

## IAGA, the International Association of Geomagnetism and Aeronomie

is the premier international scientific association promoting the study of terrestrial and planetary magnetism and space physics

## Foreword



This issue of IAGA News contains information about IAGA activities throughout 2024. You will find information about the preparations for the Joint IAGA-IASPEI Assembly in Lisbon, Portugal, in 2025 (section 2) and several

reports of smaller topical meetings supported by IAGA that were held in 2024 (section 3). Thanks to an active task group of IAGA Working Group V-MOD the new generation of the International Geomagnetic Reference Field, IGRF, was released in time in late 2024. Read about this and further IAGA activities in section 4. Section 5 remembers several IAGA scientists who passed away over the past year. The reader is also referred to the IAGA website (see below) and social media 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

## Contents

<b>1</b>	<b>Message from the President</b>	<b>2</b>
<b>2</b>	<b>Preparation for the IAGA-IASPEI Joint Assembly 2025</b>	<b>3</b>
2.1	Time and Place	3
2.2	Key dates	3
2.3	More information	3
<b>3</b>	<b>IAGA sponsored meetings and workshops</b>	<b>3</b>
3.1	EMIW2024	3
3.2	GGOS Topical Meeting on the Atmosphere	4
3.3	ISWI School on Space Science	6
3.4	Joint Symposium of Ninth Space Climate Symposium and ISEE Symposium	7
3.5	The XX <sup>th</sup> IAGA Workshop on Geomagnetic Observatory Instruments, Data Acquisition and Processing	8
3.6	Report of the School "Operational Space Weather Fundamentals"	9
3.7	EMSEV meeting 2024	11
3.8	VERSIM XI Workshop Report	11
<b>4</b>	<b>Other IAGA activities</b>	<b>13</b>
4.1	IGRF-14	13
4.2	Diamond Jubilee of HYB Observatory	14
<b>5</b>	<b>In Memorium</b>	<b>16</b>
<b>6</b>	<b>General Information about IAGA</b>	<b>24</b>
6.1	Book: Geomagnetism, Aeronomie and Space Weather	24
6.2	IAGA books series	24
6.3	IAGA Guides	24
6.4	IAGA History	25
6.5	List of World Data System members	25
6.6	IAGA website	26
6.7	IAGA on social media	26
6.8	IAGA contact	26

## IAGA on the Web

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

# 1 Message from the President



It is truly a great pleasure for me to begin this message by wishing you Happy New Year 2025, and to thank many of you for your many important contributions to the IAGA community as I reflect on our collective accomplishments dur-

ing the past year. Our most important scientific accomplishment in 2024 is arguably the creation of IGRF-14, the 14th generation of the International Geomagnetic Reference Field which was released in November, and it will undoubtedly be one of the most important 'go-to' data products in all disciplines of geomagnetism, aeronomy, and space weather in the coming years. I would like to take this opportunity to convey my heartfelt thanks and appreciation to both Ciaran Beggan and Clemens Kloss, and to the WG V-MOD task group, on behalf of the Executive Committee (EC) and the IAGA community for their tremendous effort and important accomplishment! I invite you to read their Report on the IGRF-14 in this Newsletter. In 2024, a 'between year' between the highly successful IUGG Assembly in Berlin in 2023 and the upcoming Joint IAGA-IASPEI Joint Assembly in Lisbon in 2025, we have provided funding support to more than 10 scientific workshops in geomagnetism, aeronomy, and space weather, including the 2024 ISWI International School in Kathmandu, Nepal, the XX<sup>th</sup> IAGA Workshop on Geomagnetic Ob-

servatory Instruments, Data Acquisition and Processing in Vassouras, Brazil, and the Joint Symposium of Space Climate 9 Symposium and ISEE Symposium in Nagoya, Japan, just to name a few. In my message last year, I alluded to the relative infrequency of in-person scientific conferences and workshops compared with our other research activities. I also alluded to the challenge (and opportunity) for IAGA to focus our effort and resources on supporting the participation of Early Career Researchers (ECR) in such meetings and workshops, especially regional workshops and especially ECR from Developing Countries. Our support for the international school and regional workshops in 2024 is a part of our ongoing effort. As noted above, the upcoming Joint IAGA-IASPEI Joint Assembly will be held in Lisbon, Portugal, from August 31 to September 5, 2025. As in previous Assemblies, an International School will also be held in conjunction. I am eagerly looking forward to the Assembly. On behalf of the EC and the Local Organizing Committee of the Assembly, I would like to invite you to join us in Lisbon, and to submit an abstract (or two) to one (or more) of the many scientific sessions before the submission deadline of March 12, 2025. I would also like to take this opportunity to thank the leadership of all the Divisions and Working Groups, as well as the session organizers, for their collective efforts in putting together an exciting program of scientifically stimulating sessions. It is a great privilege to serve you and others in the IAGA community as President, and a great pleasure working with my colleagues on the EC especially the Past President, the Secretary-General, and the Treasurer. I wish you all the best for the New Year and I look forward to seeing and communicating with many of you in 2025.

Andrew Yau  
President

## 2 Preparation for the IAGA-IASPEI Joint Assembly 2025

IAGA is looking forward to its next Scientific Assembly, which will again be a joined meeting with IASPEI, the International Association of Seismology and Physics of the Earth's Interior. After the fruitful, unfortunately fully virtual Joint IAGA-IASPEI Assembly 2021 we are looking forward to meet in person this time. An attractive list of joint as well as individual IAGA and IASPEI symposia has been suggested by the community and the abstract submission is already open. In addition to talks, the meeting will offer many opportunities to interact and discuss over posters and during breaks. The meeting will be preceded by the 7<sup>th</sup> IAGA School for early career scientists, for the first time including a day joint with the IASPEI School.

### 2.1 Time and Place

The IAGA-IASPEI Joint Scientific Meeting will be held from August 31 to September 5 in Lisbon,

Portugal. Portugal is a beautiful, well-accessible and very safe country with pleasant climate – Lisbon has an average of 2810 hours of sunshine per year.

### 2.2 Key dates

- Abstract submission deadline: **March 12**
- Information about abstract acceptance and travel grants: **April 17**
- Early bird registration deadline: **May 21**

### 2.3 More information

Detailed information on programme, abstract submission, registration, accommodation and venue are provided at the [IAGA-IASPEI Joint Assembly 2025 web site](#)<sup>1</sup>.

## 3 IAGA sponsored meetings and workshops

### 3.1 The 26<sup>th</sup> Electromagnetic Induction Workshop (EMIW2024)



The 26<sup>th</sup> Electromagnetic Induction Workshop (EMIW2024) was held in International Conference Center, B-Con Plaza, Beppu, Japan, from

September 7-13, 2024. Beppu, in Oita prefecture, belongs to Japan's southern island Kyushu, is situated in a geothermal region, hosting volca-



noes. The city is renowned for its hot springs, which have the highest hot water discharge rate in Japan. Given that geothermal energy and volcanoes are some of main topics of the workshop, Beppu provides an ideal setting for EMIW2024. And, the participants can refresh themselves with hot springs after daytime workshop.

The workshop is held every two years in different countries under the auspices of the IUGG and IAGA Division VI - Electromagnetic Induction in the Earth and Planetary Bodies. Having the 26<sup>th</sup> workshop means that we have so far enjoyed 52 years of knowledge sharing, exchanging and debating ideas, inspiring the young, admiring the old, and farewell to the legends. The workshop continued previous tradition of a collegiate atmosphere with one concurrent session. A one-day excursion in the middle of the workshop allowed a glimpse at natural, cultural and historical spots in and around Beppu City. For EMIW2024, we had 388 participants from 37 countries and regions joining the workshop, which was the largest number in the last five workshops. Among these were 246 full delegates, 119 students, 12 retired persons and 11 accompanying persons. There was a total of 384 abstracts submitted in which 52 abstracts including 7 reviews were selected by the Workshop Program Committee for oral presentations. The posters were on display for either two days before or after the excursion allowing the delegates a chance to see the posters during the poster sessions, but also in their own time. The abstracts and extended abstracts were available to the participants of the workshop via

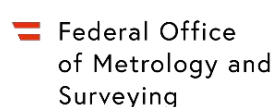
the [EMIW2024 web site](#)<sup>2</sup>. And all abstracts and some presentation slides/posters that the authors permit can be accessible to anyone via the web site after the workshop. The session descriptions and reviewer bibliographies, program schedules including excursion details are available via the web site as well. Similar to previous workshops, we had provided significant financial support for a number of participants who contributed to the workshop but had insufficient funds to cover their travel and participation costs. Funding to support participants was awarded by many national institutions and companies as well as IAGA. Out of 83 applications for financial assistance, it was possible to support 49. The Financial Support Committee of IAGA Division VI selected candidates that. (i) authored a presentation (either oral or poster), (ii) were students and postdocs/junior scientists since they typically have less access to other sources of funding, and (iii) who have not received funding at previous workshops.

The achievements in the workshop will be collected into three different journal special issues:

1. [Review talks in the special issue of Surveys in Geophysics](#)<sup>3</sup>,
2. [General academic contributions in the special issue of Earth, Planets and Space](#)<sup>4</sup>, and
3. Contributions on engineering and technical aspects of explorations in the special issue of Exploration Geophysics.

Kiyoshi Baba  
Chair of the Local Organizing Committee

### 3.2 GGOS Topical Meeting on the Atmosphere in Potsdam (Germany)



The Global Geodetic Observing System (GGOS) of the International Association of Geodesy (IAG) convened geodetic and geophysical communities to participate in the GGOS Topical Meeting on the Atmosphere, held in Potsdam, Germany, October 7-9, 2024. The main objectives were a general brainstorming and in-depth discussions on the challenges and opportunities of integrating geodetic and geophysical technologies for a comprehensive monitoring of the lower atmosphere (i.e. troposphere and stratosphere), the mid atmosphere (mesosphere) and the upper atmosphere (incl. thermosphere, ionosphere and plasmasphere). This Topical Meeting was organised as a main activity of the project Characterisation of the Ionised Atmosphere in terms of Essential Variables granted by the International Union of Geodesy and Geophysics (IUGG) for 2024/2025 with the support of the International Association of Geomagnetism and Aeronomy (IAGA) and the IAG. The meeting was attended by 76 participants from 21 countries. 36 participants are early career scientists. Thanks to the generous support of the IUGG, the IAG and the IAGA, travel grants were provided to six colleagues to enable them to attend the meeting.

Contributions covered topics from:

- GGOS Focus Area “Geodetic Space Weather Research - GSWR”
- GGOS Focus Area “Artificial Intelligence for Geodesy – AI4G”
- GGOS Focus Area “Geohazards Monitoring”
- IAGA Interdivisional Commission on “Space Weather”
- IAGA Division II “Aeronomical Phenomena”
- IAGA Division V “Geomagnetic Observatories, Surveys and Analyses”
- IAG Commission 4 “Positioning and Applications”
- IAG Sub-Commission 4.3 “Atmospheric Remote Sensing”
- GGOS Study Group “AI for GNSS Remote Sensing”
- IAG Working Group “Remote sensing using GNSS reflected signals”
- Study Group “High-resolution probing of the Troposphere and Ionosphere” of IAG Inter-Commission Committee on Theory



Participants of the GGOS Topical Meeting on the Atmosphere, Potsdam, Germany, October 7-9, 2024 (Photo R. Heinkelmann)

56 contributions, 36 oral and 20 posters, were distributed in the following sessions:

- Session 1: Magnetosphere, Ionosphere, Plasmasphere and Thermosphere, as a cou-

pled system, convener Michael Schmidt, DGFI-TUM, Germany

- Session 2: Ionosphere modelling and applications, convener Paweł Wielgosz, University of Warmia and Mazury in Olsztyn, Poland
- Session 3: Climate application of geodetic atmospheric parameters, convener Rosa Pacione, C.S.M. Data Analysis Services, e-Geos/ASI-Centro di Geodesia Spaziale, Italy
- Session 4: Geohazards monitoring, convener Michela Ravanelli, Sapienza University of Rome, Italy
- Sessions 5 and 6: Geodetic Methods for Water Vapor Monitoring and Severe Weather, convener Kyriakos Balidakis, Helmholtz Centre Potsdam GFZ German Research Centre for Geosciences, Germany
- Session 7: Atmospheric modelling based on artificial intelligence, convener: Benedikt Soja, ETH Zurich, Switzerland.

The presentations can be downloaded [here](#)<sup>5</sup>. A meeting summary and more photos can be found on the [event website](#)<sup>6</sup>.

In addition to the technical sessions, a guided tour through the emblematic facilities of the GFZ was organised and a "come together" for all participating young scientists took place. This event was not only restricted to the GGOS Topical Meeting on the Atmosphere, but also included the GRACE/GRACE-FO Science Team Meeting 2024, which took place at GFZ from October 4-8, and the GGOS Days 2024, which followed the Topical Meeting on October 10 and 11. This informal "come together" meeting was sponsored by the IAGA and was attended by about 45 young colleagues who had the opportunity to get to know each other, to talk about their work, and to network. We would like to take this opportunity to thank Ludwig Grunwaldt and Christoph Förste from GFZ for the warm welcome and interesting explanations during the visit to GFZ, as well as Julia Koch, PhD student at ETH Zurich, who, as GGOS Early Career Representative, organised the event with the young colleagues.

The GGOS Topical Meeting on the Atmosphere was only possible thanks to the support of numerous colleagues who defined the topics of the meeting, chaired the sessions, gave presentations and participated in the discussions. Special thanks go to GFZ Potsdam for hosting the meeting and to the local organising committee: Kirsten Elger, Robert Heinkelmann, Nataliya Bobenko, Sascha Torkhov and Alexander Brauser. Their tireless work ensured a familiar and comfortable atmosphere throughout the meeting. Special thanks are also due to the IUGG, whose support enabled the meeting to be held free of charge for all participants, thus facilitating the attendance of many colleagues, especially early career scientists. Finally, we would like to thank the Deutsches Geodätisches Forschungsinstitut of the Technical University of Munich (DGFI-TUM) and the Austrian Federal Office of Metrology and Surveying (BEV) for hosting and supporting the GGOS Presidency and the GGOS Coordinating Office, respectively.

Laura Sánchez, DGFI-TUM, President of GGOS  
Michael Schmidt, DGFI-TUM, Lead of the GGOS Focus Area  
"Geodetic Space Weather Research"

### 3.3 2024 ISWI School on Space Science in Nepal

#### Overview

The International Space Weather Initiative (ISWI) School 2024 was held in Kathmandu, Nepal, from September 16-20, 2024. The school was hosted by the Nepal Physical Society (NPS) and targeted pre-grad and graduate students from Nepal and neighboring countries. This educational program aimed to enhance the understanding of space weather phenomena among students, researchers, and professionals from around the world. The school featured lectures from leading international experts in the field, as well as hands-on workshops and exercises. The instructors were from NASA, CfA, Stanford, MIT, the University of Alabama in Huntsville, JAXA, University of Tokyo, University of Calgary, and Tribhuvan University. It is the first time any solar physics and space weather-related program on such a large scale has been held in Nepal.



## Event Venue & Participants

Dates: September 16 - 20, 2024  
Location: Hyatt Hotel, Taragaon, Boudha, Kathmandu -6, Nepal  
Organizers: ISWI, supported by international universities/institutes and space agencies  
Participants: 50  
Nepal: 32  
India: 15  
Bangladesh: 1  
Kenya: 1  
Egypt: 1  
Note: One student from Pakistan could not make it

## Topics Covered

One-week space weather school activities provided a wonderful opportunity for participants to explore interests and expand their knowledge engagingly and enjoyably from expert scientists with a defined curriculum listed below:

- Solar dynamo solar stellar connection
- Solar cycle
- Helioseismology
- Solar Photosphere, Chromosphere Corona
- Coronal Modeling, DKST demo
- Solar Flares, Coronal Mass Ejections, Interplanetary Coronal Mass Ejections, Solar Wind
- Magnetosphere, Ionosphere
- Space weather technology, GNSS receiver, Geospace
- Earth's Atmosphere, Atmospheric Space weather and Exoplanets
- Observational technologies for space weather research, Python and Hands on practice
- Hands on activities on related topics, data collection and analysis using real-time space weather data and python training.

## Public Talk

A public talk was arranged at the Nepal Academy of Science and Technology (NAST) on September 18 in collaboration with NAST by Dr. Dean Pesnell (NASA/Goddard Space Flight Center, USA) entitled "The Sun: Astronomy for People Who Sleep at Night" It was open for all interested. Around 100 students, early career researchers from different institutes, and interested people attended this talk.

## Summary

The school provided participants foundational and advanced knowledge of space weather science and its implications. Students participated in hands-on activities, including data analysis, modeling of space weather events, and learning different Python packages to perform research. Last but not least, the school provided networking opportunities.

The School objectives fulfilled the IUGG/IAGA scientific objectives "the creation of new knowledge in Earth and space sciences; dissemination of knowledge, data, and information, and providing geoscience education; outreach in developing countries and involvement of young scientists from developing countries."

Nishu Karna  
Center for Astrophysics, Harvard Smithsonian

## 3.4 Joint Symposium of Ninth Space Climate Symposium and ISEE Symposium

### General information

Many thanks for supporting our conference with the IAGA Co-Sponsorship of Meetings and Workshops. Under the IAGA co-sponsorship, we have organised the Space Climate 9 / ISEE Joint Symposium on October 1-4, 2024. In parallel with the registration on September 30, we have also hosted a splinter meeting of the IAU Inter-Division B-E WG Coordination of Synoptic Observations of the Sun.

This conference had a special focus on extremity, long-term variability, and data of solar impacts on Earth, with the following purposes:

- to better understand the causes and effects of long-term variations in solar activity, the solar magnetic dynamo, the structure and evolution of solar magnetic fields and related solar phenomena, such as sunspots, flares, coronal mass ejections, coronal holes, and high-speed solar wind streams;
- to better understand how the varying solar activity affects the heliosphere, the solar wind and the heliospheric magnetic field, and the near-Earth space, including the Earth's atmosphere and climate, on time scales ranging from a few solar rotations up to several millennia;
- to better understand and utilize various long-term datasets that, together with recent, more complete and accurate observations, can be used in Space climate studies.

These topics directly agree with all of the IAGA's four core topics on the magnetic and electrical properties of: the Earth's core, mantle and crust, the middle and upper atmosphere, the ionosphere and the magnetosphere, and the Sun, the solar wind, the planets and interplanetary bodies

### Participants and Nationalities

This conference accommodated 161 registered participants from 25 nationalities. This is far more than our initial expectation of  $\approx 80$ -100 participants.

### Scientific highlights

This conference hosted 15 sessions, 103 talks, and 77 posters. This is far more than our initial expectation of  $\approx 70$  abstracts.

### Abstracts and sessions

We started our conference from the opening remarks from the our department, SCOSTEP, IAGA, and space climate community. We then

had extremely dense program on 1-4 Oct. Following the regular tradition, this conference hosted regular sessions for the solar activity, cosmic environments, and terrestrial environments. Besides, we have hosted a special session clusters for the space climate data, extreme events, and the May 2024 storm. The first cluster covered pre-telescopic data, data rescue, and sunspot number recalibrations. Particularly, we have tried to accommodate wider topics for stellar flares and stellar cycles to contextualise the solar storms and solar cycles. These attempts hopefully open new possible collaborations between the existing space climate community and the external neighbours.

### Information on next workshop if planned

The next ISEE Symposium will be held in Nagoya on March 5-7, 2025. The next Space Climate Symposium will be scheduled in Finland in March 2027.

Once again, we wish to thank the IAGA for supporting our conference with the IAGA Co-Sponsorship of Meetings and Workshops. We hope our conference will accelerate discussions and collaborations not only in traditional space climatology, but also in new interesting topics.

Hisashi Hayakawa  
on behalf of the SOCs and LOCs

### 3.5 The XX<sup>th</sup> IAGA Workshop on Geomagnetic Observatory Instruments, Data Acquisition and Processing

The XX<sup>th</sup> IAGA workshop on Geomagnetic Observatory Instruments, Data Acquisition and Processing was held from October 30 to November 6, 2024 in Vassouras, Brazil. The event was organized by IAGA Division V and by an Organizing Committee specifically formed for this workshop. Another Scientific Committee led by Seiki Asari and an invited team; evaluated all papers to be presented. The complete event details can be found on the [workshop's website](#)<sup>7</sup>.

The workshop activities were hosted in two locations. The measurements and instrumental comparisons were conducted at the Vassouras Magnetic Observatory (VSS), while the oral and poster presentations took place at a hotel, located 350 meters away from VSS.



We invited some geomagnetic instruments developers to participate and with this support were possible to increase our event bringing, especially new participants from outside and students. So, we encouraged it for future IAGA Workshops. This event attended professionals from magnetic observatories, geomagnetism professionals, professors, MSc and PhD students from 35 countries

with 92 participants. The Local Organizing Committee (LOC) supported airfare for 4 participants to come to Brazil from Argentina, Bolivia and Argentina (two participants). It also provided hotel support for 20 participants. The beneficiaries were students and researchers from other countries and Brazil whose support was not necessary to cover all their expenses.



Declination/inclination measurements and intercalibration were coordinated by Jürgen Matzka and Marcos Vinicius Silva. The participants brought 33 instruments for comparison. The Summer Schools were held with five activities in the hotel lounge, conducted by Roman Leonhardt, Chris Turbitt, Emmanuel Nahayo and Luiz Benyosef. Other two in VSS by Alan Berarducci and André Wiermann.

From November 4-6, the oral and 61 poster presentations was divided into groups:

1. Geomagnetic Observatories and Networks.
2. Data analysis, interpretation, and application.
3. Data processing and distribution.
4. Observatory instrumentation.
5. Space weather.

Also, as part of the XX<sup>th</sup> IAGA Workshop, the National Observatory hosted an INTERMAGNET meeting of the management committee in Rio de

Janeiro. on November 7 and 8, after the Vasouras workshop.

Among the various regular subjects in this issue, the following topics were highlighted: updating protocols and technologies; the future global migration from the current system of data recorded every minute, to records every second and its technical and operational implications; evaluation of current technologies and possible adoption of new instruments, as well as the incorporation into the network of other observatories with more modest instruments, but which could still contribute to the densification of the observation network.

Luiz Benyosef  
LOC XX<sup>th</sup> IAGA Workshop Chairman

### 3.6 Report of the School “Operational Space Weather Fundamentals”

Organized by Consorzio Area di Ricerca in Astrogeofisica, Istituto Nazionale di Geofisica e Vulcanologia, Istituto Nazionale di Astrofisica,

Università dell' Aquila, Dipartimento di Scienze Fisiche e Chimiche, Millersville University, the school "Operational Space Weather Fundamentals" took place at the Congress Center "Luigi Zordan" of the University of L'Aquila (Italy) during May 12–17, 2024. It was directed by D. Di

Mauro (Istituto Nazionale di Geofisica e Vulcanologia, Italy); S. Lepidi (Istituto Nazionale di Geofisica e Vulcanologia, Italy); M. Messerotti (Istituto Nazionale di Astrofisica, Italy), T., Skov (Millersville University, USA).



The course consisted in 7 lectures of 90 min length, 5 lectures of 60 min length (including questions and discussion) and more than 8 hours of laboratory activity, given by 16 leading scientists of the sector (9 from European institutions and 7 from USA). It provided an overview of the current knowledge of the multi-faceted field of Space Weather, covering solar-heliospheric, magnetospheric, and ionospheric weather, with a specialized focus on operations and forecasting. By establishing the links from research to operations (R2O) and from operations to research (O2R) and by highlighting the effects of space weather on technological systems and society, this curriculum was aimed at stimulating the involvement of the next-generation researchers in this rapidly growing discipline. Lectures on phenomenology have been complemented by laboratory activities and applications with the direct and active involvement of the attendees. Another practical aspect has been covered by the "career section" aimed at illustrating which skills are desirable for a job in the frame of space weather research

and surveillance centers, and how good strategies should be used for educational and communication purposes. All lessons will be also [available at the Web site of the school](#)<sup>8</sup>.

The course was attended by 50 students selected based on their curriculum: 24 were from Italy, 9 from UK, 5 from US, 2 from Austria and Kazakhstan, 1 from Belgium, Colombia, Poland, Chile, Germany, France, Lithuania, Czech Republic. 21 of them were PhD students. The Course took place in a friendly atmosphere with continuous opportunities for close interactions among students and lecturers, also during social events (coffee breaks were provided by the school organization, as well as three cultural events aimed at team building among the participants through the discovery of the area from a social, architectural, and historical perspective).



Considering the success of this first edition of the school, the co-directors, along with the organizers, are contemplating the possibility of organizing a new school in a couple of years with updates on the topic addressed.

The Directors of the Course  
D. Di Mauro (Istituto Nazionale di Geofisica e Vulcanologia, Italy)  
S. Lepidi (Istituto Nazionale di Geofisica e Vulcanologia, Italy)  
M. Messerotti (Istituto Nazionale di AstroFisica, Italy)  
T. Skov (Millersville University, USA)

### 3.7 EMSEV meeting 2024

EMSEV2024 was held in Chania, Greece from October 6 - 9. It was the first face-to-face meeting for EMSEV in six years (EMSEV 2020 was postponed for two years due to the coronavirus, and EMSEV 2022 in Taiwan was held remotely).



During the meeting, we organized the business meeting. At the meeting, the location for the 2026 EMSEV General Assembly was discussed, and it was decided that it will be held in Kumamoto, Japan in August 2026. Because, 2026 is the 10<sup>th</sup> anniversary of the Kumamoto Earthquake (M7.3) and the 15<sup>th</sup> anniversary of the devastating Tohoku Earthquake with M9.0. Furthermore, Kumamoto is also the nearest city to the extremely active Aso Volcano.

Concerning the Bureau members, more than 20 years have passed since EMSEV was established, and in order to rejuvenate the bureau members and improve gender issues, we have decided to add six new bureau members. The [minutes of](#)

This year's meeting in Chania was organized by Professor Filippos Vallianatos of the University of Athens as the committee chair, with Professor Nicholas V. Sarlis as the vice-chair.

The meeting was attended by 70 people from 16 countries and regions, and there were 44 oral and 29 poster presentations.

Also worth mentioning is that a training course for young researchers was held for two days before the start of the EMSEV2024 entitled "Advances in Space and Ground base studies of Earthquakes and Volcanoes. New Concepts". Around 10 researchers participated in this event, and lectures were given on the latest research results and analysis methods.

[the business meeting](#)<sup>9</sup> are available.

We are grateful for the continuous support we have received from IUGG, and we would also like to express our sincere thanks to the three mother associations (IAGA, IASPEI, and IAVCEI) for their assistance.

EMSEV Chair: Toshiyasu Nagao  
Vice Chairs: Valerio Tramutoli, Qinghua Huang  
Secretary: Jann-Yenq Liu

### 3.8 VERSIM XI Workshop Report

October 2024, Breckenridge, CO

The recent VERSIM workshop successfully brought together experts from various fields to



discuss the latest advancements in VLF and ELF science and foster collaborative research. This report provides an overview of the attendance and

presentation statistics, highlighting the diversity of participants in terms of career stages and international collaboration.



### Attendance Overview

Total Attendees: 55

- Students: 11
- Early Career Scientists (within 5 years post-PhD): 11
- Senior Scientists: 33

The mix of participants reflects a well-rounded representation of career stages, with significant contributions from both emerging and established researchers. This diversity offered an enriching environment, encouraging knowledge exchange between experienced professionals and those early in their scientific journey.

Countries Represented: 12

- North American Participants: 43
- European Participants: 13
- Asian Participants: 6
- Oceania Participants: 1

This year's workshop drew attendees from 12 countries, adding a truly international dimension

to the event. Researchers from North America, Europe, Asia, and New Zealand were present, fostering an environment of cross-cultural dialogue and exchange. The variety of perspectives brought by these participants enriched discussions, allowing for a broader understanding of global research priorities and challenges in the field.

### Scientific Presentations

Talks: 56

Session Topics:

- Simulations, Data assimilation, and machine learning applications
- Wave-particle interactions
- Active Experiments
- Results of Recent Space Missions
- Wave Propagation in the Ionosphere and Magnetosphere
- Wave-induced Particle Precipitation
- Waves in other Magnetospheres

With 56 talks presented, the workshop facilitated an intensive exchange of ideas. The range of top-

ics covered underscored the breadth and depth of current research in the field, promoting insights across various specialties and fostering interdisciplinary discussions.

## Conclusion

The VERSIM workshop successfully engaged 55 attendees in an active and diverse program of 56 talks. The representation of 12 countries, along-

side the balance of students, early-career scientists, and senior scientists, contributed to a dynamic environment that enhanced the experience for all participants. VERSIM succeeded in its goal to promote international collaboration, advance scientific innovation, and strengthen professional networks across different career stages and regions.

Dr. Robert A. Marshall  
University of Colorado Boulder

---

## 4 Other IAGA activities

### 4.1 Report on the International Geomagnetic Reference Field (IGRF-14)

The 14<sup>th</sup> generation of the International Geomagnetic Reference Field (IGRF-14) was officially released on 20th November 2024. It is valid from 1900.0 to 2030.0 and supersedes the 13th generation model which ends at 2025.0. The IGRF-14 model consists of five yearly snapshots of the magnetic field represented by Gauss coefficients. The main magnetic field is captured to spherical harmonic degree and order 13.

In this generation, the coefficients for 2020.0 have been updated and are now definitive and new coefficients for 2025.0 have been computed. An estimate of the secular variation for the next five years until 2030.0 (to degree and order 8) has also been created. The IGRF-14 model coefficients are available from the [IGRF webpage](#)<sup>10</sup> hosted by NOAA.

Creating IGRF-14 was a truly international effort, involving data from global ground observatories and multiple satellite missions including ESA Swarm and Macau Scientific Satellite-1 (MSS-1). The initial call for candidates was released in March 2024 with final candidates being submitted

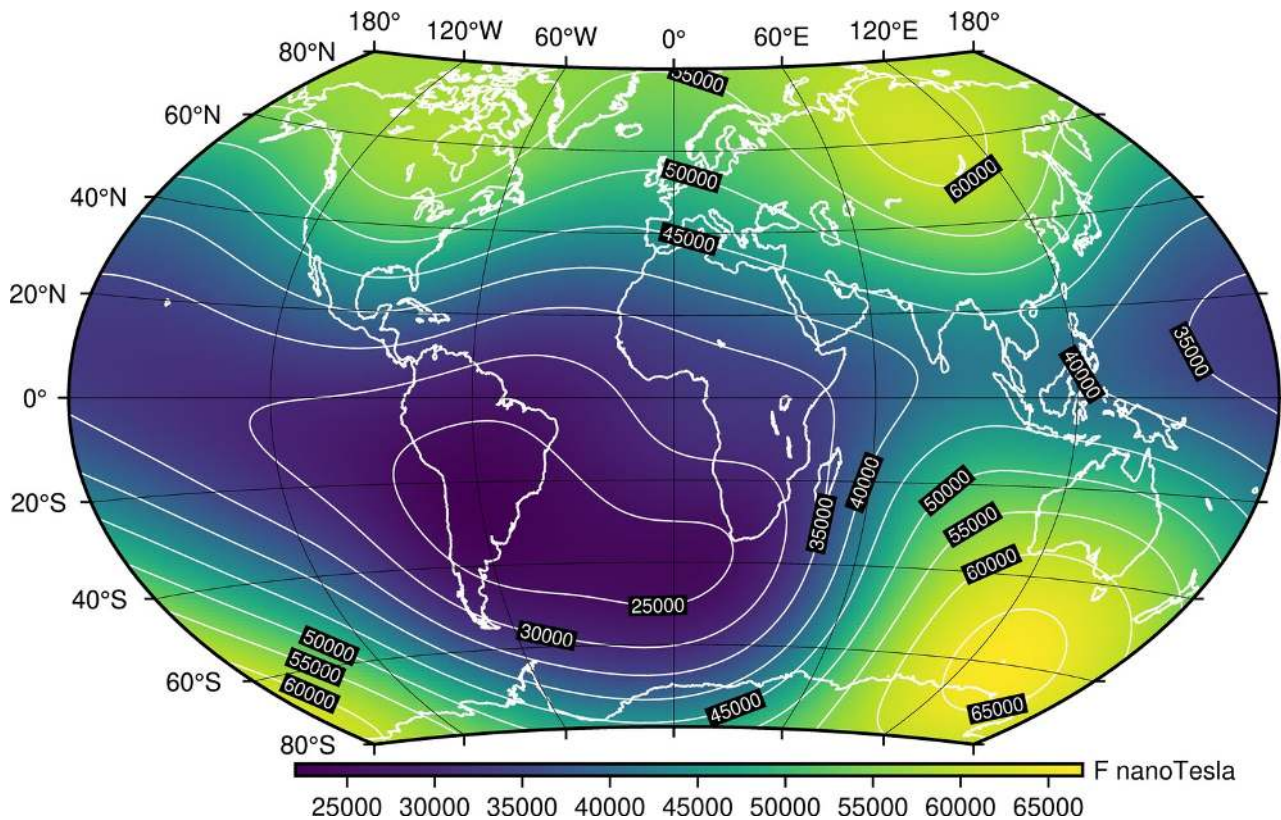
in October. We received candidate models from 19 different institutions around the world, some of whom had not previously submitted IGRF models. For comparison, 15 teams submitted models to IGRF-13 and 10 for IGRF-12, indicating a growing community which is a reflection on the importance of geomagnetism.

In detail, we requested a definitive model for 2020, termed DGRF2020, a preliminary model for 2025, termed IGRF2025 and a forecast of secular variation from 2025 to 2030, termed SV2025-30. We had a record response:

- 14 teams submitted a DGRF2020 candidate,
- 15 teams submitted an IGRF2025 main field candidate,
- 18 teams submitted an SV2025-30 candidate.

For this generation, a GitHub repository was established to maintain an open record of the analysis process and the candidates. All candidate model coefficients, along with their description documents, are on the [IAGA-VMOD IGRF14 evaluation repository](#)<sup>11</sup>.





The figure shows the modelled surface intensity at 2025.0 showing the South Atlantic Anomaly has deepened by around 150 nT over five years and moved westward around 20 km per year. The modelled minimum total field value in 2025.0 at the Earth's surface of 22,071 nT is at 26.223°S, 60.028°W in northeastern Argentina.

To evaluate the candidates and decide how best to combine these submitted models into the three final models, a volunteer Taskforce of experts was established. Much of the standard analysis of magnetic field model was placed into the IGRF14 GitHub repository which allowed an [initial automatically generated evaluation](#)<sup>12</sup>.

However, the taskforce created their own independent evaluations and recommendations on how best to combine the models. The evaluations were completed by 1 November and a ballot on the final methodology for combining the models was taken the following week.

The following combination methods were selected by the majority:

- DGRF2020: Median of the candidate models
- IGRF2025: Huber-weighted mean in space of the candidate models
- SV2025-30: Huber-weighted mean in space of the candidate models

We created formatted Excel and text files for IGRF-14 and confirmed they produced the same

magnetic field values using Python, FORTRAN and Matlab codes. The coefficient files and supporting code were uploaded to the NOAA webpage on November 20, 2024 and are now available to the community.

We wish to express our appreciation to all of the teams who contributed candidates and to the taskforce for their contribution to the IGRF-14 analysis.

Finally, we note that a [special issue in Earth, Planets and Space for the IGRF-14](#)<sup>13</sup> has opened for submission. The deadline for receipt of papers is July 1, 2025.

Ciaran Beggan  
WG V-MOD Chair

## 4.2 Diamond Jubilee of HYB Observatory

The International Geophysical Year 1957-58 provided global impetus for observations of Earth parameters. As a consequence, the establishment of the Hyderabad Magnetic Observatory



was initiated by CSIR-National Geophysical Research Institute in 1962; the Observatory with code HYB started producing data from December 1964. Equipped with the La Cour variograph and QHM and BMZ absolute magnetometers, HYB produced three component hourly mean data, which was reported to the World Data Centre as well as CSIR-NGRI quarterly bulletins from 1965-1970. Later the data was reported to the Indian Magnetic Data volumes every year, published by the Indian Institute of Geomagnetism, Mumbai, India. In the Choutuppal campus, 50 km farther east, rapid run (90 mm/hr) geo-electric variations and ultra rapid run pulsation records (30 or 60 mm/min) were setup three years later under an Indo-Russia collaboration, providing a rich repository of low latitude observations spanning the solar cycles 20-22.

Through a GFZ-NGRI collaboration in 2008, led by Dr. Mioara Manda and Dr. Nandini Nagarajan, HYB transitioned into the digital era with a DFM and Overhauser donated by GFZ. The long term efforts of Dr. Joachim Linthe and Mr. K.C.S. Rao to make the change to complete digital data acquisition and processing cannot be

over emphasized. HYB became an INTERMAGNET observatory in 2009. The Choutuppal campus was rejuvenated with the installation of a new observatory (CPL) in 2012 with similar instruments as HYB; this was a contingent plan in case HYB had to be discontinued due to upcoming Metrorail project in Hyderabad. At present both HYB and CPL are operational and are part of INTERMAGNET network, with the latter producing 1 sec data. The requisite upgrades to 1 sec data processing techniques were achieved through an Indo-Russia collaborative project between Dr. Sergey Khomutov and Dr. Kusumita Arora during 2016-18.

In October 2014, the Golden Jubilee of HYB was marked by organizing the XVI<sup>th</sup> International Association of Geomagnetism and Aeronomy (IAGA) Workshop on Geomagnetic Observatory Instruments, Data Acquisition and Processing in Hyderabad and Choutuppal with sixty observers from thirty one countries bringing thirty instruments from observatories around the world. A decade passed by; during November 29-30, 2024, the Diamond Jubilee of HYB was celebrated.



Dr(s). Mioara Manda and Kathy Whaler and Anny Cazenave were special invitees for the scientific discussion meet, where the milestones and achievements of the Geomagnetic Observatory were showcased. The objectives and outcomes of

remote station network from Andaman-Nicobar to Lakshadweep, Kanyakumari to Ladakh was also presented. Further, the important findings by the Institute from diverse directions of passive and active methods of electromagnetism

were presented, including a study on EM studies for paleochannels. Dr. Cazenave delivered a talk on state-of-art on role of space observations to monitor climate change. Dr. Manda talked of the future of magnetic measurements and the need for their continuity. Dr. Whaler delivered a very interesting talk on the core flow models and surface observations. This was followed by an Open Discussion forum where Dr(s). Manda and Whaler answered various queries from the young researchers of the Institute. The superannuated colleagues of the HYB Observatory were very much a part of this event and shared anecdotes from earlier times.

The scientific session was followed by visits to the Magnetic Observatories in the Hyderabad and Choutuppal campuses over the next day. At the Choutuppal campus the data transmission setup was specially appreciated. The hydrology experimental park, managed water recharge site, geothermal observatory were also shown to the visitors. This concluded the Diamond Jubilee of HYB, with thanks to the guests and to all colleagues of the Institute, who worked day and night for the last weeks to make this happen.

Kusumita Arora  
CSIR - National Geophysical Research Institute

## 5 In Memorium

### Joseph Carl Liddicoat (1937 - 2023)

Joseph Carl Liddicoat, age 86, died peacefully on December 20, 2023, with his beloved wife and daughter by his side. A native of Michigan, Joe remained a Midwesterner at heart, kind and friendly to all during his nearly 50 years as a New Yorker. He was known for his indefatigable enthusiasm for sharing scientific information and influenced well over 10,000 students in his 35 years as a college teacher.



Joe was born in Detroit on November 10, 1937, to Kenneth and Emma Liddicoat. He is survived by a younger sister, Nanci Nordlund. The Liddicoat family later moved to northern Michigan, and Joe graduated from Roscommon High School in 1955. He was a talented member of the high school golf team and maintained a love for the game throughout his life. Joe went on to gradu-

ate from Wayne State University in 1961 with a major in English Literature. He then joined the U.S. Navy, completing Officer Candidate School and Destroyer School, and rising to the rank of Lieutenant. He was always proud of his military service and valued the many excellent people he met, as well as the opportunity to see the world on goodwill tours of Africa and the Middle East. Joe received an honorable discharge in 1966.

Joe married Susan Torbit in 1965. After he was discharged from the Navy, they traveled around Europe for three months and then settled in Manhattan where Joe embarked on his career as a geologist by taking classes at Columbia University. The couple then moved to Dartmouth, NH, where Joe earned an M.S. in Earth Sciences in 1970. Next, they spent six interesting years in Santa Cruz, CA, where Joe completed a Ph.D. in Earth Sciences at the University of California, Santa Cruz (1976). He and Susan spent many hot days collecting samples in the California desert for his dissertation research, which was a welcome change from taking sedimentary cores from frozen lakes in New Hampshire for his master's thesis. His passion for paleomagnetism and his curiosity about changes in the earth's mag-

netic field as recorded in the Mono and Searles Lake areas continued to the last months of his life. Joe published over 50 scientific articles throughout his career as a creative and accomplished geophysicist and collaborated with researchers as far away as Italy and Inner Mongolia.

In 1977, Joe and Susan moved back to New York City where Joe held a post-doctoral fellowship at Columbia University's Lamont-Doherty Earth Observatory and Susan continued her career in editing. Their only daughter, Kendra Liddicoat, was born shortly after, and all three Liddicoats became firmly rooted in Morningside Heights. Joe was a devoted father, often taking Kendra to elementary school with a stop for sledding in Riverside Park and spending many, many afternoons with her at the American Museum of Natural History. In 1990 Joe discovered a love for teaching science at the college level. He served as the director of the Environmental Science labs at Barnard College from 1991 to 2006. He also taught as an adjunct professor at New York University, the CCNY Center for Worker Education, the SUNY Fashion Institute of Technology, and St. Francis College. Having faced challenges in college himself, he was always willing to go the extra mile for students who were trying hard while working, parenting, and adjusting to life in New York City. When COVID-19 forced all classes online, Joe quickly adapted to remote teaching and continued teaching physical science online at the Fashion Institute of Technology through Spring 2023.

Joe and Susan were inseparable and took full advantage of the cultural opportunities available in New York City. They volunteered as ushers at many small theaters throughout Manhattan and enjoyed food from all around the world. They were also very involved with their churches—for thirty years at the Cathedral of St. John the Divine and then for the last fifteen years at St. Bartholomew's Church. Before COVID-19, Joe and Susan ushered at church services and concerts, and more recently attended adult education programs online. As a child and young adult, Kendra joined them in many of these activities.

Joe is survived by Susan, his loving wife of 58 years, his daughter Kendra and her husband Brian Barringer of Stevens Point, WI, and his sister Nanci and her husband Howard Nordlund of Sun

City, AZ. Joe's cremated remains will be interred in the St. Bartholomew's columbarium following a funeral service at 2pm on January 6th. Those seeking to honor Joe may make donations to Crossroads Community Services-NYC ([www.crossroadsnyc.org](http://www.crossroadsnyc.org)).

Vadim Kravchinsky  
University of Alberta

## Jean Henri Filloux (1925 - 2024)



Jean H Filloux, a pioneering experimental oceanographer and geophysicist, has passed away at the age of 98. Jean was born on 7 July 1925 in Guéret, La Creuse, France, and died in Salt Lake City, Utah, on 29 January 2024. He grew up in a rural part of France, and particularly liked his grandparents' farm in Noyen. During World War II, his school was closed due to bombings and he entered pension at Arts et Métiers in Cluny, where he earned an engineering degree. He subsequently attended L'E'cole Supérieure l'E'lectricité in Paris from 1946 to 1948. He then worked as an electronics engineer at Fontainebleau, Paris, and met his future wife Odette Piovannaci.

Jean lived a life of adventure for much of his life. Jean participated in the first catamaran crossing of the Atlantic Ocean in 1950 in the boat Copula as one of a crew of four, ending in New York Harbor. Jean was given a camera by his friend Jacques Cousteau that he used to film this voyage. He wrote a book "La Croisière du Copula" about the experience that was published in both French and English. His interest in oceanographic



research grew during this voyage as he conducted experiments and learned to dive.

In 1953, Jean and Odette were married, and then emigrated to the United States, settling in Havre de Grace, Maryland. Over 1953-6, they built one of the first laminated fiber glass sailboats, a unique 42 foot ketch that Jean designed with a naval architect colleague, using a first-of-the-kind manufacturing method Jean devised. They received sponsorship from the Rothschild Foundation and several manufacturers, and the boat was in the New York Boat Show in 1956.

Jean met Roger Revelle of Scripps Institution of Oceanography, who invited him to begin new scientific ventures in California. The Filloux family moved to La Jolla, California, where Jean found employment as an engineer at General Atomic to support his family while also studying oceanography at Scripps. He completed his Ph.D. in 1967 under the guidance of Charles Cox. A few years later, Jean joined Scripps full time, and established his own research group. He retired from Scripps in 1991, and became an Adjunct Scientist at Woods Hole Oceanographic Institution for the subsequent twenty years. Jean was elected a Fellow of the American Geophysical Union in 1997.

Jean Filloux pioneered the use of the magnetotelluric method in the ocean, and carried out extensive magnetotelluric surveys, mostly in the Pacific Ocean basin. This required an extensive sensor development program, as no commercial sensors suitable for use in the ocean existed. Jean was assisted in this effort by German-trained instrument maker Helmut Moeller. The sensors typically were based on electro-optical principles with feedback. He devised a compact magnetic field sensor that consumed orders of magnitude less power than fluxgate sensors of the time. He also developed a pressure sensor using a Bourdon tube design. The Bourdon tube was specially fabricated and heat treated in his laboratory. He also invented the water chopper, a mechanical device that physically reversed the polarity of silver-silver chloride electrodes, eliminating the effect of electrode drift and enabling the use of short (a few m) measurement spans. This device operated by alternately connecting the electrodes to the ends of hollow pipes using a salt bridge, and required only one Joule of energy per chop. In an

era where seafloor instruments typically used hollow glass balls for floatation with a buoyancy of many tens of pounds, Jean's designs were typically self buoyant with a buoyancy of less than ten pounds. These ascended at the same rate as those with high buoyancy, as instrument velocity in the ocean is drag limited. The low buoyancy designs substantially reduced noise from instrument motion while on the seafloor. Jean's sensors were the state of the art for over thirty years, and could only be improved on in the 2000s as electronic sensors of high sensitivity at reduced power became available.

Jean participated in over twenty research programs and more than fifty research cruises over his career, and was going to sea well into his seventies. These experiments focused on magnetotelluric surveys in a variety of locations, along with physical oceanography experiments using his pressure sensors. Late in his time at Scripps and continuing at Woods Hole, this work extended to measurement of the barotropic (depth-averaged) water velocity using measurements of the electric field at periods of days to months. This was facilitated by Jean's water chopper that eliminated the effect of electrode drift which would otherwise obscure the barotropic signal.

Jean was preceded in death by his beloved wife Odette, and is survived by his son Francis Filloux of Salt Lake City, Utah, daughter Catherine Filloux of New York, New York, son Dominique Filloux of Redwood City, California, and daughter Marianne Filloux of Bozeman, Montana, along with seven grandchildren.

Alan D. Chave  
Woods Hole Oceanographic Institution

## Vale Dr Francois Chamalaun (1937 - 2024)

We are saddened to pass on the news to the MT-Net community that Dr Francois Chamalaun recently passed away in Adelaide, Australia. Prior to his retirement in 1997, he was a Senior Lecturer in Geophysics at Flinders University in South Australia and foundation Chairman of its School of Earth Sciences. Francois, a Dutchman who obtained his PhD in geophysics, at the University of Newcastle upon Tyne in 1963, was an internationally respected scientist, enthusiastic teacher, and

valued mentor. Prior to taking up his appointment at Flinders University in 1969, he was a Research Fellow at the Australian National University. His 40-year research career, which focused on rock magnetism, palaeomagnetism, plate tectonics, and geomagnetic deep sounding, led to new insights into the electrical structure of the Earth and its atmosphere, particularly in Australia, Brazil, Indonesia, India, and New Zealand.



Francois's most significant legacy is the Australia-Wide Array of Geomagnetic Stations (AWAGS) experiment with Dr Charles Barton of the Bureau of Mineral Resources (now Geoscience Australia). These data are still being used today by the geophysics community around the world and can be downloaded from the link below. AWAGS observed three-component magnetic time series simultaneously at 57 sites across Australia during 1989–1990. Deploying them in remote locations at spacings of approximately 450 km across the country was a remarkable logistical achievement. Francois wrote code to turn on every magnetometer at the same time once deployed, allowing for simultaneous data collection at all magnetometers, a pioneering effort given that at that time computers were much less powerful than today.

The success of AWAGS in analysing the Earth's subsurface electrical structure has laid the foundation for the establishment of the Australian Lithospheric Architecture Magnetotelluric Project (AusLAMP) that commenced 23 years later in 2013. Francois and the AWAGS dataset will undoubtedly be cited as a pioneer in articles for many years to come.

In memory of Dr Francois Chamalaun, 6.9.1937 – 13.4.2024

- [AWAGS data set](#)<sup>14</sup>
- [Chamalaun, F.H. and Barton, C.E. 1990. Comprehensive mapping of Australia's geomagnetic variations. Eos, Transactions American Geophysical Union, 71\(51\), 1867.](#)<sup>15</sup>

Liejun Wang,  
Adrian Hitchman,  
Graham Heinson and  
Stewart Greenhalgh

## Dr. Gerald Duma, (1946 - 2024)



Gerald Duma passed away on 10th May, 2024. He was a geophysicist in the truest sense, as his work covered the fields of seismology, geomagnetism and gravimetry.

Gerald Duma was born in Gmunden, Upper Austria, and obtained his PhD at the University of Vienna. In 1980, he joined the Department of Geophysics at the Zentralanstalt für Meteorologie und Geodynamik (ZAMG) in Vienna (known as GeoSphere Austria as of January 2023), where he worked as a seismologist at the Austrian Seismological Service, but was also responsible for the management of the former Geomagnetic Observatory at Vienna-Cobenzl.

One of the highlights of his professional career were his many years of work (1990–2005) at the Conference on Disarmament of Nuclear Tests (now the Comprehensive Test Ban Treaty Organisation – CTBTO). Internationally, Gerald Duma was also the representative of the ZAMG at the International Seismological Centre (ISC) in Reading, England, from 2005 to 2009, and the representative of Austria in the International Association of Geomagnetism and Aeronomy (IAGA) until 2012.

He was honored for his contributions to civil defense and to the Austrian Disaster Relief Unit (AFDRU) of the Ministry of Defence. Moreover, he carried out several projects on regional seismic

hazard in Austria, initiated the installation of the Strong-Motion measurement networks in Vienna and Wiener Neustadt, and performed a study on seismic microzoning of the Inn Valley. He was also a university lecturer, where he taught about magnetic instrumentation. Additionally, he was also a founding member of the Magnetic Network Europe (MagNete), which held workshops every two years from 2003 to 2013. From 2005 onwards, Gerald Duma led this group, which contributed significantly to the standardization of the surveying of geomagnetic secular points across Europe. Until his retirement in 2012, he was the deputy head of the Geophysics Department at ZAMG in addition to his function as head of the Geomagnetism and Gravimetry Department. He was still active as a scientist even after his retirement and gave his last short presentation at the European Geosciences Union (EGU) in 2021. Gerald Duma has authored over 60 scientific publications and presentations at scientific conferences.

Gerald Duma was incredibly open and warm-hearted, and above all, a person who could find the positive in everything. His cheerful demeanour and pronounced sense of humour encouraged and motivated us all in our work. We thank him and miss him.

Barbara Leichter of the GeoSphere Austria and Wolfgang Lenhardt

### Dr Josef Pek, (1952 - 2024)

It is with great sadness that I have to inform you that our colleague, good friend and excellent person Josef Pek has passed away.



Dr Josef Pek, born May 7, 1952 in Kladno then Czechoslovakia passed May 16th 2024 in Prague of natural causes after protracted health complications. Josef joined the Institute of Geophysics of the Czech Academy of Sciences after graduating from the Faculty of Mathematics and Physics of Charles University in 1975 and

spent his entire career at the Institute of Geophysics completing defending his PhD “Linearization methods of interpretation of magnetotelluric and magnetovariation data” under Dr Oldrich Praus in 1984. After the retirement of Dr Praus, Josef lead the department of Geoelectrics from 1992-2018 before retiring in 2019. Together Josef and Oldrich Praus along with coworkers put the Institute of Geophysics at the forefront of electromagnetic induction methods globally – a feat given the political climate of the time.

Josef’s research focus centred on passive electromagnetic induction sounding – in particular magnetotellurics and geomagnetic depth soundings. He made foundational contributions in development of modelling and inversion approaches and was a pioneer in the implementation of anisotropic earth structure solutions and stochastic modelling approaches. Throughout his career Josef participated in numerous multinational research projects including: determining the electrical structure surrounding the KTB drill hole; investigating links between intraplate seismicity and electrical resistivity of Western Bohemia; establishment and analysis of geomagnetic observatory network coupled with long-period magnetotelluric soundings to understand the East European craton evolution; and investigating the tectonic processes responsible for the Trans-European suture through the geoelectrical structure of the region. And taught the electromagnetic geophysics lectures at Charles University in Prague.

Always generous with his time and willing to share his knowledge and experience with students and young scientists in the Bierstube, his humble nature will be greatly missed by all those who knew him.

On behalf of the Institute of Geophysics  
Czech Academy of Sciences  
Svetlana Kováčiková  
Team of Volcanic and Magmatic Processes  
IG CAS

### Susan L. Halgedahl (1946 - 2024)

Dr. Susan ‘Sue’ Halgedahl, Associate Professor Emerita in the University of Utah’s Department of Geology Geophysics, who specialized in magnetic domain states, fine-particle magnetism, and Middle Cambrian fossils of western Utah, died June 2024. She was 77.





Sue's work focused on magnetic domain states and patterns in natural iron oxides. She made significant contributions to our understanding of domain nucleation processes and their implications for fine-particle magnetism in

rocks. She established a rock magnetic and paleomagnetic laboratory at Utah where she conducted challenging experiments on small rock samples and single crystals. Sue was elected a Fellow of the American Geophysical Union in 1997 in recognition of these achievements. Later in her career, she and her late husband, Dr. Richard D. Jarrard, a petrophysicist and also a faculty member in the Department, took great interest in exceptionally-preserved soft-bodied animals from the Middle Cambrian of western Utah, such as jellyfish, arthropods, and early deuterostomes. These unique 500-million-year-old fossils document the 'Cambrian explosion' of the initial diversification of many animal lineages alive today, and Sue discovered several species new to science. She also combined her geophysical and paleontological interests to investigate how geophysical data could help identify horizons preserving these exceptional fossils.

Sue earned her Ph.D. in 1981 from the University of California, Santa Barbara, under the direction of Dr. Mike Fuller. Prior to her faculty appointment at Utah in 1991, she was a Research Scientist for ARCO Oil and Gas from 1981 to 1984, and then an Associate Research Scientist from 1984 to 1990 when she was promoted as one of the earliest women to be members of the Senior Staff at the then-named Lamont-Doherty Geological Observatory of Columbia University. Much of her early work on mineral magnetism used samples from the Ocean Drilling Program. At Utah, Sue and Rich developed a popular online general education course "Living with Earthquakes and Volcanoes" long before online courses were common; an updated version of this course remains popular each semester, 20 years after its launch. Sue was keen to share geoscience with the pub-

lic and was a long-time supporter of the Natural History Museum of Utah.

Outside of academia, Sue enjoyed music, playing the piano, and sharing meals with friends. Former graduate students remember Rich and Sue being kind and generous in sharing their knowledge.

Peter C. Lippert (he/him/his)  
Associate Professor  
Chair, GG Undergraduate Affairs Committee  
CMES Representative, Undergraduate Council  
Director, Utah Paleomagnetic Center  
Dept. of Geology Geophysics  
Univ. of Utah, Salt Lake City

## Jean-Pierre Valet (1954 - 2024)

It is with deep sadness that we inform you of the passing of our colleague and friend, Jean-Pierre Valet, on August 28, 2024, after a long illness.

Jean-Pierre Valet, who became a Research Director at CNRS and joined the Geomagnetism and



Paleomagnetism team at the Institut de Physique du Globe de Paris in 1990, began his career in 1982 as a Research Associate at the Centre des Faibles Radioactivités in Gif-sur-Yvette.

After completing his university studies, which he financed by working as a school supervisor, Jean-Pierre Valet developed a passion for paleomagnetism. He dedicated his doctoral research to the study of the Earth's magnetic field reversals recorded in the Miocene and Pliocene marine sediments of Crete. After successfully defending his thesis in 1985, he spent a year at the paleomagnetism laboratory of the Scripps Institution of Oceanography in the United States.

From 1990, Jean-Pierre Valet participated in core drilling campaigns (on the N/O Marion-Dufresne) and deep-sea drilling (ODP/IODP). The sedimentary sequences he collected allowed him to reconstruct in detail the variations in the direction and intensity of the magnetic field during reversals. Combining information obtained from the magnetization of marine or lake sediments with data from volcanic rocks sampled around

the world (Hawaii, Canary Islands, Cape Verde), Jean-Pierre Valet and his team constructed composite records of geomagnetic dipole variations over the last two million years. They were the first to demonstrate the occurrence of “sawtooth” variations characterized by phases of gradual field intensity reduction preceding reversals, followed by abrupt recoveries afterward. These observations suggested to them that the Earth’s dynamo regains energy by reversing its polarity and then gradually loses it until the next reversal. This brilliant theory, developed with his wife Laure Meynadier, remains a subject of study and debate in the international geophysics and paleomagnetism community. These composite field variation curves also hold stratigraphic value as they offer paleoclimatologists and paleoceanographers the ability to correlate sedimentary sequences over long distances. Jean-Pierre Valet also proposed phenomenological descriptions of reversals and excursions, a topic that fascinated him throughout his career.

Since 2015, Jean-Pierre Valet had been leading an ERC Advanced Grant project that involved three laboratories (IPGP, CEREGE, and LSCE) in studying the Earth’s magnetic field by coupling paleomagnetism with the production of the cosmogenic nuclide Beryllium 10. This project, which he directed with fervor and tenacity until 2020, resulted in several doctoral and postdoctoral works and produced a significant number of articles published in high-impact journals. The last two papers (in the process of publication) were prepared in early 2024, seven years after his illness was discovered.

Jean-Pierre Valet was also involved in research administration and operations, notably leading the UMR Geomagnetism and Paleomagnetism at IPGP (1997-2005) and participating in numerous committees and councils in France and abroad, including serving as the president of the “Magnetism, Paleomagnetism, and Rock Physics” division of the EGU in 2002. Aware of the central role of education and teaching, Jean-Pierre Valet directed the IPGP doctoral school (1999-2005).

Jean-Pierre Valet was the author of nearly 200 publications on topics ranging from paleointensity variations to the extinction of Neanderthals. He supervised and co-supervised 12 doctoral theses, guiding students with care and generosity.

In recognition of his work, Jean-Pierre Valet received the CNRS Silver Medal (2001) and the Petrus Peregrinus Medal from the European Geosciences Union (2010) for his exceptional impact within the scientific community. He was also a Fellow of the American Geophysical Union (since 2003) and a member of the Société Philomathique de Paris.

For the past four decades, Jean-Pierre Valet has been a dedicated and enthusiastic worker, combining complex methodologies and concepts to address fundamental questions about the dynamics of our Earth’s interior. Those who worked alongside him have lost a passionate collaborator and an exceptional experimenter. Many have also lost a friend.

Our thoughts are with his family, especially his wife Laure and his daughter Iris, who were by his side during his final moments.

If you wish you can honor his memory with a donation to one of the following organizations:

- [Fondation La Main à la Pâte<sup>16</sup>](#)
- [Association for Research on Innovative Cancer Therapeutics<sup>1718</sup>](#)
- [Hematology Service of Cochin Hospital - Université Paris Cité<sup>19</sup>](#)
- [Association for Kidney Tumor Research<sup>20</sup>](#)

Julie Carlut  
IPGP

## Harry Dosso (1932 - 2024)

I am writing to inform the EM induction community of the sad news that Harry Dosso died on October 6<sup>th</sup> at the age of 92. Harry was one of the early pioneers in the field becoming one of the very few researchers (and certainly the most prolific) who investigated electromagnetic induction in the Earth using an analogue model in the laboratory. In those early days, when computer modelling was primitive by



today's standards, his contributions were important for interpreting MT responses in regions with irregular coastlines and consequently he collaborated with scientists around the world by modelling the geography of the region they were working in. He presented a review paper on this subject at the very first induction workshop held in Edinburgh in 1972 and was a regular participant in working-group meetings and workshops until his retirement from the University of Victoria in the late 1990s.

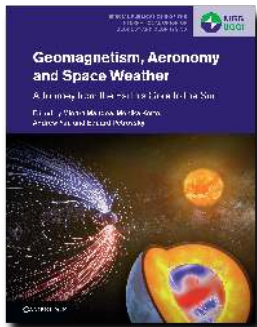
Harry leaves his wife Martha (who accompanied him on many of his international trips to conferences and workshops), two daughters and two sons (one of whom, Stan, presented a paper at the 19<sup>th</sup> Workshop in Beijing), as well as grandchildren and great-grandchildren. May he rest in peace.

John Weaver  
Victoria, BC, Canada



## 6 General Information about IAGA

### 6.1 Book: Geomagnetism, Aeronomy and Space Weather



On the occasion of the IUGG centennial in 2019 IAGA published a book with Cambridge University Press providing a comprehensive overview of the IAGA fields of research. The volume, edited by M. Manda, 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.

### 6.2 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.

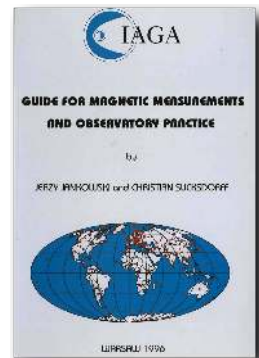
### 6.3 IAGA Guides

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

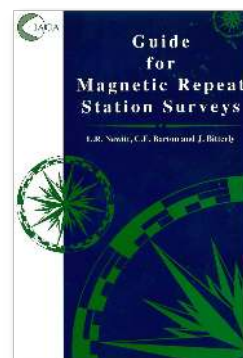
by J. Jankowski and C. Sucksdorff, 1996, 232 pages, ISBN: 0-9650686-2-5; Price: USD 50.

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.



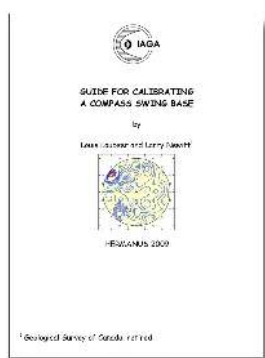
Measurements show that the clouds are higher than any others. Lying at a height of 80-85 kilometres, the clouds mark a boundary between meteorology and space physics.

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.



### 6.4 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. Manda and E. Petrovsky, entitled “IAGA: A major role in understanding our magnetic planet<sup>21</sup>” (Hist. Geo Space. Sci., 10, 163-172).

### 6.5 List of World Data System members

Following is a list of the World Data System (WDS) members as of December 2022 who serve the data closely related to IAGA research fields. The members who serve very wide range of disciplines so called “general repositories” are not included in this list. On the definition of “regular”, “network” (\*A) and “partner member” (\*B), please visit <https://worlddatasystem.org/>. Total 125 repositories/organizations are currently certified as the WDS members.

- Atmospheric Radiation Measurement Data Center<sup>22</sup>
- Atmospheric Science Data Center<sup>23</sup>
- Australian Antarctic Data Centre<sup>24</sup>
- Crustal Dynamics Data Information System (CDDIS)<sup>25</sup>
- Goddard Earth Sciences Data and Information Services Center (GES DISC)<sup>26</sup>
- INTERMAGNET<sup>27</sup> (\*A)
- International GNSS Service<sup>28</sup> (\*A)
- International Service of Geomagnetic Indices<sup>29</sup>
- International Space Environment Service<sup>30</sup> (\*A)
- International Union of Geodesy and Geophysics<sup>31</sup> (\*B)
- NASA ESDIS Project<sup>32</sup> (\*A)
- National Center for Atmospheric Research<sup>33</sup>
- National Centers for Environmental Information<sup>34</sup>
- National Geoscience Data Centre<sup>35</sup>
- National Space Science Data Center<sup>36</sup>
- Research Institute for Sustainable Humanosphere, Kyoto University<sup>37</sup>
- Scientific Committee On Solar Terrestrial Physics (SCOSTEP)<sup>38</sup> (\*B)
- UNAVCO, Inc.<sup>39</sup>
- WDC - Solar-Terrestrial Physics, Moscow<sup>40</sup>
- WDC - Sunspot Index and Long-term Solar Observations (SILSO)<sup>41</sup>
- WDC for Geophysics, Beijing<sup>42</sup>
- WDC for Solid Earth Physics, Moscow<sup>43</sup>

- WDC for Geoinformatics and Sustainable Development<sup>44</sup>
- WDC for Geomagnetism, Copenhagen<sup>45</sup>
- WDC for Geomagnetism, Edinburgh<sup>46</sup>
- WDC for Geomagnetism, Kyoto<sup>47</sup>
- WDC for Ionosphere and Space Weather<sup>48</sup>
- WDC for Solar Activity / BASS2000<sup>49</sup>

---

(A) Network member; (B) Partner member;  
Other: Regular member

## 6.6 IAGA website

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

## 6.7 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

## 6.8 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](mailto:sg@iaga-aiga.org)

kicked off in November 2019 and you can now follow IAGA on Facebook, X (former Twitter), Instagram and LinkedIn at the following sites:

-  [www.facebook.com/IAGAandAIGA/](http://www.facebook.com/IAGAandAIGA/)
-  [www.twitter.com/IAGA\\_\\_AIGA](http://www.twitter.com/IAGA__AIGA)
-  [www.instagram.com/iaga\\_aiga/](http://www.instagram.com/iaga_aiga/)
-  <https://hr.linkedin.com/company/iaga-international-association-of-geomagnetism-and-aeronomy>

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](mailto:socialmedia@iaga-aiga.org).



# Appendix

1. <https://iaga-iaspei-lisboa-2025.isel.pt/>
2. <https://www.emiw.org/emiw2024/>
3. <https://link.springer.com/collections/hiididhagb>
4. <https://www.springeropen.com/collections/EMIW26>
5. <https://zenodo.org/communities/ggos-topical-meeting-atmosphere/>
6. <https://ggos.org/event/ggos-topical-meeting-atmosphere/>
7. <https://20iagaworkshop.on.br>
8. <https://www.astrogeofisica.it/oswf>
9. <https://www.emsev-iugg.org/BM/EMSEV2024BMminutes.pdf>
10. <https://www.ncei.noaa.gov/products/international-geomagnetic-reference-field>
11. <https://github.com/IAGA-VMOD/IGRF14eval>
12. <https://iaga-vmod.github.io/IGRF14eval/>
13. <https://www.springeropen.com/collections/IGRF14>
14. <https://ecat.ga.gov.au/geonetwork/srv/eng/catalog.search/metadata/116283>
15. <https://doi.org/10.1029/90EO00376>
16. <https://fondation-lamap.org>
17. <https://www.association-artic.org/>
18. <https://www.association-artic.org/>
19. <https://soutenir.aphp-centre.aphp.fr/cochin-hematologie/~mon-don>
20. [https://www.payasso.fr/association\\_artur/adhesions-dons](https://www.payasso.fr/association_artur/adhesions-dons)
21. <https://doi.org/10.5194/hgss-10-163-2019>
22. <https://www.arm.gov/about>
23. <https://www.earthdata.nasa.gov/eosdis/daacs/asdc>
24. <https://data.aad.gov.au/about>
25. <https://www.earthdata.nasa.gov/eosdis/daacs/cddis>
26. <https://www.earthdata.nasa.gov/eosdis/daacs/gesdisc>
27. <https://intermagnet.github.io/>
28. <https://igs.org/>
29. <https://isgi.unistra.fr/>
30. <http://www.spaceweather.org/> (potentially insecure website)
31. <https://iugg.org/>
32. <https://www.earthdata.nasa.gov/eosdis>
33. <https://ncar.ucar.edu/>
34. <https://www.ncei.noaa.gov/>
35. <https://www.bgs.ac.uk/ngdc/>
36. <https://www.nssdc.ac.cn/eng/>
37. <https://www.rish.kyoto-u.ac.jp/?lang=en>
38. <https://council.science/what-we-do/affiliated-bodies/scientific-committee-on-solar-terrestrial-physics-scostep/>
39. <https://www.unavco.org/data/gps-gnss/gps-gnss.html>
40. <http://www.wdcb.ru/stp/index.en.html> (potentially insecure website)
41. <https://www.sidc.be/silso/>
42. <http://www.geophys.ac.cn/> (potentially insecure website)
43. <http://www.wdcb.ru/sep/> (potentially insecure website)
44. [https://kpi.ua/en/web\\_wdc](https://kpi.ua/en/web_wdc)
45. [https://www.space.dtu.dk/english/research/scientific-data-and-models/world\\_data\\_center\\_for\\_geomagnetism](https://www.space.dtu.dk/english/research/scientific-data-and-models/world_data_center_for_geomagnetism)
46. <http://www.wdc.bgs.ac.uk/> (potentially insecure website)
47. <https://wdc.kugi.kyoto-u.ac.jp/>
48. <https://wdc.nict.go.jp/IONO/wdc/index.html>
49. <https://bass2000.obspm.fr/home.php>

## Imprint

Executive Editor: M. Korte (GFZ - German Research Centre for Geosciences, Potsdam, Germany)  
Layout by L<sup>A</sup>T<sub>E</sub>X & A. Jordan (GFZ - German Research Centre for Geosciences, Potsdam, Germany)