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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

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IAGA on the Web
http://www.iaga-aiga.org/

Foreword

This issue of IAGA News contains information about the IAGA activities during the year 2017. The main event of this year was the 2017 Joint IAPSO-IAMAS-IAGA Assembly which officially closed on Friday 1st September 2017. The conference was a highly successful Joint Assembly organised at Cape Town's CTICC, and the first of its kind between the three IUGG associations. The conference abstracts are available on the IAGA web.

The IAGA programme efficiently ran in a conference centre which provided an excellent space for poster viewing and the exhibition, as well as plenty of varied sized rooms for oral presentations. This gave us the chance to catch up with latest developments in our own research specialities, as well as take in some of the more interdisciplinary topics. Some major decisions taken during the Assembly by the IAGA Conference of Delegates and the Executive Committee are reported. The meeting provided many opportunities for scientists to discuss different topics, over breaks, poster sessions, and the IAGA special dinner party!

This issue also contains reports on IAGA activities of different kinds and provides information about recently deceased IAGA scientists. In its present form, IAGA News contains only brief summaries of different activities and topics; the reader is referred to the IAGA website (www.iaga-aiga.org) for more details. Information on activities at Division level can be found via each Division website.

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

Mioara Mandea
(Secretary-General)

1 Message from the President

Dear friends and colleagues, dear Geomagnetists and Aeronomers, This year was very busy with the highlight being our scientific assembly in Cape Town. The assembly was held jointly with IAMAS and IAPSO and provided an excellent milieu for interaction with colleagues from the southern and northern hemispheres as well as with atmospheric scientists and oceanographers. And we may be proud that IAGA was well represented, with 557 out of 1356 abstracts. Despite the initial worries due to the location and probably also reputation of the site, as well as not the easiest of preparations of the programme, any fears were put to rest with the opening ceremony. The whole Assembly went very well, in an excellent venue and with the great hospitality and efficient help of local staff. The Assembly was also important from the point of view of the internal life of IAGA, as some few changes to our Statutes and By-Laws were adopted. And I have also to mention briefly the 3rd IAGA summer school, perfectly organized by Monika Korte, at the Hermanus observatory. In particular the assistance and involvement of the local Hermanus colleagues is greatly appreciated. And with the last day of this Assembly we started on our way to the next IUGG Assembly in Montreal in 2019. I had the opportunity to visit the Montreal venue in September. The Palais de Congres is very nice, perfectly designed to host such an event; compact, well organized, with number of lecture rooms of sufficient capacity. Therefore I believe that the IAGA community will be very well represented.

Vice President Monika Korte, President Eduard Petrovsky and Secretary-General Mioara Mandea at the Triple-Association dinner in Cape Town.

Because of the Scientific Assembly in Cape Town, there were only a very few topical meetings sponsored by IAGA. I would like to mention the one I attended – the 2nd meeting on Natural Dynamos, held in South Moravia (in the Czech Republic). The meeting, although rather small in attendance, was very busy, with a good ratio of senior and junior scientists from many different countries. The most promising is the fact that dynamo people have decided to hold these meeting on regular basis with a frequency of 4 years. Next year will be again very busy with topical meetings. Here I have to mention the 24th Electromagnetic Induction Workshop to be held in Helsingør, Denmark. This workshop was originally planned to be held in Turkey. However, due to the present environment there following the political events in the previous year, the leaders of Division VI, after thorough consideration and discussion, decided to exchange the venues of the 2018 and 2020 workshops. There is no way this decision should reduce the credit of our Turkish colleagues, nor discourage them from the preparation of a successful workshop in the future.

Last, but not least, I have to mention also another kind of political involvement. IAGA had been greatly concerned to learn of the possible closure of the USGS Geomagnetism program, following the announcement of the US President's budget request for fiscal year 2018. Therefore, in June 2017 an Internet petition was launched, urging the US authorities to consider the importance of the USGS Geomagnetism program for the US

and for international scientific communities and society in general, and to take corresponding action in revision of the 2018 budget to continue this important program. According to recent news, the U.S. House of Representatives has restored the cuts proposed by the Administration to the USGS Geomagnetism program and to other Natural Hazards programs.

To conclude, despite sometimes a rather turbulent situation, IAGA is doing well. I am very grateful to all the Executive Committee members, division and working group leaders, as well as many other helpers for your great assistance and active approach. I am looking forward to 2018 with its topical meetings, as well as to the preparation of an attractive programme for the 2019 IUGG Assembly, where 100 years of IUGG will be celebrated. Finally, let me wish you all the best in your work, as well as in your personal life, and I look forward to seeing you again.

Eduard Petrovsky
(President)

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2 The 2017 Joint IAPSO-IAMAS-IAGA Scientific Assembly

2.1 Participation

Lasting a full 5 days, the Joint Assembly had a total of 1038 registrations although a no-show (despite having paid up) of 57 and a total of 29 accompanying persons registered. The distribution of the participants between the three Associations was as following.

Int. Assoc. of Geomagn. & Aeronomy	383
Int. Assoc. of Meteorology & Atm. Sci.	339
Int. Assoc. of Phys. Sci. of the Ocean	230

A total of 64 country registrations were received with delegates from 54 countries on site, and the "Top 5" participanting delegations were:

USA	157
UK	109
France	45
China	70
Germany	69

2.2 Report of the Meetings of the IAGA Conference of Delegates

First Conference of IAGA Delegates: Tue, 29th August, 1800-2000

The Secretary-General conducted a Roll Call of the Chief Delegates from all IAGA member countries. This established that 18 Chief Delegates with voting rights were present.

The agenda was approved with no objections or suggestions for changes and the President called the meeting to order and welcomed all the delegates.

Moment of remembrance for IAGA members deceased

The President led the remembrance of deceased members in 2015 and 2016, and the delegates stood for a minute of silence.

Approval of the Minutes of the 2015 Conference of Delegates

The minutes of the 2015 CoD were approved unanimously.

Report of the President

The Report included the following items and activities:

- In 2015:
  Division VI was created at the IUGG 2015 Assembly in Prague.
  In the 2015 Assembly, IAGA led 6 joint symposia and was involved in 7 others; 622 of the attendees had IAGA affiliation. IUGG 2015 was subsequently voted Congress of the Year for Prague.

- In 2016:
  The President attended the IUGG EC meeting in Paris, in which the IUGG 2016-2023 Strategic Plan was discussed. IAGA sponsored a

number of topical meetings, which are reported in the IAGA News. An EMI Workshop was planned for 2018, to be held in Turkey.

- In 2017:
  A meeting of the President, Vice President, and Secretary General was held in February, to discuss the statutes and bylaws, the preparation for the 2017 Joint Assembly, and the IAGA Book). The sponsorship of topical meetings continues.
  An online petition was organized against the proposed reduction of funding to the USGS and closure of the USGS Geomagnetism Program. The Internet petition started on June 8th, and garnered 1194 supporters as of August 28th, 2017. The US Congress restored the cuts on July 20th.
  The 3rd IAGA International Summer School was held in Hermanus in the past week (the week preceding the present Assembly).
  For the EMI 2018 Workshop originally planned to be held in Turkey, the leaders of Division VI have decided to exchange venue with Scandinavia (the original 2020 venue) in view of the current political unease in Turkey.
  The present 2017 Joint Assembly has 1012 registrations so far, including 393 affiliated with IAGA. These attendance figures are very positive and exceed organizers' original expectation.

Report of the Secretary-General

The Report included the following items and activities:

- A new IAGA domain has been created, to help improve IAGA's visibility online as an Association of IUGG.
- The present Executive Committee has held several meetings since the election: one in 2015 (after CoD2 in IUGG 2015; two additional meetings were held before during IUGG 2015 before CoD2); two in 2016, via teleconferences, and four in 2017, 1 via teleconference earlier and 3 in the present Scientific Assembly. Decisions are generally made by email.
- Topical meetings sponsored since IUGG 2015 include one in 2015, six in 2016, and three in 2017.
- Several young scientists were nominated for the Young Scientist Award (YSA), which will be presented in this Assembly. The Outstanding Long Service Medal will be awarded to J. Rasson; the Shen Kuo Award to J. Forbes.
- The IAGA Book is now on contract with Cambridge University Press. EC members are in charge of the five parts in the book. Secretary-General specific activities in the past two years include the production of the IAGA News, which now has a full collection online; management of the IAGA account; preparation of the Tri-Association meeting, in which the contributions of symposium conveners and division leaders are much appreciated.

Report of the Finance Committee (Michel Menvielle)

In the absence of M. Menvielle, the Financial Committee (FC) Report was presented by J. Forbes, as a former member of the IAGA EC. The report covers the period of January 1st, 2015 to December 31st, 2016, and was prepared based on documentation provided by the Secretary-General. The FC was mandated to ensure IAGA's fulfilment of IUGG's commitment to legal auditing. The Committee recommends an external audit for 2015-2018 in the first half of 2019.

Recommendations:

- IAGA needs to continue book contracts as a potential source of revenue;
- IAGA has to maintain a low level of reserve for the future; and if the balance as of Jan 1st, 2018 exceeds 5 %, increase the support of science activities and new outreach;
- IAGA has to continue to organize the Summer School before each Assembly (and to consider posting the related tutorials on line).

Brief Report on the 3rd IAGA Summer School

The 3rd IAGA School was hosted by SANSA, at Hermanus (130 km from Cape Town). Calls for nominations of applicants were sent to Division Chairs and WG Chairs and via several mailing lists in September 2016. In total, 8 female and 12 male students attended, including students from Europe (6), Russia (3), Asia (4), North and South America (2), Africa and the Middle East, including South Africa (4). The School included one lecture session for each of the Divisions, with a practical session in some cases, and an outing (see detail report in the following).

Brief Report on the Divisions and Commissions activities

The six chairs of IAGA divisions and of two commissions (ICDC and ICDH) sumarised the main activities achieved over the last two years.

Presentation of 2021 IAGA-IASPEI bids (India and Portugal)

Representatives from both India and Portugal gave a presentation on their 2021 IAGA-IASPEI bids.

Highlights of the India Bid: August 1-7, 2019, at Hyderabad International Convention Center (HICC), Hyderabad; 450/500/600 USD (early-bird/regular/on-site) registration; 30 USD abstract fee; registration waiver for 100 young scientists; significant national support from INSA, CSIR, MOES, Industry, Academia etc.

Highlights of the Portugal Bid: Venue - Pavilion of Portugal, Lisbon (15 min from city center; 10 min from airport); Date - alternative dates available; C-IN (organization vendor of 2015 IUGG) will handle conference organization including abstract submission; LOC - includes several IAGA and IASPEI liaisons and Division/WG Chairs; 500/570/640 EUR (early-bird/regular/on-site) registration, reduced rates for student registration; 50 EUR abstract fee; 30-40 free student registration and grants of 500 EUR each for up to 20 delegates.

Changes of Statutes and By-Laws

Since the IUGG in Perugia, the EC consists of the President, the Vice President (VP), and the Secretary General (SG) as Officers, in addition to the Past President and the members at large.

In view of the increasingly high workload for the three Officers, it is proposed to increase the number of VP to two starting in 2019, and to establish a new position of Treasurer; this position should be based in an Euros country, as current IAGA revenues, expenses, and financial assets are denominated in Euros.

Currently, changes of Statutes and By-Laws are to be discussed and adopted at a General Assembly (GA), and to take effect in the next GA. As a result, new statutes and by-laws often cannot be implemented in a sufficiently timely manner. It is therefore proposed to allow discussion and adoption of changes at either a Scientific Assembly (SA) or a GA, and to have such changes come into force at the end of the next Assembly.

The motion to create the positions of Second Vice President and Treasurer on the Executive Committee, effective at the end of the 2019 IUGG GA was accepted unanimously.

Secretary-General re-election

Mioara Mandea was re-elected for another 4-year term, unanimously.

Resolutions Committee

The EC proposed the following to be appointed to the Resolution Committee: Archana Bhattacharyya Monika Korte, and Erwan Thébault. The CoD unanimously accepts the EC proposal for the Resolution Committee membership.

Second Conference of Delegates: Thu 31st August, 1800-1930

The Secretary-General conducted a Roll Call of the Chief Delegates from all IAGA member countries. This established that 17 Chief Delegates with voting rights were present.

Approval of the Agenda

The agenda was approved with no objections or suggestions for changes.

Report of the meetings of the EC during the Assembly

The Executive Council members had three meetings during the assembly. The discussed topics are underlined in the following.

2.3 Executive meetings

EC Meeting 1 was focused on the preparation of CoD1. The discussions and decisions during this meeting were presented in CoD 1.

EC Meeting 2 was focused on the preparation of CoD2 and covered the following topics:

- The IAGA Book for the IUGG 100th Anniversary: This book has 5 parts, each consisting of multiple chapters. Two EC members are in charge of each part. The first drafts for about half of the chapters are about 90 % completed, with the rest expected to be finished by the end of September/October.
- IAGA involvements in the 100th Anniversary celebration: Plan will include events to highlight the history of IAGA and participation in IUGG-led projects

- IUGG 2019: The discussion centered on having strong sessions with "critical mass" by encouraging Divisions to combine proposed sessions with similar or overlapping themes.
- Public outreach video on IAGA: The possibility of commissioning a short (2-3 minutes) video for public outreach was discussed, with the decision to explore the feasibility and available options further.

  EC Meeting 3 was dedicated to discussions concerning the Assembly.

Resolutions of the 2017 Scientific Assembly

M. Korte (Resolution Committee Chair) tabled two resolutions that were submitted to the Resolution Committee for consideration. The resolution on Magnetic Satellite Mission Constellation was adopted.

Election of the IAGA-IASPEI 2021 location

A vote was held to elect the location of the 2021 Assembly. A total of 17 votes were cast by the ND: 7 for Hyderabad, and 10 for Lisbon.

The final decision on the selection of venue will be made jointly by the IASPEI and IAGA Executives, possibly by the end of September, based in part on the result of this vote.

Preparation for election of Officers for the 2019 - 2023 Quadrennium

The EC was tasked to establish a Nomination Committee, and to prepare for the election of a new (additional) VP, a new Treasurer, a Young Scientist representative, and Division Leaders in the 2019-2023 Quadrennium.

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3 2015 IAGA Awards

On Thursday 30th August each association hosted their medal awards. For the first time, IAGA organised a special event, including the ceremony itself and an invited lecture given by the Shen Kuo awardee, Jeffrey Forbes.

IAGA President Eduard Petrovsky, Vice-President Monika Korte, Young Scientist awardees Emma Douma, Katarzyna Dudzisz and Federico Gasperini, Long Service awardee Jean Rasson, IAGA Secretary General Mioara Mandea and Shen Kuo medalist Jeffrey Forbes (from left to right) at the IAGA Award Ceremony.

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 presented to

Jeffrey Forbes (USA)

Jeffrey Forbes has made very important contributions on a broad range of topics that are essential to the advancement of aeronomy and our understanding of how aeronomy impacts geomagnetic observations.

Jeffrey Forbes has been scientifically active for over 45 years and during that period, he has published more than 270 papers in refereed journals. His path-breaking 1976 paper on the electrodynamic effects of atmospheric solar tides and their relationship to the Global Sq current system and his 1981 review paper on the Equatorial Electrojet, continue to provide the basis for understanding tidal-ionospheric coupling. Hence Jeffrey Forbes' research is not only important from the point of view of Aeronomic phenomena, but also for understanding the contribution of ionospheric currents to daily variations of the geomagnetic field recorded at a large number of observatories around the globe as well as measured in space by satellites such as CHAMP, Swarm satellites.

Starting with his 1973 study of thermospheric density variations associated with auroral electrojet activity, he has played a leading role in quantifying thermospheric neutral density and wind response to severe geomagnetic storms using satellite observations, and modelling them. These papers, as also his work on the equatorial penetration of magnetic disturbance effects in the thermosphere and ionosphere are very important contributions to the study of magnetospheric forcing of the ionosphere-thermosphere system, which forms an important part of space weather. He also did pioneering work on identifying upper atmosphere tidal variability due to latent heat release in the tropical troposphere (1999, 2008) which plays an important role in the tidal variability in the ionospheric dynamo region (2008). Jeffrey Forbes, has thus been instrumental in also illuminating the role played by tropospheric forcing of the ionosphere-thermosphere system in causing day-to-day variability of the ionosphere during magnetically quiet periods, which is also an important component of space weather. He has played a leading role in a number of international programs dealing with these topics.

For his outstanding achievements, Jeffrey Forbes has been honoured by the American Geophysical Union and the European Geophysical Union. He became a Fellow of AGU in 2008 and was awarded the Julius-Bartels Medal by EGU in 2016.

Jeffrey Forbes receives Shen Kuo Medal to recognize his scientific achievements, including studies of the upper atmosphere environments of Earth, Mars, and other planets; coupling of these environments to lower altitudes and to solar variability; geomagnetic storm effects on satellite drag variability; the vertical propagation of tides and planetary waves in planetary atmospheres, and their electrodynamic and chemical effects.

3.2 IAGA Long Service Award

The IAGA Long Service Award in recognition of valued services to the IAGA community over many years was presented to

Jean Rasson (Belgium)

Jean Rasson has worked at the Observatory Dourbes for 40 years and he is the head of its geomagnetism unit with direct responsibility for two geomagnetic observatories in Belgium. Under his tenure, Dourbes became a centre for absolute instrument and variometer development, comparison and testing. The AUTODIF and the INTERMAGNET 1-Second variometer are examples for that. Additionally, he was interested in the traceability of measurement standards for the Earth's magnetic field and in the application of geomagnetic mea-

surements for society, e.g. in aeronautics.

Jean Rasson has strongly contributed to the international efforts for global monitoring of Earth's magnetic field by means of geomagnetic observatories and repeat stations. He organised the IAGA Workshops on Geomagnetic Observatory Instruments, Data Acquisition and Processing in 1994 and in 2016, as well as regional conferences for the exchange of geomagnetic observatory expertise. For 17 years, Jean Rasson has contributed to INTERMAGNET and he was chairing its Operations Committee since 2003.

His detailed knowledge on both modern and classical geomagnetic instrumentation and his command of several languages make him a competent teacher and helper to numerous colleagues worldwide. He has supported initiatives like Interlatam as well as many geomagnetic observatories and researchers in numerous countries, including Argentina, Brazil, Cuba, Colombia, Indonesia, Mexico, Mozambique, Pakistan, Peru, Philippines and South Korea. He is also involved in geomagnetic observatories in Antarctica and in geomagnetic repeat station work.

Jean Rasson receives the IAGA Long Service Award in recognition of his efforts continuously dedicated to produce the highest quality geomagnetic field data in many observatories around the world and repeat stations, and his devoted work to make Dourbes observatory a centre for absolute instrument and variometer development, comparison and testing.

3.3 IAGA Young Scientist Award

During the Award Ceremony, certificates were presented by the President to the winners of IAGA's "Young Scientist Award". More information about the workshops in which they participated and nominated can be found on the IAGA web site.

Emma Douma (NZ)

Nominated by the VLF/ELF Remote Sensing of Ionospheres and Magnetospheres meeting (2016).

Katarzyna Dudzisz (PL)

Nominated by the New Trends in Geomagnetism - Paleo, Rock and Environmental Magnetism (2016).

Federico Gasperini (USA)

Nominated by the IAGA/ICMA/SCOSTEP Workshop on Vertical Coupling in the Atmosphere-Ionosphere System (2016).

4 The 3rd IAGA (Summer) School

The third IAGA School was sponsored by and took place at SANSA Space Science in Hermanus, South Africa, from 20-26 August 2017 (the week before Scientific Assembly of IAPSO-IAMAS-IAGA). Finally realizing that it never is summer all over the world at the same time (in fact this year it would have been a winter school) it was decided to drop the term "summer" henceforth and call the events IAGA Schools. This year the school was attended by 19 post-graduate students from 15 countries worldwide (including e.g., Algeria, Brazil, Mexico, India, Japan, Russia, Poland, UK, South Africa). The attendees included students nominated for the IAGA Young Researcher Award, or nominated by the IAGA Division and Working Group leaders. Altogether 6 topics across all the disciplines of IAGA were covered by lectures given by experts in their fields: Space and Magnetospheric Physics (Edgar Bering, Houston, Texas, USA), Space Weather (Michael Kosch, Hermanus, South Africa), The Ionosphere (Zama Katamzi-Joseph and Pierre Cilliers, Hermanus, South Africa), Electromagnetic Induction Methods and Applications (Stephan Thiel, Adelaide, Australia), Geomagnetic Main Field and Core Dynamics (Nicolas Gillet, Grenoble, France), Paleomagnetism: Deciphering the records of the prehistoric field (Gillian Turner, Wellington, New Zealand). Lectures were accompanied by practical projects that the students worked on in groups and presented in excellent group talks on the last

afternoon. Both the students and the lecturers gave very positive feedback on the event. Interactions among students and between students and lecturers were very friendly and informal and friendships and networks were formed. This was facilitated by the convenient location where all students stayed in student accommodation on the institute premises and all lecturers stayed together in a guesthouse nearby. Coffee breaks and most meals were provided by catering at SANSA and joined by students and lecturers and used for lively discussions. Last but not least, a half day outing to a nearby Penguin colony provided relief from the hard work over the week and another opportunity for international socializing and networking.

IAGA School students and some lecturers at SANSA Space Science in Hermanus.

The main aims, increasing the visibility and attractiveness of IAGA to young researchers, providing the young promising researchers with overview of the activities carried out within IAGA across all fields of research related to the Earth's magnetic field and aeronomy, and to facilitate establishing new personal contacts were fully accomplished. We are very grateful to the European Geophysical Union (EGU), who provided valuable financial support. We deeply thank SANSA Space Science for local organization and for providing lecture facilities, well-tested projects and transportation between Cape Town and Hermanus.

Monika Korte
IAGA Vice-President

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5 Swarm mission – probing the geomagnetic field

Four years into operations since its launch in 22 November 2013, the Swarm constellation is providing excellent measurements of the Earth's magnetic field and associated plasma environment. The user community is achieving unprecedented scientific results and exploring new applications. All three satellite platforms are performing very well, essentially free of any anomalies, and the space segment constellation orbit geometry evolves in line with expectation.

The important 2017 Swarm-related meetings were the Fourth Swarm Science Meeting organised at the Park Lodge Hotel in Banff, Alberta, Canada from 20-24 March 2017 (http://swarm2017.org/) and the 7th Data Quality Workshop organised in Delft on 9-12 October

2017, hosted by the Delft University of Technology.

The main aim of the Fourth Swarm Science Meeting was to address science, applications and services in the context of its Earth Explorer series of missions, ranging in focus from the Earth's outer core to the magnetosphere. Specifically, as the Swarm mission completed at time of that meeting three years of extremely successful science operations, the meeting brought together the wider international scientific community to explore and develop scientific and application synergies and to propel the mission into its next phase. Indeed, the Banff science meeting provided the platform for around 400 scientists and experts to participate in discussions on new science and discoveries about our planet thanks to extraordinary satellite missions. The meeting was also important for collecting thoughts and recommendations for ESA's consideration in the evolution of Swarm mission.

The 7th Data Quality Workshop was an important meeting to summarise the status of present and perspectives for future Swarm activities. Presentations of the 7th Swarm Data Quality Workshop can be downloaded via Swarm DQW FTP site.

Finally, let us note that the ESA Member States participating in the Earth Observation Envelope Programme have given a nice birthday present to the Swarm mission. At its 172nd meeting on 15-16 November the Earth Observation Programme Board approved the extension of Swarm until the end of 2021. The mission team is working to implement extensions of all the relevant activities under contract, as well as a good number of new ones.

The message to users is that through this decision the Swarm ecosystem will continue to grow in the years ahead.

Giuseppe Ottavianelli, Rune Floberghagen (ESA)
Mioara Mandea (CNES)

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

6.1 2nd Conference on Natural Dynamos 2017

Valtice, Czech Republic, June 25 – July 1, 2017

The 2nd Conference on Natural Dynamos (http://valtice.ig.cas.cz/index.html) was held on June 25 – July 1, 2017, in Valtice, Czech Republic. It was dedicated to hydromagnetic dynamos, magnetoconvection and various hydromagnetic processes acting in the Earth's core, planetary cores, in the Sun and other stars, in galaxies, accretion discs and other astrophysical objects, and also laboratory hydromagnetic and dynamo experiments. The conference was co-organised by the Institute of Geophysics of the Academy of Sciences of the Czech Republic, Prague, the Earth Science Institute of Slovak Academy of Sciences, Bratislava, and the Department of Astronomy, Physics of the Earth and Meteorology of the Faculty of Mathematics, Physics, Comenius University, Bratislava. In total, 59 participants, including 2 accompanying persons, from 9 countries worldwide (the USA and Europe) attended the conference. It was important that our conference was attractive in particular to young researchers: 14 graduate and undergraduate students took part in the conference.

Scientific part of the conference consisted of five oral sessions (included a tutorial lecture for each session) and three afternoon poster sessions. The posters were introduced by short, 2-minute oral introductions. In total, 62 abstracts were received, they corresponded either to oral or poster presentations and are provided in the Programme and Book of Abstracts.

The 2nd Conference on Natural Dynamos enabled the dynamo community (geophysicists, astrophysicists, applied mathematicians, physicists working on dynamo laboratory experiments) to meet and engage in intense discussions, extending beyond the scientific sessions. International Programme Committee agreed that the quality of the presentations of students was in general very high, and Certificate of Excellence for the best student presentation was issued to Valeria Shumaylova (Cambridge University, U.K.) for her

presentation "Coarsening magnetic instability in domains of large aspect ratio: ABC and modulated flow".

Participants of the 2nd Conference on Natural Dynamos in front of the castle of Valtice (Czech Republic).

In addition, the conference was devoted to anniversaries of Jozef Brestenský and Pavel Hejda, who organised previous dynamo conferences. We consider organising the 3rd Conference on Natural Dynamos in four–five years in Slovakia.

J. Šimkanin
On behalf of Local Organizing Committee

6.2 6th LATINMAG Workshop

Querétaro, Mexico, September 18 - 22, 2017

The event took place at the Juriquilla Campus of the Universidad Nacional Autónoma de México, un Querétaro, Mexico, at the Centro Académico Cultural. In the congress there was a total of 80 participants, 40 of which were students, 36 researchers and 4 invited speakers. The program included one day that was dedicated to Young scientists and students, with workshops by Harald Bohnel, Roberto Molina, Jaime Pavon, andMartin Chadima. The participants represented nine countries: Argentina, Brasil, Colombia, Spain, Ecuador, México, Czech Republic, and United States. The participation by country was lead by 38 Mexicans. The talks and posters were presented the following three days (September 19, 20 and 21), with 8 sessions, five invited talks, and the general assembly. The program ended Friday with a geological excursion.

The main participation was from Mexico, but there were 6 colombian students from Mexican institutions, and one Brasilian students from UNAM. The majority of the participants were from Mexico, with 20 Mexican students, 7 from Colombia, 6 from Argentina, 6 from Brasil, and one from Egypt. The students are 14 doctoral students, 15 Masters students, and eleven undergraduate students. Equador had its first participation in LATINMAG. Notable was the absence of participants from Chile and Venezuela who have been at other LATINMAG events.

Five conferences were included in the program, given by Harald Bohnel (UNAM CGEO), Jaime Urrutia Fucugauchi (Colegio Nacional), Martin Chadima (AGICO), Javier Pavón (U. Complutense de Madrid) y Fernando Corbo (CONACyT). An invited talk was presented by Augusto Rapalini (UBA, Argentina) who made a semblance of the work of Rubén Somoza, Latinmag member who passed earlier this year. The program consisted of 8 regular sessions with 40 oral presentations and 28 posters. The sessions included rock magnetism, geomagnetism, geophysical prospecting, paleomagnetism, environmental

magnetism, and archeomagnetism.

During the event the best two oral presentations and the best poster were awarded. The best presentation awards were for Daniela Mejía (Colombia) with the presentation "Biomonitoreo magnético de la calidad del aire en el valle Aburrá (Colombia) a partir del uso de Tillandsia recurvata", and Luis Valderrain Rojas (Mexico) for the talk "Paleomagnetic study of the volcanic sequences from the proto-gulf formations, Sonora, southern región (Guaymas), Mexico." The award to the best poster was given to Jeanine A Carmo (Brasil) who presented "Estratigrafía magnética do Furo DSDP- 511 (Plato das Falklands) durante o Barremiano-Aptiano".

Roberto Molina Garza
On behalf of Local Organizing Committee

6.3 IAU Symposium 335 on "Space Weather of the Heliosphere: Processes and Forecasts

Exeter, UK, July 17-21 2017

The recent IAU Symposium 335 on "Space Weather of the Heliosphere: Processes and Forecasts" held at the University of Exeter, UK in July 17-21 2017, linked various aspects of research in solar, heliospheric and planetary physics, emphasizing cross-disciplinary developments. The symposium brought together scientific experts from various pertinent disciplines to the meeting from all over the world around the topic of Space Weather. A number of excursions were organized to local facilities and places of interest. An active parallel education/public outreach program on the first 3 days engaged 14 of the participants and members of the LOC to share their enthusiasm about space weather with schools, teachers and the general public ($\sim$300 people).

We welcomed 185 participants from 30 different countries and 21 accompanying persons, exhibitors or public lecturer. Particular noteworthy was the relatively high (36.8 %) proportion of women attendees, one of the highest ever encountered at a large meeting in our field.

Attendees of IAU Symposium 335 on "Space Weather of the Heliosphere: Processes and Forecasts" in Exeter (UK).

Abstracts and Sessions: The overall scientific program was represented by a total of 204 abstracts. Of those presented abstracts, 122 were posters and 82 were in the oral program. The oral program consisted of 26 invited talks by leaders in the field and 56 oral contributed presentations, as well as the town hall and round-table discussions, plenary summaries, and a few opening and closing talks. 10 chairs led the sessions and provided lively question and answer sessions. The scientific program consisted of 8 sessions, scheduled over 4.5 days. Each session topic was ex-

plored by 2 to 4 invited talks, contributed talks and poster sessions. All oral presentations were plenary, except for the last theme where we had a common plenary and a split in 2 round tables. Thanks to the rich representation and optimal (scientific, regional, gender) diversity of the SOC, balance was respected in the selection of the 26 invited speakers and the general scientific program. The symposium therefore gave a balanced international overview of the general advances in space weather, focusing on the key topics of solar drivers and activity levels (session 1); Solar wind and heliosphere (2); Impact of solar wind, structures and radiation on and within terrestrial and planetary environments (3 and 4); Long-term trends and predictions for space weather (5); Challenges and strategy plans for Earth and the heliosphere (6); Forecasting models (7); Space weather monitoring, instrumentation, data and services (8).

In the last few years, we have seen transformations of the UK political landscape, all in response to space weather being on the national risk register (e.g. the Met Office centre). The Symposium opened with a Welcome Introduction by Mike Hapgood, chair of the Space Environment Impact Expert Group [SEIEG] that advises the Cabinet Office on Space Weather. Space weather is increasingly recognised as an international challenge faced by several communities. In Session 6, Ian Mann (Canada) led a town hall session from the United Nations Expert Group on Space Weather: "Strategy for Developing an International Framework for Space Weather Services (2018-2030)". On the last day, Session 8 included two parallel round tables RT1 "Data Handling and Assimilation" and RT2 "Relationships with the 'civil' society", with the findings summarized in the plenary by invited speakers Terry Onsager (USA) and Lee-Anne McKinnell (South Africa). The ability to understand, monitor and forecast the space weather of the Earth and the heliosphere is of paramount importance for our high-technology dependent society and for the current rapid developments in our knowledge and exploration (robotic and human) of the Solar System. Space weather is not just important at Earth and this symposium brought a vast range of expertise together, discussing the activity and winds of other Suns and the effects on planets and other objects of the solar system such as Pluto.

To encourage interactions and networking between attendees, and to foster the excitement of younger colleagues in presenting their work, a poster competition for students was organised with judges assigned among the senior participants. The poster competition engaged 28 young scientists and 34 judges, and 5 worthy winners were celebrated during the conference dinner, 2 of which issued from Session 4, a traditionally IAGA-oriented session. The poster winners were: in joint fourth, Rimpei Chiba (Session 4 - Japan) and Vaibhav Pant (Session 5 - India); in joint second, Nadia Hussain (Session 4 - Pakistan and Canada) and Marianna Korsos (Session 7 - UK); and in first place, Sushant Mahajan (Session 5 - India and US).

Thanks to IAU and cosponsors such as IAGA, we supported 47 scientists from around the world to come and present their work. The IAGA funds awarded were specifically attributed to support 3 young scientists from Nepal, Mexico and France, respectively, whose presentations were pertinent to IAGA disciplines – the IAGA contributions representing on average 34 % of their total awards.

The post-conference materials are posted on the website at: http://blogs.exeter.ac.uk/iaus335/media/

Claire Foullon
On behalf of Local Organizing Committee

7 In Memorium

Andrei Alexandru "Andy" Soare (1931 – 2017)

Unfortunately, among others, we have lost Andrei A. Soare on October 16, 2017 at the age of 85 years, and the benefit of his contribution, because of the leading role he played in the life of our Association, as National Correspondent. In 1954, after he graduated the Faculty of Geophysics - Institute of Mines of Bucharest, Andy joined the Romanian Geomagnetic Observatory – Surlari (SUA), a job he loved, retiring with over 50 years of service as the head of it.

Andrei Soare was a high-calibre geophysicist, beginning his scientific career with his main mentor, Acad. Liviu Constantinescu, the founder of the Surlari National Geomagnetic Observatory, in 1943. He took over all geomagnetic works, including development of observatory practice, since 1954, and expanded substantially the geomagnetic activities starting with International Geophysical Year. He was maintaining a close and fruitful collaboration with his master, with fundamental contributions especially for spatial and temporal dynamics of the terrestrial magnetic field and long-term monitoring of the planetary magnetic field on the Romanian territory. Andrei Soare published hundreds scientific articles and reports as well as numerous contributions in national and international congresses. In addition, he co-directed tens of master theses, as associate professor at the Department of Geophysics, Faculty of Geology and Geophysics of the University of Bucharest. For his work he was awarded twice by the Romanian Academy: Grigore Murgoci Prize for the Magnetic Map of the Black Sea (1973) and Stefan Hepites Prize for Historical geomagnetic measurements in Romania (1998). In 2000 he received the Society of Exploration Geophysicists (SEG) Award for the entire activity in the field of geophysics, and in 2005 the Diploma of Gratitude from the Institute of Geodynamics of the Romanian Academy during the 40th anniversary of the Căldărușani Geodinamic Observatory.

Andrei Soare left behind when he retired, in 2009, a priceless legacy: a continuously running observatory - INTERMAGNET member, and few young scientists who will have always a special place in their hearts for him. He has contributed to the development of Romanian geomagnetic research deserving a place in our memory.

Anca Isac
Geological Institute of Romania, Bucarest

Attia Abdel-Salam Ashour (1924 – 2017)

Professor Attia Abdel-Salam Ashour of the Department of Mathematics, Faculty of Science, Cairo University, peacefully passed away on 17 April 2017 at his Dokki residence in Cairo, aged 93.

Born on 13 September 1924 in Damietta, Egypt, Ashour graduated from the Faculty of Science, Fouad 1st University (later to become Cairo University) in 1944. He obtained his Ph.D. Degree in Mathematics from the Imperial College in London, UK, in 1948. His tutors were no less than the famous scientists Sydney Chapman and Albert Price. In 1967, Ashour was granted the D.Sc. Degree in Mathematics from London University, thus becoming one of the very few Egyptians to hold such a degree.

Ashour's career at the Department of Mathematics started in 1944 as a teaching assistant, then as a lecturer in 1948, culminating as Professor of Applied Mathematics in 1966. He was a Professor Emeritus at the department since 1984. He headed the Department of Mathematics for a long period. Ashour acquired an international status through his innovative work in applications of Mathematics in Geophysics. His name is closely linked to fields of Mathematics like Special Functions, Boundary-Value Problems, and to Theoretical Geomagnetism. He has lead an active school of research in these fields and several scientists obtained their M.Sc. and Ph.D. degrees

under his supervision. He was one of the leading experts on the Mathematical Theory of Electromagnetic Induction. Several applications carry his name. Ashour was a Visiting Professor in many scientific Institutions worldwide.

Ashour was elected a member of the Egyptian Academy of the Arab Language in 1990. Ashour was holder of many national and international prizes for his scientific work and for his national and regional efforts in diffusing and strengthening mathematical knowledge: The Order of Merit of Arts and Sciences First Grade, three times in 1966-1986 and in 1988, The Order of Merit of the Republic of Egypt of the Fifth Grade in 1954 and of the second Grade in 1984, The Medal of the African Mathematical Union in 1990.

Ashour was granted Chevalier dans l'Ordre de La Palme Académique from the French Government in 1985, and Chevalier dans l'Ordre National de Mérite from the French President in 1995 for his efforts in developing Egyptian-French cooperation in Mathematics.

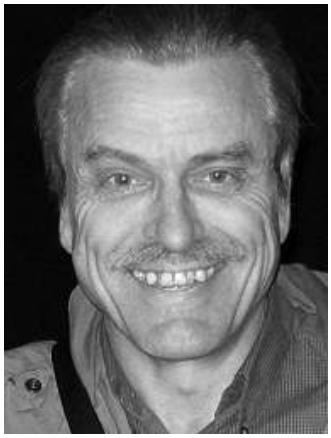
Ashour was Fellow of the Royal Astronomical Society (R.A.S) since 1954, and was also elected Foreign Associate of RAS, the highest recognition offered by this society for foreign scientists, in 1978. He was a Member of the Advisory Board to the Director General of UNESCO on Science and the 21st Century. He was President of the Arab Union of Mathematicians and Physicists, 1975-1977, and Vice-President of the African Mathematical Union, 1976-1986. Ashour was Vice-President of the International Union of Geodesy and Geophysics (IUGG) during the period 1971-1975, and President of IUGG during the period 1975-1979, He was Chairman of the Inter-divisional Working Group on International and External Fields, of the International Association of Geomagnetism and Aeronomy, during 1973-1979. He was made an Honorary Member of IAGA in 1991.

Ashour was the Head of the International Center for Pure and Applied Mathematics (CIMPA) at Nice, France, from 1992 till 1996, and member of its Administrative Council during1997-2000. He was a founding member of the Arab Academy of Sciences. Ashour was a member of the Institut d'Egypte, and a multitude of other national and international scientific organizations.

He is sadly missed by his numerous students and colleagues, and all who knew him. He is survived by his wife Karima and his daughter Zeinab, currently Professor at the Faculty of Medicine, Cairo University.

Ahmed Abdel Hady
Astronomy, Space and Meteorology Dept.
Faculty of Sciences, Cairo University, Egypt

Olof Walter Lennartsson (1943 – 2017)



We are sad to report that our friend and colleague Olof Walter Lennartsson passed away unexpectedly at his home in Los Altos, CA on February 2, 2017. He was a great scientist and a good friend to the many people with whom he worked. During his long and productive career he was a leader in unravelling the complex process that form the Earth's magnetosphere.

Walter was born on October 27, 1943, in the small village of Laxviken Sweden. He attended elementary school in Laxviken and Föllinge. While painting radiators during the daytime and observing the Aurora Borealis in the night skies of Northern Sweden, Walter knew that he wanted to learn more than the Jämtland Province could offer so he completed his high school education in Östersund, Sweden.

He studied space physics from 1966 to 1973 at the Swedish Royal Institute of Technology (KTH) with space pioneers Lars Block, C.-G. Faellthammar, and Rolf Bostrom in the Laboratory directed by Hannes Alfvén. His thesis work addressed electric field and current distributions in the ionosphere. This work was one of the earliest to suggest large potential drops along auroral magnetic field lines. Subsequent work on the subject was published in several papers during the rest of his career. Walter's early papers on the subject were controversial and have not yet been adequately recognized for their keen insights and pioneering nature.

In 1974 he began a NASA Postdoctoral Research Fellowship at the Marshall Alabama Space

Flight Center, Huntsville, Alabama, where he met his wife, Nancy Harris. They were married in 1978 and relocated to Palo Alto, California where Walter joined the Space Sciences group at the then Lockheed Palo Alto Research Laboratories (LPARL)

At Lockheed Walter was the driving force behind the analysis of the energetic ion mass spectrometer data from NASA's ISEE-1 satellite. He and many collaborators addressed the role of ion composition in magnetic storms, sub storms, geomagnetic pulsations, as well as the formation and dynamics of the Earth's plasma sheet. Perhaps the best known paper reporting on this phase of his career is his 1986 paper with Ed Shelley, entitled "Survey of 0.1- to 16-keV/e plasma sheet ion composition".

Walter applied his keen analytical skills and insights, not only to improve the designs of several very successful space plasma instruments, but also the analysis and interpretation of the resulting data. Notable among those were the HERS instrument on the ESA Giotto Mission to Comet Halley and the TIMAS instrument on NASA's Polar spacecraft. After 35 years of employment at Lockheed Martin, he retired in 2013. Walter is survived by his wife of 38 years, Nancy Lennartsson, his son Nils Lennartsson; sister, Ellen Hedström (Umeå, Sweden) and in-laws, nephews and nieces living in Alabama, Spain and Sweden. He will be deeply missed by them and his many research colleagues.

Ed Shelley
Bill Peterson
Laboratory for Atmospheric and Space Physics (LASP)
University of Colorado, USA

Predhiman Krishan Kaw (1948 – 2017)

Prof. Predhiman Krishan Kaw, an internationally acclaimed plasma physicist and the Founder Director of the Institute for Plasma Research (IPR), Gandhinagar, passed away due to a sudden cardiac arrest on 18th June, 2017. He was born in Kashmir on 15 January 1948, and was a child prodigy who received his early schooling at home and went on to obtain his Master's degree at the age 16 and a Ph.D. at the age of 18 from the Indian Institute of Technology, Delhi. He then joined Princeton Plasma Physics Laboratory at the age of 19 by which time he already had 20 publications to his credit.

Predhiman was a brilliant scientist with a broad range of research interests and a prodigious research output spanning over 389 papers in international journals. His early work at Princeton during the period 1967-71 resulted in seminal contributions to nonlinear problems connected with laser – plasma interactions and laid the foundations for much of the current research on high power laser matter interactions. From 1971-75, he worked at the Physical Research Laboratory (PRL), Ahmedabad where he extended the theory of parametric instabilities to magnetized plasmas. The review articles written by him and some of his collaborators in this period are widely cited and have had a significant impact on the development of intense RF heating in magnetized plasmas and in the interpretation of ionospheric heating experiments at Arecibo. During this period, he also made important contributions to the theory of ionospheric irregularities and even initiated laboratory experiments at PRL to simulate some of the ionospheric phenomena thereby planting a seed for future experimental plasma physics activities in India.

In 1975 Predhiman went back to Princeton and took up research on magnetically confined fusion plasmas and made several pioneering contributions in this area. He showed that the decades old conventional wisdom on the stability of drift waves in sheared geometry was incorrect. He also demonstrated the existence of a coalescence instability of magnetic islands and showed how model calculations can elucidate complex nonlinear magnetic reconnection phenomena. These ideas have found applications in diverse phenomena like disruption in tokamaks, energy release in solar flares and sub-storm effects in tail regions of the magnetosphere.

Predhiman was also responsible for initiating and developing the national magnetic fusion program in India. In the late seventies and early eighties, he and some of his colleagues at PRL succeeded

in persuading the Dept. of Science and Technology, Govt. of India, to set up a major programme of plasma physics at PRL. He returned to India in 1982 to direct this programme, which eventually evolved into the autonomous Institute for Plasma Research.

For his outstanding contributions and achievements, Prof. Kaw received many honors and awards during his illustrious career including the Indian National Science Academy's Young Scientists Award in 1974, the Padma Shri award in 1985 and the SS Bhatnagar award in 1986. Most recently he was awarded the Subrahmanyan Chandrasekhar Prize for "outstanding contributions" in the field of plasma physics by the Association of Asia Pacific Plasma Physics Societies.

Above all, Prof. Kaw was a passionate scientist and a great teacher who never tired of promoting the cause of science and spending enormous time mentoring students and younger colleagues. As a human being he was extra-ordinarily kind and gentle with infinite patience particularly for younger colleagues. This coupled with his infectious enthusiasm for research and informal behavior encouraged many students and scientists, not only from within the Institute but also from the Universities and the scientific community abroad to interact with him and collaborate with him in research. Each one of them felt enriched and emotionally touched by his warmth and generosity of spirit. In his more than 50 years of active scientific life, Predhiman has not only contributed significantly to the progress of plasma physics and its applications in India and abroad but has also inspired a lot of young minds and touched a great many human lives in an uplifting manner and thus leaves behind an invaluable legacy in science and humanity. His death is a great loss for the plasma physics community worldwide. Prof. Kaw is survived by his wife Saroj and children, Sidharth, Prashant and Puja.

Abhijit Sen
Institute for Plasma Research, Gandhinagar, India
Gurbax Lakhina
Indian Institute of Geomagnetism, New Panvel, India
Bruce Tsurutani
Jet Propulsion laboratory, Pasadena, California, USA

Shi Tsan Wu (1933 - 2017)

With a heavy heart, we announce the passing of Dr. S. T. Wu, Distinguished Professor Emeritus of the Department of Mechanical and Aerospace Engineering and Center for Space Plasma and Aeronomic Research, at the University of Alabama in Huntsville. He got ill suddenly and died in the afternoon of Sunday, May 21, 2017. His beloved wife Mai and his children were with him.

As a child, he was attracted by automobiles, and he wanted to build cars in China so that everyone could afford them. He chose mechanical engineering as his major at the National Taiwan University in Taiwan, Republic of China. His senior year project was the design of a small cheap car for everyone at that time when it was in the 1950's. He came to the USA in 1957 for graduate study in mechanical engineering and received a Masters degree in Mechanical Engineering from the Illinois Institute of Technology, Chicago, Illinois.

The physics of fluids and heat transfer became his favorite subjects and opened his eyes to fundamental sciences. His research in solar physics began in 1964 when he was a Ph.D. student at the University of Colorado with a research assistantship at the High Altitude Observatory (HAO) of the National Center for Atmospheric Research (NCAR) in Boulder, Colorado. Supervised by Dr. Yoshinari Nakagawa, his work at HAO was on a laboratory plasma experiment that simulated solar flares in the laboratory using a magnetohydrodynamic shock tube.

He was assigned to develop a theoretical model to simulate solar flare shock tube experiment. Under the conditions of this shock tube, it produced a high temperature and multi-species plasma under non-thermodynamic-equilibrium (Non-LTE) conditions. At that time no appropriate theoretical model existed. He began to formulate this problem using multiple component Boltzmann Equation with quantum effects. Finally, they arrived

at a set of multi-species Navier-Stokes type conservation equations for the non-equilibrium radiative plasma flow. This piece of research was his Ph.D. dissertation (Nakagawa and Wu, 1968: Wu 1969, 1970) and began his research in solar MHD plasma.

After he completed his Ph.D. degree, he joined The University of Alabama in Huntsville (UAH) near the NASA/Marshall Space Flight Center. He had the opportunity to work with scientists in the Solar Physics Group. He was one of the pioneers who started the development of numerical magnetohydrodynamic (MHD) models to simulate the initiation and evolution of solar disturbances (e.g., Coronal Mass Ejection) from the Sun to the Earth.

While working at UAH, he supervised 24 Ph.D. and 25 Master students. He had received many international, national, and regional honors and awards. He also served as a committee member in different science communities. He had published hundreds of science research articles. He was the founder and Director of the Center for Space Plasma and Aeronomic Research (CSPAR) during 1995-2005. He was also a Distinguished Professor in Department of Mechanical and Aerospace Engineering at UAH during 1990-2005. He retired in 2005 when he became a distinguished Professor Emeritus, University of Alabama System, Department of Mechanical and Aerospace Engineering and Center for Space Plasma & Aeronomic Research (UAH).

Chin-Chun Wu
Space Science Division
Naval Research Laboratory, Washington D.C., USA

John W. Freeman, Jr. (1935 - 2017)

John Freeman, a Rice professor emeritus and research professor of physics and astronomy and first director of the Master of Liberal Studies program at the Glasscock School of Continuing Studies, died July 15 in Dallas. He was 82.

Freeman joined Rice's then-named Department of Space Science in 1964 after a year as a staff scientist at NASA headquarters in Washington, D.C. Freeman's primary research focused on space weather. He followed in the footsteps of space science pioneer James Van Allen, his mentor at the University of Iowa, where Freeman earned his master's degree and a Ph.D. in 1963. He worked on early models of Earth's magnetosphere for space weather analysis and prediction and was instrumental in developing the Magnetospheric Specification and Forecast Model funded and deployed by the Air Force. He also worked on a program to evaluate the feasibility of satellite-based solar power.

In the late '60s and early '70s, Freeman was principal investigator of the Suprathermal Ion Detection Experiment (SIDE), part of the Apollo Lunar Surface Experiment Package (ALSEP). Set up on the moon during the Apollo 12, 14 and 15 missions, the nuclear-powered ALSEP was an octopus-like set of experiments that measured characteristics of the thin atmosphere found near the moon's surface. Pointed into the solar wind, it was the first to detect water vapour on the moon and gathered ground-breaking data about the composition and nature of Earth's magnetosphere for nearly seven years.

His work on Apollo earned Freeman the NASA Medal for Exceptional Scientific Achievement, the Apollo Achievement Award and a Distinguished Service Citation from his undergraduate alma mater, Beloit College. "There was enormous spirit at that time," said Alexander Dessler, professor emeritus of space physics and astronomy, who founded the world's first university department of space science at Rice and hired Freeman. "Everybody was in their late 20s or early 30s. We were young, optimistic, high energy and enthusiastic and John fit right into that. He was a very cheery guy with a lot of ideas. He buoyed up the department in his formative days," Dessler said. "Some professors are more likeable than others and John was definitely a very likeable guy for the students – and everybody. I think that came through for his entire life. He came in well-equipped to be at the forefront of research and added vigour to the department from the very beginning." Over the years, Freeman taught both graduate and undergraduate space physics and physics courses, including a series of natural science courses for non-science majors as well as pre-med physics. Eighteen students earned their Ph.D.s in his group, according to his longtime colleague Patricia Reiff, a Rice professor of physics and astronomy.

Freeman retired from the department in 2000,

though he continued to pursue his research interests. The author of numerous papers, articles and presentations, he served as editor in chief of Space Power, a journal dedicated to space applications, and authored a book, "Storms in Space," published in 2001. He became the first director of the Master of Liberal Studies degree program at the Glasscock School in 2005, serving in that position until August 2016.

In 2011, Freeman oversaw the creation of the Master of Liberal Studies Writers Group, of which he was a member, sharing his talents as playwright, a poet and a writer of creative nonfiction. Freeman ran half marathons as recently as four years ago and he was a frequent volunteer on water projects in Haiti, the Yucatan Peninsula and Cuba. He was named a Paul Harris Fellow by Rotary for his work to develop water systems in developing countries. Freeman recently celebrated his 60th anniversary with his wife, Phyllis. The couple had a daughter, Laurie, and a son, David.

Umbe Oliveira Cantu
Physics and Astronomy Department
Rice University, Houston, Texas, USA

Arthur C. Aikin (1932 - 2017)

Arthur Coldren Aikin, Jr., 84, a pioneer in space research who worked in areas of ionospheric physics, planetary atmospheres, and cometary structure, died September 28 at Howard County General Hospital of congestive heart failure.

Dr. Aikin was born in 1932 in Gettysburg, Pa., to the late Arthur C. and Kathryn (Bender) Aikin. A graduate of Gettysburg College, Dr. Aikin received his Ph.D. in physics from Penn State, and served on advisory boards for both institutions.

Dr. Aikin began his career helping launch scientific sounding rockets in Algeria for the French Government before joining NASA's Goddard Space Flight Center in 1961, and for several years he served as head of a NASA scientific branch involved in rocket exploration of the ionosphere and middle atmosphere. He went on to head multiple sounding rocket campaigns in the U.S. as well as Argentina, Brazil, Greece, India, Norway, Spain, and Sweden. He served as a consultant to the NASA lunar landing program, and as a scientific investigator on several satellite projects. A co-investigator on the Voyager planetary mission, he developed the first model of atmospheric species on Saturn's moon Titan. As a scientific advisor to Senator Pete Domenici, Dr. Aikin assisted in drafting the amendment to the Clean Air Act that regulated ozone-destroying CFC's. He lectured on ozone and global warming in Japan on a fellowship from the Japanese government, and taught courses at the University of Maryland and the U.S. Naval Academy. The author of over 100 scientific publications, one of Dr. Aikin's papers is among the ten most cited articles in geophysics.

Following his retirement from Goddard, Dr. Aikin served as an emeritus scientist at Goddard. He was a research professor in the Physics Department of the Catholic University of America and also served as a consultant to Howard University. He was principal investigator of an Air Force project in cooperation with the University of Bremen in Germany.

He is survived by his wife of 53 years, Dorothy Jeanne; his daughter Kathryn Aikin (Daniel Gross); his son Jeffrey Aikin (Shelly Smith); his granddaughter Eleanor Gross, and his grandsons Jeffrey Gross and Oliver Aikin.

John Correira
Computational Physics, Inc.
Springfield, VA, USA

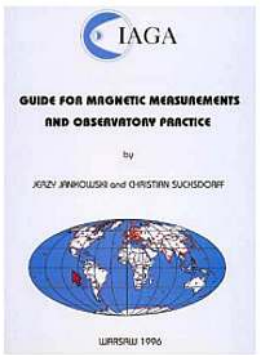
8 General Information about IAGA

8.1 IAGA books series published by Springer

One of the important achievements of IAGA during the last years was to publish, with Springer, a series of five books, representing results obtained by the IAGA five Divisions over recent years. As well as providing useful reference texts, the income to IAGA from Springer for this venture was used to support scientists to attend the last SA in Sopron, Hungary. The previous Secretary-General devoted considerable time and effort to seeing this project through to completion, and the current Secretary-General would like to thank warmly everyone who showed support during the preparation of these manuscripts, and is grateful for the time taken by colleagues and friends to provide valuable information and data, comments and encouragement, as authors, editors or referees.

IAGA has published four practical guides to observation. These may be ordered from the Secretary-General and they are also available at the IAGA web site.

IAGA Guide for Magnetic Measurements and Observatory Practice

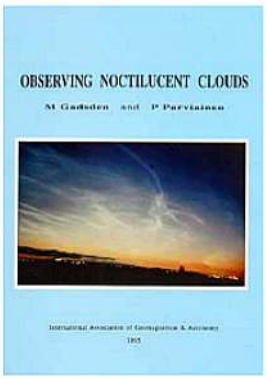


by J. Jankowski and C. Sucksdorff, 1996, 232 pages, ISBN: 0-9650686-2-5; Price: USD 50.

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.

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".

This guide is out of print but it is available at the web site using the link ONC. (Prices do not include shipping and handling.)

8.2 IAGA website

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

8.3 IAGA contact

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

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