovsky and entitled "Geomagnetism, Aeronomy and Space Weather – A Journey from Earth's Core to the Sun" was published in November 2019.

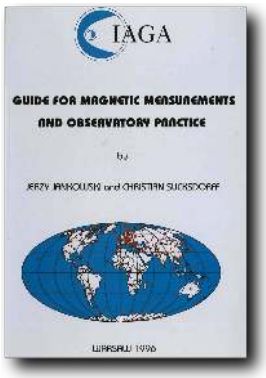
11.2 IAGA books series

A series of five books, representing the five IAGA Divisions, provides a comprehensive overview over all fields of IAGA science, including the state of the art at the time of writing (~2010). The books are written and edited by experts in their fields. Published by Springer, the income from the books supported scientists to attend the IAGA Scientific Assembly in Sopron.

11.3 IAGA Guides

IAGA has published four practical guides to observation. These are available as pdf documents from the IAGA web site, or they may be ordered from the IAGA Secretary General.

IAGA Guide for Magnetic Measurements and Observatory Practice

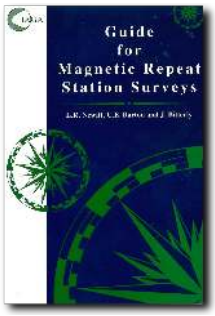


by J. Jankowski and C. Sucksdorff, 1996, 232 pages, ISBN: 0-9650686-2-5; Price: USD 50.

This Guide provides comprehensive information about how to organize and run a magnetic observatory and make magnetic measurements. The main topics are:

- A brief description of the magnetic field of the Earth
- Selection of observatory sites and layout
- Magnetometers
- Absolute magnetic measurements
- Recording of magnetic variations
- Data processing
- Testing and calibrating instruments

IAGA Guide for Magnetic Repeat Station Survey



by L.R. Newitt, C.E. Barton, and J. Bitterly, 1997, 120 pages, ISBN: 0-9650686-1-7; Price: USD 25.

This Guide provides a comprehensive description of the theoretical basis, operational details, and instrumentation for making magnetic repeat station survey measurements.

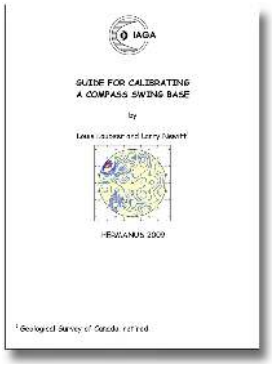
IAGA Guide to Observing Noctilucent Clouds

by M. Gadsden and P. Parviainen, 1995, ISBN: 0-9650686-0-9; Price: USD 25.

This manual and instruction book was written by a group of active researchers, both professional and amateur. There

are chapters giving practical advice for taking visual observations, photographing the clouds with film or with video equipment. A summary of observations from space is included, as well as comments on the connection between noctilucent clouds, seen from the ground, and the polar mesospheric clouds that so far have been measured only from orbit. Noctilucent clouds are seen in the summer months, shining in the poleward sky at night-time. Measurements show that the clouds are higher than any others. Lying at a height of 80-85 kilometres, the clouds mark a boundary between meteorology and space physics. This book is beautifully illustrated with photographs, and will help everyone recognize and appreciate these "sailors in the summer night".

IAGA Guide for Calibrating a Compass Swing Base



by L. Loubser and L.R. Newitt, 2009, 35 pages, available only as Electronic version (PDF).

In this guide a general description of a compass swing base calibration procedure is presented which was developed at the Hermanus Magnetic Observatory. The procedure is based on the use of DI flux magnetometers as these types of magnetometers are widely in use. Although there are also other methods in use the 'DI-method' should be seen as an IAGA recommendation.

11.4 IAGA History

A special issue of the open access journal History of Geo- and Space Sciences (HGSS) was published on the occasion of the IUGG centennial in 2019. It contains articles about the history of IUGG and its eight associations. The IAGA contribution is authored by M. Mandea and E. Petrovsky, entiteld "IAGA: A major role in understanding our magnetic planet" (Hist. Geo Space. Sci., 10, 163–172, **https://doi.org/10.5194/hgss-10-163-2019**).

11.5 IAGA website

Information on IAGA can be found at:
http://www.iaga-aiga.org

11.6 IAGA on Social Media

The social media working group within the Interdivisional Commission on Education and Outreach (ICEO) promotes and shares topics of IAGA interest on several platforms. The activities kicked off in November 2019 and you can now follow IAGA on Facebook, Twitter and Instagram at the following sites:

www.facebook.com/IAGAandAIGA/

www.twitter.com/IAGA__AIGA

www.instagram.com/iaga_aiga/

There also is an IAGA blog:

- **https://iaga-aiga.blogspot.com/**

If you notice any exciting IAGA science that should be advertised there or if you would like to get permanently involved in generating content for regular social media posts and become part of the task group please get in touch at socialmedia@iaga-aiga.org.

11.7 IAGA contact

The Secretary-General is the main point of contact for all matters concerning IAGA:

Monika Korte

GFZ German Research Centre for Geosciences
Telegrafenberg
14473 Potsdam
Germany

email: sg@iaga-aiga.org

Imprint
Executive Editor: M. Korte (GFZ - German Research Centre for Geosciences, Potsdam, Germany)
Layout by LaTeX & A. Jordan (GFZ - German Research Centre for Geosciences, Potsdam, Germany)