



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

IN THIS ISSUE

Foreword	1
Message from the new IAGA President	1
The IUGG General Assembly, Sapporo, Japan, 30 June – 11 July 2003	2
Minutes of the meetings of the IAGA Conference of Delegates and the IAGA Executive Committee held in Sapporo.....	3
The President's Report to the IAGA Conference of Delegates	3
IGY+50: IAGA Task Group Proposal.....	3
IAGA Sponsorship of Scientific Meetings in 2003-2004.....	3
Reports on IAGA-Sponsored Projects/Meetings	4
Reports from IAGA Representatives on ICSU Committees	4
The International Geomagnetic Reference Field (IGRF)	4
In Memoriam	4
Obituaries.....	4
Naoshi Fukushima (1925-2003).....	4
Michael Gadsden (1933-2003)	6
The new IAGA leadership 2003 – 2007	7
General Information about IAGA	11

Foreword



This issue of *IAGA News* is the first after a long interruption, which has been due to two changes of Secretary-General and to the need to adapt to the new styles of communication in the IT era. *IAGA News* in this new form consists mainly of brief summaries, or even

simply titles of news items, and the reader is referred to the IAGA web site for more details. The goal is to reach, with this new format for *IAGA News*, not only the IAGA community but also national and international policy makers whose decisions affect IAGA-related activities.

IAGA News has, in the past, included short articles, reports and announcements of interest to the IAGA community. This tradition will continue with *IAGA News* in its new format. Contributions are invited and should be sent to the Secretary-General.

This issue of *IAGA News* is principally devoted to reports on activities at the 23rd General Assembly of IUGG, held in Sapporo, Japan, on June 30 – July 11, 2003. I believe that all the participants at Sapporo would agree that this Assembly was very successful and extremely well organised by our Japanese hosts.

Bengt Hultqvist
Secretary General

Message from the new IAGA President



Dear colleagues

A central issue facing us as an organisation is the penchant of many national governments to fund science according to its contribution to dealing with well-known national problems. This contrasts with the classical pursuit of knowledge. The list of problems is similar throughout the world - health and well-being, wealth creation, sustainability, and security. Which doesn't leave out much. The problems are

IAGA ON THE WEB

Information on IAGA is regularly updated at the following site: <http://www.iugg.org/IAGA/>

important and daunting and demand a multidisciplinary approach using collaborating teams. As most of us are paid by tax payers in our respective countries, we have an obligation to apply our scientific expertise to address the problems facing Society.

In this problem-centric environment, discipline-based organisation, such as IAGA, are at risk of appearing archaic and it is natural to consider restructuring to achieve a better fit to the list of problems. New institutions and bodies have grown up in response to this imperative. Yet the great strength of the Associations is that they are breeding grounds of expertise in the very disciplinary building blocks that constitute the multidisciplinary. Cost-conscious governments may seek a short-cut and grow generalists to target the complex problems directly, but only rarely does the world produce a generalist of the stature that can match the combined expertise of a multidisciplinary team.

We already have in place an effective mechanism for directing our combined scientific energies at particular problems - the Inter-Association (and Inter-Union) bodies. The central challenges I see ahead of us as an Association are to ensure, first, that our Inter-Association and Inter-Union bodies and initiatives are structured efficiently to address the salient societal problems, and, second, that we nurture the disciplinary building blocks (the Associations) that are the suppliers of expertise. The Associations are as relevant today as they have ever been.

I look forward to working with you towards a productive four years for IAGA.

With best wishes,

Charles Barton
President, IAGA

The IUGG General Assembly, Sapporo, Japan, 30 June – 11 July 2003

The total number of scientists attending the IUGG General Assembly was a record high: 4151. A larger number had registered, but a few hundred did not attend, probably, to a large extent, because of the SARS epidemic in the months before the start of the Assembly. The distribution of the participants amongst the seven Associations and the Union was as follows:

International Association of Geodesy (IAG)	407
International Association of Geomagnetism and Aeronomy (IAGA)	741
International Association of Hydrological Sciences (IAHS)	381

International Association of Meteorology and Atmospheric Sciences (IAMAS)	823
International Association of the Physical Sciences of the Ocean (IAPSO)	410
International Association of Seismology and Physics of the Earth's Interior (IASPEI)	658
International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI)	347
Union (IUGG)	384

The total number of registrants in Sapporo was about 100 more than at the previous IUGG General Assembly in Birmingham in 1999. The number of IAGA registrants was 134 less than in Birmingham.

IAGA scientists led 53 symposia, distributed as follows between inter-Association symposia (JSA) and IAGA division/commission symposia:

JSA*	9
Division I	10
Division II	7
Division III	14
Division IV	4
Division V	7
IDCDC**	2

* Of the 9 joint symposia, 4 were led by Division I, and 5 by Division II

**IDCDC – Interdivisional Commission on Developing Countries

The number of papers accepted for those 53 symposia was 1601, distributed as follows:

Inter-association symposia (JSA)	347
Division I symposia	221
Division II symposia	234
Division III symposia	446
Division IV symposia	125
Division V symposia	195
ICDC symposia	33

Minutes of the meetings of the IAGA Conference of Delegates and the IAGA Executive Committee held in Sapporo

The minutes of the following meetings are available at the IAGA web site: (link to [minutes](#))

- 30 June 2003: first meeting of the Conference of Delegates
 - 10 July 2003: second meeting of the Conference of Delegates
 - 30 June 2003: first meeting of the Executive Committee
 - 4 July 2003: second meeting of the Executive Committee
 - 10 July 2003: third meeting of the Executive Committee
 - 11 July 2003: first meeting of the new Executive Committee
-

The President's Report to the IAGA Conference of Delegates

The President, David Kerridge, gave a report at the first meeting of the IAGA Conference of Delegates on developments in the preceding four years in IAGA activities and IAGA sciences. He, amongst other things, emphasised the concept of 'inclusiveness' in the scientific community as an IAGA goal, to make excellent science accessible to scientists in all parts of the world. He summarised the ways in which IAGA tries to achieve this goal and reported on two major activities planned for the next four years, the celebration of the 50th anniversary of the International Geophysical Year and the IAGA Scientific Assembly in Toulouse, France in 2005. ([Full report.](#))

IGY+50: IAGA Task Group Proposal

An informal "IGY+50 Task Force" was formed, after the first meeting of the IAGA Conference of Delegates, to consider ways in which IAGA could initiate or contribute to activities marking the 50th anniversary of the International Geophysical Year.

The following is a summary of the Task Group's report.

Essential Ideas

- Several "International Year" concepts are being discussed and developed, notably the IHY, IPY, and IYPE.
- IAGA has a keen interest in many of these "I*Y" initiatives as well as the CAWSES program and endorses their intent
- IAGA wants to promote effective open access to:

- Real-time, world-wide data,
- Existing data bases, and
- Digitised versions of relevant analogue data

Proposal

We propose that IAGA contributes towards the IGY+50 initiatives by:

- Establishing an Electronic Geophysical Year (e-GY) as a Union-wide initiative
- Supporting CAWSES as an IAGA-dominant I*Y
- Providing input from IAGA to other I*Ys (IYPE, IHY, IPY).

Task Group members: *Dan Baker (chair), Charlie Barton (Div.I), Alan Rodger (Div.II), Brian Fraser (Div.III), Barbara Thompson (Div.IV), Volodya Papitashvili (Div.V)*, Supporting members: Joe Allen, Joe Davilla (IHY), Juha Korhonen (Finland)

Glossary

IGY – International Geophysical Year

IHY – International Heliophysical Year

IPY – International Polar Year

IYPE – International Year of Planet Earth

CAWSES – Climate and Weather of the Sun-Earth System (a SCOSTEP Program)

([Full report.](#))

IAGA Sponsorship of Scientific Meetings in 2003-2004

The Executive Committee at Sapporo agreed to allocate the following amounts to meetings to be held after the Assembly and before the end of 2004:

- 2nd IAGA/ICMA Workshop on vertical atmospheric coupling: USD 1000 ([web site](#))
 - XIth IAGA Workshop on geomagnetic observatory instruments: USD 3000 ([web site](#))
 - 3rd IAGA/ICMA Workshop on long-term trends in the upper atmosphere: USD 1000 ([web site](#))
 - 9th meeting on paleo-, rock-, and environmental magnetism: USD 1000 ([web site](#))
 - 3rd General Assembly of SPARC: USD 500 ([web site](#))
 - 35th General Assembly of COSPAR: USD 500 ([web site](#))
 - Workshop to celebrate the 100-year anniversary of Ebro geomagnetic observatory: USD 1000 ([web site](#))
 - 17th Electromagnetic induction Workshop: USD 1500 (refer to [MTNet site](#))
-

Reports on IAGA-Sponsored Projects/Meetings

Reports on the following IAGA-sponsored projects/meetings can be found at the IAGA web site:

- Workshop at Hermanus Geomagnetic Observatory ([report](#))
- Meeting on Mesospheric Clouds ([report](#))
- Inter-Association Commission on Electromagnetic Studies of Earthquakes and Volcanoes ([EMSEV](#))
- 3rd IAGA/ICMA workshop "Solar Activity Forcing of the Middle Atmosphere" ([report](#))

Reports from IAGA Representatives on ICSU Committees

Reports on the activities of the committees listed below can be found at the IAGA web site: (link to [reports](#))

- SCOSTEP - Scientific Committee on Solar-Terrestrial Physics
- COSPAR - Committee on Space Research
- SCL - Scientific Committee on the Lithosphere
- SCAR - Scientific Committee on Antarctic Research
- ISES - International Space Environment Service
- VERSIM - VLF/ELF Remote Sensing of the Ionosphere and Magnetosphere

The International Geomagnetic Reference Field (IGRF)

The International Geomagnetic Reference Field (IGRF) is a mathematical description of the Earth's main magnetic field used widely in studies of the Earth's deep interior, the crust and the ionosphere and magnetosphere. Production of the IGRF is an international collaborative effort relying on co-operation between magnetic field modellers and institutes and agencies responsible for collecting and publishing geomagnetic field data. The IGRF incorporates data from permanent observatories and from land, airborne, marine and satellite surveys. The latest version of the model - the 9th Generation IGRF - was finalised by Working Group 8 of IAGA Division V in July 2003 at the IUGG XXIII General Assembly in Sapporo, Japan. It includes models of the main field at five-year intervals from 1900 to 2000, and a secular variation model for 2000-2005.

The spherical harmonic coefficients of the 9th Generation IGRF can be downloaded from the IAGA web site (as an Excel file). The IAGA web site also provides a further link to a site where geomagnetic field values may be computed using the 9th Generation IGRF. (Link to [IGRF](#))

In Memoriam

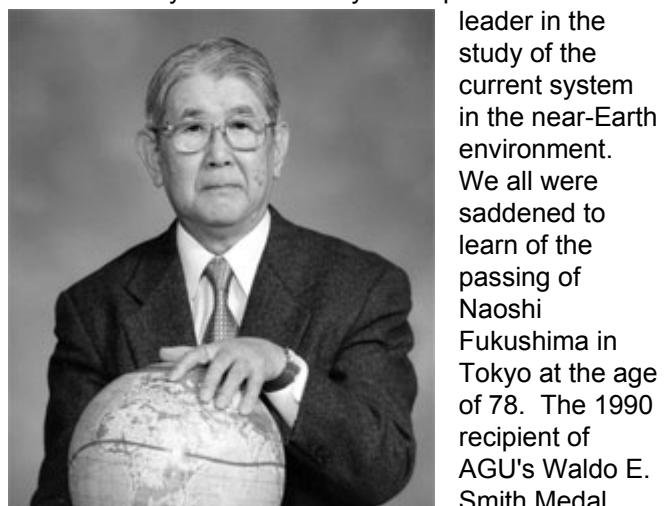
At the opening of the first meeting of the IAGA Conference of Delegate a moment of silence was observed in memory of the following IAGA scientists who had died in the past quadrennium:

- Professor Lars Block (Sweden)
Dr. Michael Buonsanto (USA)
Dr. Frank Cook (USA)
Dr. Ivan Cupal (Czech Republic)
Dr. Attia El-Sayed (Egypt)
Professor Naoshi Fukushima (Japan), former Secretary General of IAGA
Dr Michael Gadsden (Scotland, UK), former Secretary General of IAGA
Professor Ruth Gall (Mexico)
Dr. Motokazu Hirona (Japan)
Dr. Andrei Konradi (USA)
Professor Sam Ogunade (Nigeria), member of the EC of IAGA when he died
Dr. Wilfred Dudley Parkinson (Australia)
Professor Phil Williams (Wales, UK)
Dr. Toshiyuki Yonesawa (Japan)

Obituaries

Naoshi Fukushima (1925-2003)

On 25 June 2003 the Geomagnetism and Solar-Terrestrial Physics community lost a pioneer and a



leader in the study of the current system in the near-Earth environment. We all were saddened to learn of the passing of Naoshi Fukushima in Tokyo at the age of 78. The 1990 recipient of AGU's Waldo E. Smith Medal,

Fukushima was a life member of AGU who joined in 1960.

Fukushima was born on 19 January 1925. He was educated at the Imperial University of Tokyo, soon to become the University of Tokyo, where he received his bachelor's degree in geophysics in 1947. In 1953, he obtained a doctorate degree from the Graduate School of the University of Tokyo. His doctoral thesis, titled "Polar Magnetic Storms and Geomagnetic Bays," was highly influential for years to come. From 1951, he was an academic staff member, reaching the position

of full professor in 1965 at the Geophysical Institute and Geophysics Research Laboratory (GRL) of the University of Tokyo. He had been the director of the GRL since 1973. During his tenure at the University of Tokyo, Fukushima was also a visiting fellow at a number of institutions around the world, including the University of Göttingen, the NASA Goddard Space Flight Center, and the University of Oslo.

Among his early contributions to the field of space physics were studies of the morphology of polar magnetic disturbances and their associated low-latitude perturbations, which were termed "magnetic bays." He was one of the first to recognize the importance of examining individual, not statistical, geomagnetic disturbances, which led to the introduction of the concept of magnetospheric substorms in space physics. Contrary to the then-prevailing view that individual geomagnetic disturbances could be accounted for by slight modifications of the average storm pattern, Fukushima convincingly demonstrated that the most basic element of a disturbance field at high latitudes was an electric doublet, similar to Birkeland's conception of a polar elementary storm.

A serious debate had persisted between two schools of thought concerning the existence or non-existence of field-aligned currents, one represented by Alfvén and the other by Chapman. According to Birkeland and Alfvén, the auroral electrojet was fed by currents flowing along magnetic field lines, but Chapman insisted that the auroral electrojet was closed entirely in the two-dimensional ionosphere. Fukushima told us that for a considerable time he had been wondering how these two types of current systems could produce identical magnetic effects on the Earth's surface.

It was during a flight from Norway to Tokyo in 1967 when Fukushima suddenly hit upon a solution to this riddle. This was the genesis of the so-called "Fukushima theorem," which showed the equivalence in ground magnetic perturbations produced by Chapman-Vestine's and Birkeland-Alfvén's currents. The scientific community soon realized that the debate between the two schools could not be resolved unless and until observations above the ionosphere were brought into the analysis.

It was at about the same time that measurements of the three-component magnetic fields by polar-orbiting satellites, from which field-aligned currents can be deduced, were proposed. NASA, for example, would launch the Magsat satellite in 1979. Responding to the Announcement of Opportunity for Magsat Data Analysis, Fukushima's proposal to assemble a national team in Japan for studying a full set of Magsat data was accepted. Applying Ampère's law to the data, he and his colleagues created a model current system that included the partial ring current in the

magnetosphere, an idea he had envisaged some 10 years earlier through detailed calculations.

Fukushima's interests were not confined to the current system in the ionosphere and magnetosphere. His curiosity extended, for example, to a plasma experiment that studied the effect of the solar wind on the Earth's magnetic field and the history of auroras in China and Europe. His enjoyment of novel and interdisciplinary research topics was evident throughout his life.

Fukushima officially retired from the University of Tokyo in 1985, but only on paper. He continued to be actively involved in science and teaching. After retiring, he worked at the National Institute of Polar Research in Tokyo on a semi-regular basis, and also visited a number of institutions around the world, including the National Institute for Space Research in Brazil. He continually impressed his colleagues by presenting a significant number of talks at both domestic and international scientific conferences until the last several years. We heard from his wife that he even intended to submit a paper to the International Union of Geodesy and Geophysics 2003 Assembly in Sapporo; he was deterred only by his passing a few days prior to the beginning of the conference.

His extensive contributions to the field of geomagnetism resulted in numerous honors and awards, including the Matsunaga Award (1969), the Foreign Member Award of the Norwegian Academy of Sciences (1984), and the Shiju-Hosho Medal from the government of Japan (1987).

Fukushima was a kind as well as stimulating teacher. He guided us with good judgment and an unassuming dignity, encouraging and inspiring us with his great love of learning. He was very careful not to overstate or exaggerate. Indeed, the Kanji character for "Naoshi," his given name, means "straight." As a teacher of science, his *bête noire* was ambiguity and uncertainty. One of the authors, Y. Kamide, recalls the many after office-hour discussions that led to draft after draft of joint papers with Fukushima sensei. He also remembers his frustration at being forced to delete several passages of his manuscript when it was pointed out by Fukushima that ground-based magnetic observations are severely limited, in that one can only infer, not prove, what is occurring in the magnetosphere: what one can determine is the "equivalent" current systems in the ionosphere. This valuable advice and guidance led the author to appreciate more deeply the necessity of combining the geomagnetic data with radar and satellite observations of ionospheric electric fields, conductivities, and auroras to construct the realistic current system in three dimensions.

Among Fukushima's extraordinary contributions to the community was his service as president of the Society of Geomagnetism and Geoelectricity of Japan. He

was also editor-in-chief of the Report of Ionosphere and Space Research in Japan, a publication that for over 25 years touted Japan's activity in this research field around the world. The entire world community benefited from Fukushima's key role as Secretary General of the International Association of Geomagnetism and Aeronomy (IAGA) from 1975 to 1983, as well as his membership in the IAGA Executive Committee until 1987. He carried out these time-consuming tasks with great energy and skill, not only ensuring the smooth operation of the committee, but also enhancing the scope of IAGA.

It is particularly important to emphasize that Fukushima worked very hard to assist scientists in developing countries who often faced significant disadvantages in participating in front-end research. He is a prime example of an individual who believed in encouraging and cultivating less-advantaged scientists. In fact, his response to the citation of the AGU's Waldo E. Smith Medal was telling: "My motto was to serve as much as possible those colleagues scattered all over the world who are unfortunately unable to attend the IAGA assemblies. In order to encourage these colleagues, I tried to keep them informed of the IAGA's various activities and of useful knowledge through the IAGA News." This ethical approach, appreciated by his colleagues, can also be seen in a recent letter of condolence: "His modest manner and remarkable administrative abilities and thoroughness set a new standard that few, if any of us, can match."

In addition to his scientific accomplishments and selfless service to the community, Fukushima had a quiet, modest, yet thoroughly agreeable personality that served as an inspiration to us all. One was always aware of the strong sense of ethics that informed all aspects of life. We miss his dry sense of humor as well. He was truly an ambassador of the world whose global view knew no borders or boundaries. He could claim a friend in every corner of the world. Those who knew Fukushima will recall a man of boundless spirits and vitality who will touch them for the rest of their lives. He is survived by his wife Midori, a son, and a daughter.

Y. Kamide, Solar-Terrestrial Environment Laboratory, Nagoya University, Toyokawa, Japan and A. Nishida, Machida, Japan.

Michael Gadsden (1933-2003)

Michael Gadsden, a pioneer in noctilucent cloud research, a retired Senior Lecturer in Physics at the University of Aberdeen, and an Honorary Member and former Secretary-General of the International



Association of Geomagnetism and Aeronomy, died at his home in Perth, Scotland on 10 April 2003 following an extended fight with cancer. He was buried at St Ninian's Scottish Episcopal Cathedral in Perth at a service attended by many of his scientific friends, both amateur and professional.

Michael was born in Harrow, Middlesex, on 10 December 1933, the youngest of three sons of Blanche and William Gadsden, a fire insurance surveyor. He attended Brighton, Hove and Sussex Grammar School and entered The Royal College of Science at Imperial College, London in 1951. He graduated ARCS and BSc with honours in Physics in 1954 then took the DIC in technical optics and a PhD in 1957 with a thesis entitled "The Application of Colorimetry to some Astronomical and Meteorological Phenomena". He married Mavis Upton in 1955.

He entered the New Zealand Public Service, at the auroral station of the Dominion Physical Laboratory in Invercargill, during the International Geophysical Year, studying radar phenomena of the Aurora Australis and spectrophotometry of the twilight and night sky. This involved two visits to the Scott Base in Antarctica. Michael was a member of a subcommittee set up by the International Association of Geomagnetism and Aeronomy (IAGA) under the chairmanship of James Paton, to re-classify auroral forms after the experience of the IGY, and to produce a new Atlas, which is still a widely-used standard. Mavis and Michael had three children while living in New Zealand: Andrew, Anne and Jonathan.

In 1963 Michael was invited to work at the Central Radio Propagation Laboratory at Boulder, Colorado as Director of the Fritz Peak Observatory, and subsequently became Director of the Aeronomy Laboratory. His work, mainly on airglow and detection of metals in the upper atmosphere, involved further visits to the South Pole and other Antarctic stations, participation in the 1968 NASA Airborne Auroral Expedition, and visits to the Cook Islands in 1965 and

to Mexico in 1969 to observe total solar eclipses. In 1970 Michael accepted a post as Senior Lecturer in the Department of Natural Philosophy (Physics) at Aberdeen University. He undertook undergraduate teaching at all levels while focusing his own research on Noctilucent Clouds (NLC), rescuing the ancient abandoned observatory on top of the Cromwell Tower at King's College and equipping it with photometers, spectrographs, polarimeters and an all-sky camera for airglow and NLC observations.

Michael enthusiastically encouraged amateur involvement in upper atmosphere research, and in the 1980s he initiated a simultaneous photography programme with the British Astronomical Association's (BAA) Aurora Section members across Central Scotland to determine the height of the NLC layer. As a brilliant lecturer he was much in demand by local astronomical societies. When he retired to Perth he became active in the Scottish Astronomers' Group and the Dundee Astronomical Society and gave a great deal of advice and encouragement to the BAA Aurora Section. He was instrumental in having the Section's, and James Paton's IGY observations, preserved in a special Balfour Stewart archive at Aberdeen University.

Michael became a Fellow of the Royal Astronomical Society in 1958, was a member of its Council (1979-80 and 1991-93), Vice-President in 1981 and Harold Jeffreys Lecturer in 1985. He was a member of the American Association for the Advancement of Science, and a member of the Royal Astronomical Society of Canada. He joined the American Geophysical Union in 1964, was awarded its Silver Pin in 1989, and made a Life Member in 1990. He was a Fellow of the Royal Meteorological Society, serving as Vice-President for Scotland 2000-2002. He was awarded the E. R. Cooper Memorial Medal and Prize of the Royal Society of New Zealand (1962), and the US Antarctic Service Medal (1974).

One of Michael's most enduring contributions to the international scientific community came through his years of service with IAGA. He was a member of the IAGA Executive Committee (1975-79), served as Vice-President (1979-83), and as Secretary-General (1983-95). He was a passionate supporter of research, and an ardent activist in helping scientists from developing countries participate in international science meetings and programmes. As Secretary-General, Michael ran the day-to-day affairs of IAGA in an open, good natured, yet strict and efficient manner. He was responsible for arranging and organizing IAGA's main business, the biennial international IAGA Scientific Assemblies. Under Michael's guidance IAGA's budget grew, its Scientific Assemblies became recognized as some of the best available, and IAGA became the largest scientific contributor within the IUGG family to the quadrennial IUGG General Assemblies. In recognition of his outstanding service to the

Association over more than 20 years he was made an IAGA Honorary Member in 1997.

Michael was co-author of the "IAGA Guide to Observing Noctilucent Clouds" giving practical advice for taking visual observations, and photographing NLC. He remained scientifically active following his retirement, using an old stone-built cottage in his garden as a laboratory, and he organised a highly successful IAGA-sponsored international meeting on Mesospheric Clouds in Perth, in August 2002, bringing together amateur observers and professional scientists.

Michael was a big, jolly man, with a wicked sense of fun disguising a formidable intellect. He had a seemingly endless supply of stories on any and all subjects, which he told with gusto. His wit, his enthusiasm, his spirited support of scientists from developing countries, and his fervent support for science at the international level marked him as a unique and highly valued contributor to the worldwide scientific community.

We shall all miss him greatly but none more so than his devoted family, especially his nine grandchildren. Few have had such a rich, full and happy life.

This obituary has been compiled from contributions made by David Gavine, Edinburgh, and Don Williams, former IAGA President, and includes much information kindly provided by Mavis Gadsden. The photograph, taken at the Mesospheric Clouds Conference in Perth, 2002, shows Michael Gadsden (centre) with the Danish aurora observers Holger Andersen and Ole Skov Hansen.

The new IAGA leadership 2003 – 2007

The members of the **Executive Committee**, elected by the Conference of Delegates in Sapporo, are as follows:

President

Dr Charles Barton
Research School of Earth Sciences, Australian National University, Canberra ACT 0200, Australia
email: charles.barton@anu.edu.au;

Vice-presidents

Prof Eigil Friis-Christensen
Danish Space Research Institute, Juliane Maries Vej 30, DK 2100 Copenhagen, Denmark
email: eigil.friis@dsri.dk

Prof Yohsuke Kamide

Nagoya University, Solar-Terrestrial Environment Laboratory, Honohara 3-13, Toyokawa, Aichi 442-8507, Japan
email: kamide@stelab.nagoya-u.ac.jp

Secretary-General

Prof Bengt Hultqvist

The Swedish Institute of Space Physics, Box 812, S-98128 Kiruna, Sweden
email: hultqv@irf.se

Members

Dr Mangalathayil Abdu

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Dr Jan Lastovicka

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Prof Kathryn Whaler

School of Geosciences, The Grant Institute, The University of Edinburgh, West Mains Road, Edinburgh, EH9 3JW, Scotland, UK
email: Kathy.Whaler@ed.ac.uk

Past President:

Dr David Kerridge

British Geological Survey, Murchison House, West Mains Road, Edinburgh, EH9 3LA, Scotland, UK
email: djk@bgs.ac.uk

The new Leaders of the IAGA Divisions and Commissions, proposed by the Divisions/Commission and appointed by the (previous) Executive Committee, and the **Chairs and Co-Chairs of the Working Groups**, elected/appointed at the business meeting of the respective working groups, are as follows:

Division I - Internal Magnetic Fields

Chair: David E. Loper

Geophysical Fluid Dynamics Institute, Florida State University, Tallahassee, Florida 32306, USA
email: loper@gfdi.fsu.edu

Co-Chair: Hidefumi Tanaka

Kochi University, Education, Akebono-cho 2-5-1, Kochi 780-8520, Japan
email: hidefumi@cc.kochi-u.ac.jp

WG I-1: Theory of Planetary Magnetic Fields and Geomagnetic Secular Variation

Chair: Philippe Cardin

LGIT/Observatoire de Grenoble, BP 53, 38041

Grenoble, France

email: philippe.cardin@ujf-grenoble.fr

Co-Chair: David Ivers

School of Mathematics and Statistics, University of Sydney, Sydney NSW 2006, Australia
email: david@maths.usyd.edu.au

WG I-2: Electromagnetic Induction and Electrical Conductivity

Chair until 2005: Pascal Tarits

IUEM/UBO, Place Nicolas Copernic, F-29280, Plouzane, France
email: tarits@univ-brest.fr

Co-Chair until 2005: Andreas Junge

Institut für Meteorologie und Geophysik, Johann Wolfgang Goethe-Universität Frankfurt am Main, Feldbergstrasse 47, D-60323 Frankfurt am Main, Germany
email: junge@geophysik.uni-frankfurt.de

WG I-3: Paleomagnetism

Chair until 2005: Mark Dekkers

Paleomagnetic Lab Fort Hoofddijk, Utrecht University, Budapestlaan 17, NL-3584 CF Utrecht, The Netherlands
email: dekkers@geo.uu.nl

Co-Chair until 2005: Herald Boehnel

UNICIT – Instituto de Geofísica, Universidad Nacional Autónoma de Mexico, Mexico
email: hboehnel@unicit.unam.mx

WG I-4: Rock Magnetism

Chair until 2005: Barbara Maher

Centre for Environmental Magnetism and Paleomagnetism, Lancaster Environmental Centre, Department of Geography, University of Lancaster, Lancaster LA1 4YB, UK
email: b.maher@lancaster.ac.uk

Co-Chair until 2005: Eduard Petrovsky

Geophysical Institute, Bocni II/1401, 141 31 Prague 4, Czech Republic
email: edp@ig.cas.cz

Division II - Aeronomics Phenomena

Chair: Robert Schunk

Center for Atmospheric and Space Sciences, Utah State University, 4405 Old Main Hill, Logan, UT 84322-4405, USA
email: schunk@cc.usu.edu

Co-Chair: Alan Rodger

British Antarctic Survey, High Cross, Madingley Road, Cambridge, CB3 0ET, UK
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WG II-A: Electrodynamics of the Middle Atmosphere

Chair: Richard A. Goldberg

NASA/Goddard Space Flight Center, Code 690,
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email: richard.a.goldberg@nasa.gov

Co-Chair: Tom A. Blix (Norway);
Division for Electronics, Norwegian Defense Research
Establishment, P.O. Box 25, N-2007 Kjeller, Norway
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WG II-B: Thermospheric Dynamics

Chair: Alan D. Aylward

Atmospheric Physics Laboratory, Department of
Physics and Astronomy, University College of London,
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email: alan@apl.ucl.ac.uk

Co-Chair: Timothy L. Killeen
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Co-Chair: R. Sridharan
Physical Research Laboratory, Ahmedabad, 380009,
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WG II-C: Meteorological Effects on the Ionosphere

Chair: Dora Pancheva

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Co-Chair: David Altadill
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Co-Chair: Werner Singer
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WG II-D: External Forcing of the Middle Atmosphere

Chair: Edward Kazimirovsky

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Co-Chair: Charles H. Jackman
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WG II-E: Ionospheric Irregularities, Fields, and Waves

Chair: R. A. Greenwald

Johns Hopkins University, Applied Physics Laboratory,
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Co-Chair: J.-P. St. Maurice

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London, Ontario N6A 3K7, Canada
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***WG II-F: Long-Term Trends in the Mesosphere, Thermosphere and Ionosphere* (IAGA/ ICMA/ SCOSTEP)**

Chair: Jan Lastovicka

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Prague 4, Czech Republic; email: jla@ufa.cas.cz

Co-Chair: G. Beig

Indian Institute of Meteorology, Pune, India
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WG II-G: Polar Research

Chair: Allan T. Weatherwax

Siena College, Department of Physics, 515 Loudon
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Co-Chair: Mervyn Freeman

British Antarctic Survey, Natural Environment
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Cambridge, CB3 0ET, UK
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IAGA/URSI WG: (VERSIM) VLF/ELF Remote Sensing of the Ionosphere and Magnetosphere

IAGA Chair: Craig J. Rodger

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email: crodger@physics.otago.ac.nz

URSI Chair: M. Parrot

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email: mparrot@cnrs-orleans.fr

Division III - Magnetospheric Phenomena

Chair: Brian Anderson

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Co-chair: Masaki Fujimoto

University of Nagoya, Physics Department, Chikusa-ko,
Nagoya, Japan
email: fujimoto@a.phys.nagoya-u.ac.jp

WG III-5: Polar Research

(See WG II-G above)

Division IV - Solar Wind and Interplanetary Field

Chair: Iver Cairns

School of Physics, University of Sydney, NSW 2006,
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Co-Chair: Barbara Thompson

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Inter-Divisional Commission on Developing Countries

Chair: Thi Kim Thoa Nguyen

Institute of Geophysics, NSCT Vietnam, Hoang Quoc
Viet-Cau Giay, Hanoi, Vietnam
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Co-Chair: Polinaya Murali Krishna

Instituto Nacional de Pesquisas Espaciais, C.P. 515,
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Division V - Geomagnetic Observatories, Surveys and Analyses

Chair: Toshihiko Iyemori

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Co-Chair: Mioara Mandea

Institut de Physique du Globe de Paris, 4 Place
Jussieu, Tour 24-25, 2eme etage, 75252 Paris,
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WG V-OBS: Geomagnetic Observation

Chair: Hans-Joachim Linthe

GeoForschungsZentrum Potsdam, Adolf-Schmidt-
Observatorium Niemegk,
Lindenstr. 7, D-14823 Niemegk, Germany
email: linthe@gfz-potsdam.de

Co-Chair: Pieter Kotze

Hermanus Magnetic Observatory, P O Box 32,
Hermanus 7200, South Africa
email: pkotze@hmo.ac.za

WG V-DAT: Geomagnetic Data and Indices

Chair: Alan Thomson

British Geological Survey, West Mains Road,
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Co-Chair: Mita Rajaram

Indian Institute of Geomagnetism, Kalamboli Highway,
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WG V-MOD: Geomagnetic Field Modelling

Chair: Susan Macmillan

British Geological Survey, West Mains Road,
Edinburgh, EH9 3LA, UK
email: smac@bgs.ac.uk

Co-Chair: Stefan Maus

GeoForschungsZentrum, Telegrafenberg, D-14473
Potsdam, Germany
email: smaus@gfz-potsdam.de

Inter-Divisional Commission on History

Chair: To be decided

Co-Chair: To be decided

The next IAGA Scientific Assembly in Toulouse in 2005

The next IAGA assembly will be a Scientific Assembly,
to be organised together with the International
Commission on the Middle Atmosphere (ICMA), in
Toulouse, 18–29 July 2005. See the IAGA web site for
presently available information, including the [First Circular](#).

General Information about IAGA

The International Association of Geomagnetism and Aeronomy is one of the seven Associations of the International Union of Geodesy and Geophysics ([IUGG](#)).

The other IUGG Associations are:

International Association of Geodesy ([IAG](#))

International Association of Hydrological Sciences ([IAHS](#))

International Association of Meteorology and Atmospheric Sciences ([IAMAS](#))

International Association for the Physical Sciences of the Oceans ([IAPSO](#))

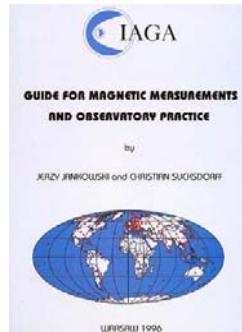
International Association of Seismology and Physics of the Earth's Interior ([IASPEI](#))

International Association of Volcanology and Chemistry of the Earth's Interior ([IAVCEI](#))

the study of particular subjects in their general areas of interest. On occasion, these internal IAGA groups issue their own newsletters or circulars and many maintain their own web sites. At the IAGA Assemblies, the groups organize specialist symposia, invite scholarly reviews and receive contributed papers that present up-to-the-minute results of current research. The IAGA web site gives, or provides links to, information on the range of IAGA activities.

IAGA Guides

IAGA has published three practical guides to observation. These may be ordered from the Secretary-General.

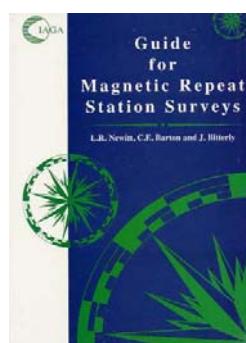


IAGA Guide for Magnetic Measurements and Observatory Practice by J. Jankowski and C. Sucksdorff, 1996

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 Surveys 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's Mission

The overall purpose of IAGA is set out in the first

statute of the Association:

- a) to promote studies of magnetism and aeronomy of the Earth and other bodies of the solar system, and of the interplanetary medium and its interaction with these bodies, where such studies have international interest;
- b) to encourage research in these subjects by individual countries, institutions or persons and to facilitate its international coordination;
- c) to provide an opportunity on an international basis for discussion and publication of the results of the researches; and
- d) to promote appropriate standardizations of observational programs, data acquisition systems, data analysis and publication.

(Link to the complete IAGA [Statutes and By-Laws](#).)

Scientific Assemblies

IAGA holds an Ordinary General Assembly every four years in conjunction with each Ordinary General Assembly of IUGG. Between the General Assemblies, IAGA holds a Scientific Assembly, often meeting with one of the other Associations of IUGG.

Participation in IAGA Activities

IAGA welcomes all scientists throughout the world to join in research into Geomagnetism and Aeronomy. IAGA is subdivided into a number of Divisions and Commissions, many of which have working groups for

OBSERVING NOCTILUENT CLOUDS

M Gadsden and P Parviainen



International Association of Geomagnetism & Earth Physics
1995

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 nighttime. 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."

(Prices do not include shipping and handling.)

IAGA News

IAGA News contains items of general interest to the IAGA community. It is intended that, beginning with Issue 40, the main method of distribution for IAGA News will be via the IAGA web site. If printed copies are required a request should be made to the Secretary-General who will mail copies free of charge.

Requests to publish short articles, reports and announcements in IAGA News should be sent to the Secretary-General.

Meetings Calendar

A calendar of scientific meetings relevant to the interests of IAGA scientists is maintained at:

<http://www.ufa.cas.cz/html/conferences/iaga.html>

International Geophysical Calendar

The International Geophysical Calendar for 2004 is available for download, as a *pdf* file at the following address:

ftp://ftp.ngdc.noaa.gov/STP/SOLAR_DATA/IGC_CALENDAR/2004/ (Link to [IGC 2004](#))

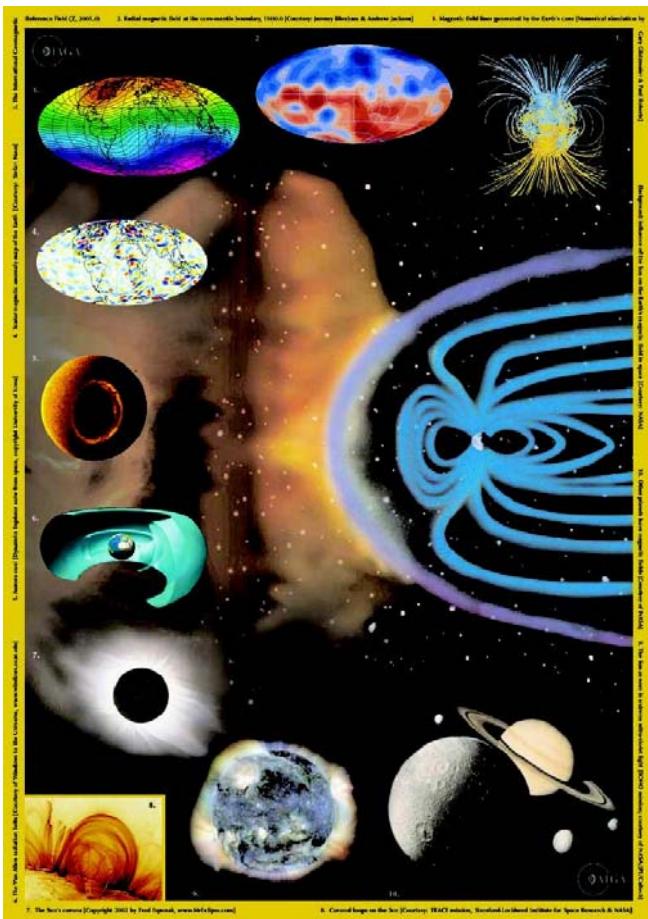
The 2003 calendar may be viewed at the ISES web site: <http://www.ises-spaceweather.org/>

The IAGA Web site

Information on IAGA can be found at:
<http://www.iugg.org/IAGA/>

IAGA Flyer

A flyer summarising IAGA scientific interests and activities can be downloaded in *pdf* format from the IAGA web site by clicking on the image below (718kb):



Contacting IAGA

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

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