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Our Magnetic Planet Moving in Space
Le voyage de notre Planète magnétique dans l'espace



Second Circular
Deuxième Circulaire

11th Scientific Assembly

11^{ème} Assemblée Scientifique

August 23–30, 2009, Sopron (Hungary)

International Association of Geomagnetism and Aeronomy,
member of International Union of Geodesy and Geophysics



Scientific programme

Business programme

Social programme

IAGA
11th Scientific Assembly
 23–30 August 2009
 Sopron (Hungary)
 www.iagaz2009sopron.hu

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Schedule at a Glance
 version of July 23, 2008

	23/08 Sunday	24/08 Monday	25/08 Tuesday	26/08 Wednesday	27/08 Thursday	28/08 Friday	29/08 Saturday	30/08 Sunday
8:30– –10:00		Oral Sessions		Association Lectures		Oral Sessions		<i>City Walks, Bus Excursions</i>
		<i>Coffee Break</i>						
10:30– –12:00		Oral Sessions				CD2 10:00–12:00		
		WG Meetings						
13:30– –15:00		Oral Sessions						
		<i>Coffee Break</i>						
15:30– –17:00	<i>Registration, City Walks, Bus Excursions</i>	CD1 16:00–18:00	Oral Sessions					
17:00– –19:00			Poster Sessions					
19:00– –20:00	<i>Opening Ceremony</i>			Division Evenings			<i>Closing Ceremony</i>	
20:00–	<i>Welcome Reception</i>				<i>Banquet</i>			

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Geodetic and Geophysical Research Institute
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Avant-propos

Le Comité local d'organisation et le Comité national hongrois de l'UGGI ont le grand plaisir de vous accueillir à la 11^{ème} Assemblée scientifique de l'Association internationale de géomagnétisme et d'aéronomie (AIGA) qui se tient à Sopron du 23 au 30 août 2009, ayant comme motto » Le voyage de notre Planète magnétique dans l'espace «.

ASSOCIATION INTERNATIONALE DE GEOMAGNETISME ET D'AERONOMIE (AIGA)

L'association internationale de géomagnétisme et d'aéronomie (AIGA) est une des huit associations de l'Union géodésique et géophysique internationale (UGGI). L'AIGA a une longue histoire: elle a pour origine la Commission de magnétisme terrestre et d'électricité atmosphérique, qui faisait partie de l'Organisation météorologique internationale, fondée en 1873.

L'AIGA est une organisation non gouvernementale fondée pour promouvoir l'étude des propriétés électriques et magnétiques de la Terre (noyau, manteau, croûte), et de son environnement (moyenne et haute atmosphère, ionosphère et magnétosphère), du vent solaire, des planètes, de leurs satellites et des petits objets du système solaire.

L'AIGA est structurée en cinq Divisions et deux Commissions inter-divisions.

- Division I:** champ magnétique interne
- Division II:** aéronomie
- Division III:** magnétosphère
- Division IV:** vent solaire et champ magnétique interplanétaire
- Division V:** observatoires géomagnétiques, levés magnétiques et analyse de données
- CIDH (IDCH):** Commission inter-division sur l'histoire
- CIPD (ICDC):** Commission inter-division sur les pays en voie de développement

Chaque Division et Commission est placée sous la responsabilité d'un Président et d'un Vice-président. Elle peut former des Groupes de travail autour de thématiques spécifiques et élire des responsables chargés de l'animation de ces groupes.

Aux termes de ses statuts, l'AIGA a pour principaux objectifs de promouvoir l'échange gratuit d'informations scientifiques et de faciliter la collaboration internationale dans son domaine de recherche. L'AIGA organise une Assemblée générale ordinaire tous les quatre ans, en même temps que chacune des Assemblées générales ordinaires de l'UGGI. Entre deux Assemblées générales, elle organise une Assemblée scientifique, parfois conjointement avec l'une ou l'autre des Associations membres de l'UGGI, ainsi que des symposiums spécialisés. Les Assemblées scientifiques et Symposiums organisés par l'AIGA constituent autant de forums dédiés à la présentation et à la discussion des travaux de recherche les plus récents, au partage des connaissances, à la définition de standards ainsi qu'à la promotion de programmes de recherche et de coopération internationaux.

Les langues officielles de l'AIGA sont l'anglais et le français.

Foreword

The Local Organising Committee and the Hungarian National Committee of IUGG have the great pleasure to welcome you to the 11th Scientific Assembly of the International Association of Geomagnetism and Aeronomy (IAGA) which is held in Sopron from 23 to 30 August 2009 with the motto: "Our Magnetic Planet Moving in Space".

INTERNATIONAL ASSOCIATION OF GEOMAGNETISM AND AERONOMY (IAGA)

The International Association of Geomagnetism and Aeronomy (IAGA) is one of the eight associations of the International Union of Geodesy and Geophysics (IUGG). IAGA has a long history and can trace its origins to the commission for Terrestrial Magnetism and Atmospheric Electricity, part of the International Meteorological Organisation, which was established in 1873.

IAGA is a non-governmental body founded to promote and coordinate studies of the electrical and magnetic properties of the Earth's core, mantle and crust, of the middle and upper atmosphere, of the ionosphere and magnetosphere, and the Sun, the solar wind, the planets and interplanetary bodies.

IAGA is organised into five Divisions and two Interdivisional (ID) commissions.

- Division I:** Internal Magnetic Field
- Division II:** Aeronomic Phenomena
- Division III:** Magnetospheric Phenomena
- Division IV:** Solar Wind and Interplanetary Field
- Division V:** Geomagnetic Observatories, Surveys and Analyses
- IDCH:** Commission on History
- ICDC:** Commission on Developing Countries.

Each Division and Commission is led by a Chair and Co-Chair. The Divisions and/or Commissions may form working Groups for topic areas and elect officers to run the business of the Working Groups.

IAGA encourages free exchange of scientific information and facilitates international collaboration in research. IAGA holds an Ordinary General Assembly every four years in conjunction with each Ordinary General Assembly of IUGG. Between these General Assemblies, IAGA holds a Scientific Assembly sometimes with one of the other Associations of IUGG. In addition to these assemblies IAGA organises workshops dedicated to specific topics. Through its assemblies and workshops, IAGA provides global forums for scientists to present and discuss their latest research results, to share knowledge, to establish standards, to resolve issues, and to promote international studies and cooperation. Much of this is achieved through Business and Working Group Meetings of the IAGA Divisions and Commissions.

The official languages of IAGA are English and French.

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Scientific Programme

The scientific programme starts on 24 August (Monday) and ends on 29 August (Saturday). The posters will be on show for six days. About 600 oral presentations, 600 posters are expected.

Association Lectures

Nº 1: Wednesday, 26 August, 08:30–10:00

Nº 2: Thursday, 27 August, 08:30–10:00

- Division I.**
- I.01. Planetary dynamos: theory, models, observation and experiment
 - I.02. Magnetospheric processes and their consequences for MT response functions
 - I.03. Continental lithospheric formation and deformation
 - I.04. Near surface and environmental studies using electromagnetic induction
 - I.05. Deep mantle structure imaged by electromagnetic observations using long-period MT, cables and satellites
 - I.06. Crustal tectonic processes constrained by electromagnetic observations
 - I.07. EM modelling and inversion
 - I.08. EM studies in the ocean
 - I.09. Kinematics and geodynamics:
global and regional inferences from paleomagnetic data
 - I.10. Magneto-cyclostratigraphy as a tool for high-resolution time frames
 - I.11. Developments in magnetic anisotropy
 - I.12. Palaeointensity and archaeointensity
– results and their implications, methodological advances, and open issues
 - I.13. Paleomagnetic, geomagnetic and rock-magnetic procedures:
field tests, instrumentation, statistics
 - I.14. Geo- and paleomagnetic data constraints on geodynamo models
 - I.15. Rock magnetism: theory, experiments and observations
 - I.16. Environmental magnetism and biomagnetism
 - I.17. Paleomagnetism and rock magnetism of anomaly source rocks
 - I.18. Open poster session
- Division II.**
- II.01. Electrodynamical coupling from the troposphere to the magnetosphere related to thunderstorm electrical activity
 - II.02. New findings concerning the polar summer mesosphere/lower thermosphere/ionosphere region including the role of dusty plasmas
 - II.03. Long-term changes in the mesosphere, thermosphere and ionosphere
 - II.04. Solar and lower atmospheric forcing of the middle atmosphere-ionosphere system
 - II.05. Energetic particle precipitation into the atmosphere: sources and consequences
 - II.06. Equatorial atmosphere-ionosphere interactive processes:
vertical and latitudinal coupling and magnetospheric forcing
 - II.07. Forcing of the middle and high latitude thermosphere from above and below
 - II.08. Remote sensing of the plasmasphere, and coupling to the ionosphere

- Division III.** III.01. Magnetopause and magnetosheath processes: reconnection, diffusion and boundary dynamics
 III.02. Advances in substorm research from multi-point observations in the magnetosphere
 III.03. Magnetosphere-ionosphere interactions and auroral processes
 III.04. New perspectives of the magnetosphere-ionosphere system from global models, synoptic observations, and data assimilation
 III.05. The plasma sheet - ionosphere, a coupled system:
 Sinks, sources, transport and the role of Region 2 currents
 III.06. Techniques and instrumentation in space plasma physics
 III.07. Wave and particle dynamics in the ring current and radiation belts/geomagnetic storms
 III.08. Other magnetospheric worlds
 III.09. Conjugate and inter-hemispheric studies of polar geophysical phenomena: Results from the International Polar and Heliophysical Years (IPY/IHY)
 III.10. ULF Waves as magnetospheric probes
 III.11. Reporter reviews

- Division IV.** IV.01. New solar and interplanetary results
 IV.02. From micro- to macro-scales in the heliosphere and magnetospheres
 IV.03. Universal heliophysical processes
 IV.04. Advances in coordinated Sun-Earth system science through CAWSES and ILWS
 IV.05. Neutral-plasma interactions for planets, moons, asteroids, and comets
 IV.06. Solar and interplanetary radio emissions
 IV.07. Reporter reviews

- Division V.** V.01. Connecting space and ground-based magnetic data for scientific benefit
 V.02. Geomagnetic observatory practice, instrumentation and network
 V.03. Geomagnetic jerks and rapid core field variations
 V.04. Application, history and evolution of geomagnetic indices
 V.05. Improved modelling of the lithospheric magnetic field
 V.06. Tectonic interpretation of satellite, air-borne, ground and marine geomagnetic data
 V.07. Results from the decade of geopotential research and future prospects
 V.08. Reporter reviews

- ICDC** DC.01. Atmospheric coupling processes in the equatorial region
 DC.02. Low latitude ionosphere-thermosphere system in quiet and magnetically disturbed periods

- IDCH** H.01. von Humboldt's legacy after 150 years
 H.02. History of geomagnetic observations, observatories & indices

Schedule of the Working Days

(Monday–Saturday)

08:30–10:00	Time Block 1 (8–9 parallel, oral sessions; on Wednesday and Thursday Association lectures)
10:00–10:30	Coffee break
10:30–12:00	Time Block 2 (8–9 parallel, oral sessions)
12:00–13:30	Lunch break
13:30–15:00	Time Block 3 (8–9 parallel, oral sessions)
15:00–15:30	Coffee break
15:30–17:00	Time Block 4 (8–9 parallel, oral sessions)
17:00–19:00	Poster Block (in three poster halls)

The Exhibition area is open between 8:00–19:00. The session halls are in LFCCC and in nearby buildings. The poster sessions will be held in nearby buildings (less than 5 min walking distance from LFCCC). The posters will be on show for six days.

Social Programme

23 and 30 August, Sunday: City walks (included in the registration fee)

24 August, Monday evening: Welcome reception (included in the registration fee)

Between 23–29 August: Evening congress concerts (included in the registration fee)

27 August, Thursday evening: Banquet (not included in the registration fee)

Between 23–30 August: Bus excursions (not included in the registration fee)

Other programmes: 23–30 August: City Cultural events

Bathing, cycling and hiking are also recommended in and around Sopron.

Detailed information will be available at the Information desk.

Deadlines

31 March, 2009	Abstract submission (by post)
15 April, 2009	Abstract submission (online)
31 March, 2009	Application for grant
30 April, 2009	Decision about grants
31 May, 2009	Reduced rate registration
1 July, 2009	Exhibition booking
22 August, 2009	Normal rate registration

Cancellation deadlines

Cancellation of registration without penalty (100% refund): 31 May, 2009

Cancellation of registration with 50% penalty (50% refund): 15 July, 2009

After 15 July, 2009 no refund is possible.

Pre-Registration

Before any electronic abstract submission or payment, a pre-registration is required. It is already available via our online system.

Abstract Submission

Abstract submission should be made preferably online (www.iagaz009sopron.hu) not later than 15 April, 2009. In exceptional cases we accept abstract submissions by mail. In order to be able to process them, abstracts by mail should arrive on 31 March, 2009 as latest. Acceptance e-mails will be sent before 30 April, 2009. Submission of abstracts implies that IAGA has permission to reproduce it in programmes and reports related to the Assembly. According to our estimations, at the 11th IAGA Scientific Assembly about 600 oral- and 600 posters will be presented. Authors in the oral sessions should prepare for 15 min long oral talks. The maximum size of posters is 1 × 2m (horizontal × vertical).

Submission information

The abstracts should be prepared in the following format:

- a. ABSTRACT TITLE IN CAPITAL LETTERS, and leave a blank line after this line
- b. Name(s) of Author(s): Left Justified, the First Name and the Last (Family) Name of the Author. WHO WILL PRESENT THE PAPER should be in capital letters.
- c. Affiliation(s) of the Author(s). In case of multiple affiliations, the number that corresponds to the proper affiliation should be shown after each name. Leave a blank line after the last affiliation.
- d. Text of Abstract: left justified, do not indent paragraphs, single line spacing, about 200–300 (max. 360) words in English or French. Below the abstract leave a blank line.
- e. Please provide the following information:
 1. Symposium code
 2. Symposium title
 3. Keywords (1–3)
 4. Name and coordinates of the corresponding author
 5. Type of presentation preferred (O for oral, P for poster,
OP if the first preference is oral, but the poster presentation is also acceptable)
 6. Equipment requested for presentation (PC for PC+digital projector,
OH for overhead projector. Indicate any special request.)
 7. Student paper: if a student author is presenting the paper, indicate YES
 8. Are you applying for a grant? YES or NO after the name of each co-author
 9. Message to Convener (if any)

Simple fonts (Times New Roman) and 12 letter size, and left-justification are recommended.

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Sample Abstract

SOME WORDS ON WINE

TIBOR KECSKEMÉTI 1, Árpád Keresztesy 2

1. Hungarian Natural History Museum, Budapest, Hungary,
e-mail: kecs@nhmus.hu
2. Institute for Ampelography, Tokaj, Hungary, email: mailer@daemon.hu

The oldest vine found in Hungary is a leaf fossil (*Vitis hungarica*) from sediments of the Early Oligocene at Kis-Eged near the town of Eger in NE Hungary. (About 35 Ma old.) The Romans introduced grapevine and viticulture into their province Pannonia Inferior in the 3rd century A.D. In the period of over a millennium and a half since then, careful cultivation and improvement of the strains have created in present-day Hungary about twenty districts producing excellent wines. The disastrous Phylloxera plague of the 1870-ies caused enormous destruction in the vineyards of the country. However, from the early 20th century, with the planting of new, Phylloxera-resistant strains the cultivation of vines and wine-making has been gradually regenerated. The character of wines is basically controlled by the geographic location of the site where they are grown. This determines namely the duration of the growing period, the number of hours of sunshine, and the total amount of heat received. However, the character is also strongly influenced by the soil, which in turn depends on the geological setting and the geochemical features of the area. This text is from „Geological Guidebook to Hungarian Wines”, Hungarian Geological Society, 1993.

1. VI01
2. Geomagnetism and wines
3. fossil, vine-making, geology
4. Tibor Kecskeméti, Hungarian Natural History Museum. 1083 Budapest,
Ludovika tér 2., tel: 210-1075/2316, fax: 338-2728, e-mail: kecs@nhmus.hu
5. O
6. PC
7. NO
8. Tibor Kecskeméti: NO, Árpád Keresztesy: YES
9. NONE

Application For Grant

The IAGA and the IAGA2009 LOC are working together to offer a limited number of financial assistance grants to support participation at the 11th IAGA Scientific Assembly. An application for a grant can only be made by those who have submitted one or more abstracts to the scientific programme. Financial assistance funds are limited. Most awards will be for the registration fee only. It is unlikely that full support will be possible.

Applications for grant should be sent exclusively to the Local Organising Committee in e-mail to the address: loc@iagaz09sopron.hu, with the subject: „IAGA 2009, application for grant”. Already submitted abstract(s) by the applicant should be attached. The deadline is strict (March 31, 2009), in order to be able to bring decisions not later than April 30, 2009. In that case the grantees have possibility to apply to additional sources in their home countries.

Registration Information

Online registration is possible from summer 2008. All participants are kindly requested to pre-register online via the online database, by filling in the personal details.

By using the online system, you can submit your abstracts, sign up for excursions, pay the registration- and accommodation fees. All participants will receive a confirmation on registration and hotel reservation, but participants may check their own payment and reservation status in their personal records of the registration database.

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Registration Fees

Category	Reduced rate until 31 May, 2009	Normal rate between 1 June and 22 Aug	On site rate from 23 Aug, 2009
Regular Participant ¹	370 €	410 €	450 €
Young Scientist/ Student Participant ^{1,2}	220 €	250 €	280 €
Accompanying person ³	60 €	70 €	80 €
One day registration	<i>not possible</i>	<i>not possible</i>	120 €

- ¹ Registration fee for congress participants (regular and young scientist/student) include: participation in all sessions, admission to the exhibition, Abstract Volume on CD, conference bag with printed Programme Book, admission to the Opening and Closing ceremonies, welcome reception (24 August), congress concerts
- ² Category of young scientists (including students) has an exact age limit: it is 32 years. Participants born in or after August 1977, and who are co-authors of at least one presentation submitted to the IAGA 2009, are eligible for this reduced registration fee.
- ³ Registered accompanying persons are entitled to receive: Admission to the Opening and Closing Ceremonies, Welcome reception (24 August), Congress concerts, Guided city walks in Sopron, Coffee breaks (24–29 August)

The Banquet in the evening of 27 August and bus excursions are not included in any of these fees.

Methods of Payment

- either by bank transfer payable to:
Diamond Congress Ltd – IAGA2009
Raiffeisen Bank Zrt.
Address: **H-1015 Budapest, Széna tér 1/a**
International Bank Account Number **HU79-12010154-00175156-00200001**
SWIFT code: **UBRTHUHB**
- or by major credit cards (American Express, Visa, MasterCard) to be arranged during the secure online registration.

At the bank transfer please do not forget to send the name of the Conference (IAGA2009), and your registration ID or your name. Registrations and hotel reservations, which are not accompanied by appropriate payment, will not be honoured. Registrations and hotel reservations will be acknowledged in writing. Official invoices and receipts for fees paid by the participants will be handed over on site upon registration. Congress bureau Diamond Congress Ltd. is responsible for collection of all charges; hence all financial issues are handled and confirmed by the congress bureau. On site registration fees, hotel charges and optional programmes can be paid in cash in convertible currency or in Hungarian Forint. Besides, credit cards listed above will be accepted. The organisers regret that cheques cannot be accepted, they should be cashed at the banks.

Venue

The IAGA 11th Scientific Assembly will be held in the Liszt Ferenc Conference and Culture Centre (LFCCC) and nearby buildings (in the developing “Sopron Downtown Convention District”). LFCCC will serve as headquarter (with the registration area, opening and closing ceremony, association lectures, and part of the sessions). The other part of the sessions and the poster presentations will be held in other buildings. All lecture and poster halls are within less than 5 minutes of each other on foot. LFCCC can be found easily in the SW corner of the horseshoe-shaped downtown, at the address: H-9400 Sopron, Liszt Ferenc utca 1., Tel: +36 99 517500, Fax: +36 99 517516, www.prokultura.hu, e-mail: info@prokultura.hu

Exhibition

An indoor exhibition will be organised at the first floor of the Liszt Ferenc Conference and Culture Centre (LFCCC), next to the coffee break area and three session rooms. Tea and coffee will be served within the exhibition area, thus ensuring maximum contact between exhibitors and delegates. Each exhibiting company/organisation will receive a listing and brief description of your company’s services and products in the Programme Book. Each exhibiting company/organisation will receive acknowledgement in all printed assembly materials including the Final Programme and on signage prominently displayed at the registration area. Each exhibiting company/organisation will receive one (1) complimentary Full Registration.

Indoor Exhibition (booth size):

- 4 m² 1200 € (including 1 full registration);
8 m² 2000 € (including 1 full registration);
12 m² 2800 € (including 2 full registrations);
16 m² 3600 € (including 3 full registrations)
- All prices regarding exhibition and sponsorship include 20 % V.A.T.

There is possibility for outdoor exhibitions, too. Potential exhibitors are kindly asked to contact the LOC (loc@iagazoo9sopron.hu)

Sponsorship

Besides the exhibition, in our website you find detailed descriptions about the other possibilities of involvement such as: sponsorship, delegate support, social programme support, and advertising opportunities.

Sponsorship: Platinum Sponsor, Gold Sponsor, Silver Sponsor, Bronze Sponsor or Assembly Supporter

Delegate Support: Assembly Bags, Delegate Notepaper & Pens, Delegate Name Badges, Internet Centre, Young Scientist Support

Social Programme Support: Coffee Break(s), Welcome Reception, Cultural Event

Advertising Opportunities: Advertising in the Programme Booklet or Advertising Insert in Delegate Bag

For all details of the Sopron IAGA Assembly see our website, www.iagazoo9sopron.hu. With your ideas, willingness to support the IAGA 2009, you are kindly asked to contact the Local Organising Committee (loc@iagazoo9sopron.hu).

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Accommodation

Accommodation has been reserved for conference participants and their companions in hotels of Sopron, as listed in our website, and at the end of this Circular. In order to reserve accommodation, please reserve your room in the online database for Registration & Hotel Reservation before 1 June, 2009. The reservation system will not offer dates prior to 22 August and after 30 August 2009. If you need to come earlier or depart later, share your room with somebody, please consult the organisers beforehand by e-mail, addressed to diamond@diamond-congress.hu. Paying 2 nights hotel fee – as a deposit – is mandatory. Without deposit the accommodation cannot be guaranteed.

Child Care Service

The LOC Secretariat has the pleasure to inform you that between 24–29 August, 2009 a daily child care service will be available for 0–14 year's old children. The service is assured by the Benedek Elek Pedagogical Faculty of University of West Hungary (www.bpk.nyme.hu) English and/or German speaking students and teachers (kindergarten teachers) of the Faculty will take care of the children daily, between 8 a.m. and 5 p.m. If you are interested in the service, please download the "IAGA 2009 Child Care Form" and send it to us by fax or by email.

Preliminary price: 80 €/8 days, or 20 €/day (*in case of requests received on or before 30 June, 2009*), or 100 €/8 days or 25 €/day (*in case of requests received after 30 June, 2009*)

Internet Access

A free wifi internet access is planned to be available to all participants in the Congress Centre. Some desktop computers will be available for those participants, who do not have their own notebook with themselves.

Invitation Letter

On request, having already received pre-registration and abstract submission, we can send invitation letter to those, who need it. It is just a formal letter; it does not guarantee any visa to Hungary.

Description of Symposia

Division I.

I.01. Planetary dynamos: theory, models, observation and experiment

Div. I and SEDI

Magnetic fields are generated by dynamo action in the interiors of the Earth, and the planets, Jupiter, Saturn, Neptune, Uranus, and possibly Mercury. Our current understanding of these natural dynamos relies on theory, computational and analytical modelling, observations and laboratory experiments. Advances in computer hardware and software are improving the numerical modelling of dynamos. Small scale turbulence, which cannot be directly computed, requires sub-grid scale modelling, such as large eddy simulation techniques. Observations, such as the magnetic data from recent Earth satellites, provide important constraints on natural dynamos. Substantial progress is being made in laboratory experiments on magnetic field generation in electrically-conducting fluids. Comparative studies of the natural dynamos with numerical dynamos and laboratory experiments, which typically operate in different parameter regimes, should increase our understanding of the dynamo process in the Earth and other planets.

We call for contributions on all aspects of planetary dynamos: theory, models, observations and experiments. Contributions which improve our understanding of the geodynamo are particularly welcome.

Convener: David Ivers, School of Mathematics and Statistics, Univ. of Sydney, Sydney, NSW 2006, Australia; tel: +61 2 9351 3561; fax: +61 2 9351 4534; e-mail: david@maths.usyd.edu.au

Co-Conveners: Ibrahim Eltayeb; Sultan Quaboos University, Oman; Alexandra Pais; Universidade de Coimbra, Portugal; Jonathan Aunou; Univ. of California, Los Angeles, USA

I.02. Consequences of magnetospheric-ionospheric processes on magnetotelluric response functions

Divs. I, II, III, and V

Magnetotellurics is a method to image the subsurface electrical conductivity structure through electromagnetic induction, where the source field is provided by natural electromagnetic signals of magnetosphere-ionosphere origin. From some very long (ground observatory) records more or less regular variations of the response function have been observed. If the subsurface is constant, any variation in the response function refer to processes in the source field, e.g. to plasmaphysical processes of the outer environment. Papers dealing with periodic modulation of electromagnetic response function are sought. Presentations focusing on field observations at low, middle and high latitudes, and on associated ionospheric and magnetospheric sources behaviour are welcome.

Convener: László Szarka, Geodetic and Geophysical Research Institute of Hung. Academy of Sciences, H-9400 Sopron, Csatkai u. 6-8, Hungary; tel: +36 99 508342; fax: +36 99 508355; e-mail: szarka@ggki.hu

Co-Conveners: Jan Lastovicka, Institute of Atmospheric Physics, Czech Republic; Michel Menvielle, CETP Observatoire de Saint Maur, France

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**Description
of Symposia**

I.03. Continental lithospheric formation and deformation

Divs. I and V

What are the processes by which the lithosphere beneath the continents is formed and subsequently deformed, and do these processes result in structures and geometries that can be imaged by electromagnetic and geomagnetic methods? These questions are at the heart of this session, which will explore whether deep-probing electromagnetic data and models of satellite and ground-based magnetic data can give insight into Earth processes, and particularly their secular variation.

Convener: Alan G. Jones, School of Cosmic Physics, Dublin Institute for Advanced Studies, 5 Merrion Square, Dublin 2, Ireland; tel: +353 1 653 5147; fax: +353 1 443 0575; e-mail: alan@cp.dias.ie

Co-Convener: Miora Manda, GeoForschungsZentrum Potsdam, Germany

I.04. Near surface and environmental studies using electromagnetic induction

Div. I

With the development of new technologies, new instruments, and improved data-processing, electromagnetic methods are able to image shallow structures with applications to many environmental problems. Examples include contaminated unconfined aquifers associated with landfills, landslides, seawater intrusion in coastal areas, the detection of cavities, and the detection of sinkholes and caves in karstic areas. Recently, landmines and unexploded ordnance hazard have appeared as other fields where electromagnetic methods can provide useful applications. We would like to invite contributions related to the issues discussed above, including case studies, the development of novel applications of electromagnetic methods in hydrogeophysics, and the joint inversion of electromagnetic data with other geophysical datasets.

Convener: Gad El-Qady, National Research Institute of Astronomy and Geophysics, Helwan, 11722 Cairo, Egypt. Tel.+2010-1547090, Fax.+202-25548020, e-mail: gadosan@nriag.sci.eg, gadosan@yahoo.com

Co-Convener: Andre Revil, Colorado School of Mines, USA

I.05. Deep mantle structure imaged by electromagnetic observations using long-period MT, cables and satellites

Div. I and ICDC

An increasing number of initiatives have been taken to study the electromagnetic (EM) signature of the Earth's crust and mantle. These initiatives include both the acquisition of new high quality data obtained at the planet surface and/or from satellite and development of new tools for the analysis and interpretation of EM data and its comparison with other geophysical and geological data. We encourage presentations addressing these and related questions comparing or integrating different geophysical methods and models, with special focus on EM works that synthesize regional and global compilations to increase our understanding of lithospheric - asthenospheric structure and processes behind its formation and evolution, as well as studies related to new developments on deep EM methods.

Convener: Juanjo Ledo, Dept. Geodinamica i Geofísica, Facultat de Geologia, c/ Martí i Franques, s/n, 08028 Barcelona, Spain; tel: +34 93 403 5911; fax: +34 93 402 1340; e-mail: jledo@ub.edu.es

Co-Convener: S. G. Gokarn, Indian Institute of Geomagnetism, India

I.06. Crustal tectonic processes constrained by electromagnetic observations

Div. I

Study of the crustal processes helps to delineate the natural resources, seismically active zones, geothermal regions etc. The session is devoted to research contribution of electromagnetic studies in resolving structural features of crust ranging from Archean to Recent in age. Recent review paper on EM investigations of the lithosphere in Europe provided an overview of the large-scale EM surveys on a regional scale. We particularly invite such large scale studies. The session also addressed the role of EM in monitoring crustal processes. EM monitoring of seismic and volcanic processes have examined correlation of electrical resistivity models with crustal melting, seismicity, and fault zones.

Convener: T. Harinarayana, Magnetotellurics Division, National Geophysics Research Institute, Uppal Road, Hyderabad – 500 007, India; tel: +91 40 23434613; fax: +91 40 23434651; e-mail: thari54@yahoo.com

Co-Convener: Yasuo Ogawa, Tokyo Institute of Technology, Japan

I.07. EM modelling and inversion

Div. I

In all areas of applied geophysics numerical methods are increasingly important. The interpretation of electric and electromagnetic field data is impossible without adequate numerical modeling and inversion codes. Growing computer power and new numerical algorithms propel the methodological development of modeling and inversion techniques. Although these techniques are as close to reality as never before, nature still holds a lead due to the multi-scaled complexity of its materials. The boundaries between classical methods as dc resistivity, induction and electromagnetic wave methods dissolve. The physical responses of dielectric permittivity and magnetic permeability mingle with pure inductive processes. Three-dimensionality, topography, complex geometry, anisotropy, large parameter contrasts, discretization and parallelization are just a few key words of current research in the field of simulation. Classical and alternative inversion concepts allowing for smooth or sharp boundaries, parametrization strategies, stochastic approaches for global minimum search, all-at-once approaches, resolution analysis, model appraisal, and sensitivity studies represent current areas of research in the field of inverse problems. Besides pure numerical topics, the presentation of specialized codes for marine, land-based, airborne or any other electromagnetic application are of great interest for practitioners and developers.

Concluding, we invite contributions to all methodological and computational approaches in all areas of electric and electromagnetic methods.

Convener: Klaus Spitzer, Institute of Geophysics – TU Bergakademie Freiberg, Gustav-Zeuner-Str. 12, 09596 Freiberg, Germany; tel: +49 3731 39 2722; fax: +49 3731 39 2636; e-mail: klaus.spitzer@geophysik.tu-freiberg.de

Co-Convener: Weerachai Siripunvaraporn, Mahidol University, Thailand

I.08. EM studies in the ocean

Div. I

During the last years there has been a surge of interest in the use of electromagnetic methods for (1) offshore hydrocarbon detection and assessment, (2) studies of tectonically active zones (midocean ridges, subduction zones, etc.), (3) development of seafloor monitoring stations or observatories and (4) ocean current monitoring using motionally induced voltage measurements. The objective of the symposium is to provide a forum for discussion of ideas, technological advances and new applications of marine EM in this fast developing scientific direction. We seek papers illustrating the current state and progress in this domain.

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Convener: Nikolay A. Palshin, Geophysical Fields Laboratory, Shishov Institute of Oceanology, RAS, 36 Nakhimov Avenue, 117997 Moscow, Russia; tel: +7 495 124 7956; fax: +7 495 124 5983; e-mail: palshin@ocean.ru, nikolay.palshin@gmail.com

Co-Convener: Marion Jegen, IFM-GEOMAR, Germany

I.09. Kinematics and geodynamics: global and regional inferences from paleomagnetic data

Div. I

In this session we invite contributions that show both the elegance and the pitfalls of paleomagnetism as tool in constraining geodynamic and kinematic processes. Paleomagnetism has important applications in the reconstruction of plate motions and their derivatives, orogens and basins: apparent polar wander path reconstructions (and true polar wander), vertical axis rotations to constrain e.g. fault behavior and oroclinal bending, and magnetostratigraphic age dating. We welcome contributions that focus both on the fundamental development and the application of these techniques within the context of geodynamics and tectonics. Especially, we invite papers that integrate the paleomagnetic tools with other fields of earth scientific expertise, including seismology and tomography, numerical modeling, structural geology, geochronology, fauna and stratigraphy.

Convener: Douwe van Hinsbergen, Dept. Earth Sciences, Utrecht University, Budapestlaan 17, NL-3584 CD Utrecht, The Netherlands; tel: +31 30 253 1676; fax: +31 30 253 1677; e-mail: hins@geo.uu.nl

Co-Conveners: Trond H. Torsvik, Norwegian Geological Survey, Norway; Satrija Bijaksana, Institut Teknologi Bandung, Indonesia; Roberto Molina-Garza, Centro de Geociencias, UNAM, Mexico

I.10. Magneto-cyclostratigraphy as a tool for high-resolution time frames

Div. I

Magnetic cyclostratigraphy involves the study of cyclic and repetitive magnetic properties of strata and their relationship with sedimentary, geochemical, isotopic or biostratigraphic records. Since the late 1980s, rapidly increasing research into orbitally forced stratigraphic cyclicity lead to a major breakthrough in the construction of astronomically calibrated geological time-scales for the Quaternary and older geological periods. Contributions covering all aspects of magnetic cyclostratigraphy as a tool for high-resolution time frames in the rock record, from cyclic sedimentation to global cyclostratigraphy are welcome.

Convener: Robert Scholger, University of Leoben, Chair of Geophysics, Paleomagnetic Lab/Gams 45, A-8130 Frohnleiten, Austria; tel: +43 3126 50415; fax: +43 3126 50414; e-mail: scholger@unileoben.ac.at

Co-Conveners: Toshitsugu Yamazaki, Geological Survey of Japan, Japan; Liliiana Vasiliev, Utrecht University, The Netherlands; Shiva K. Patil, Indian Institute of Geomagnetism, India

I.11. Developments in magnetic anisotropy

Div. I

Conventional AMS measurements have been widely used in studying the magnetic fabric of igneous, sedimentary and metamorphic rocks. This session intends to be a forum for papers dealing with the AMS of any of the mentioned rock types, preferably in combination with a detailed rock-magnetism study and other anisotropies of the magnetic properties, such as the anisotropy of remanence or high field anisotropy. Presentations about the applications of variable AC field amplitude and frequency in studying the anisotropy of the magnetic susceptibility, as a new technique to help the interpretation of anomalous or inverse fabric, are especially welcome.

Convener: Emő Márton, Eötvös Loránd Geophysical Institute, Columbus u. 17-23, H-1145 Budapest, Hungary; tel: +36 319 3203; fax: +36 248 0379; e-mail: paleo@elgi.hu
Co-Conveners: Francesca Cifelli, Uni. of Roma III, Italy; Martin Chadima, Agico, Czech Republic; M. Irene B. Raposo, Univ. Sao Paulo, Brazil

1.12. Palaeointensity and archaeointensity – results and their implications, methodological advances, and open issues

Div. I

Records of ancient geomagnetic field intensity variations are being produced at an accelerating rate from igneous, sedimentary, and baked archaeological materials and are being applied to such diverse and exciting topics in geoscience as geodynamo theory, climatology, and mantle convection. All of this in spite of the well-documented difficulties associated with producing reliable measurements which have themselves motivated a rapidly growing number of studies focused on improving the experimental and analytical methodologies. We solicit presentations based on any aspect of palaeointensity (absolute and relative) and archaeo-intensity determination and particularly welcome contributions which directly address controversial issues associated with either the acquisition of intensity records or their implications for important, interdisciplinary problems.

Convener: Andy Biggin, Palaeomagnetic Laboratory Fort Hoofddijk, Utrecht University, Budapestlaan 17, Utrecht 3584 CD, Netherlands; tel: +31 30 253 5246; fax: +31 30 253 1677; e-mail: biggin@geo.uu.nl
Co-Conveners: Simo Spassov, Centre de Physique du Globe, Belgium; Mimi Hill, Univ. Liverpool, UK

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1.13. Paleomagnetic, geomagnetic and rock-magnetic procedures: Field tests, instrumentation, statistics

Div. I

The rock and sedimentary record of the Earth magnetic field is based on straightforward principles established since more than fifty years. Nevertheless, continuous research in this field and progressive extension of the paleomagnetic database, progressively opened a “Pandora box” of complex phenomena related to the formation of iron minerals, and the acquisition of a magnetic remanence in weak fields. A deep understanding of these phenomena requires an interdisciplinary approach that spans from pure mathematics, to mineral physics, geochemistry, climatology and biology. Emerging techniques, such as nanoscale magnetic imaging, magnetic tomography of fine particles, single crystal demagnetization, as well as new paleointensity procedures, are now emerging frontiers that will be addressed in this session. Contributions describing novel instrumentation, (geo)magnetic data acquisition and analysis procedures, rock magnetism, paleointensity, and magnetic imaging techniques are welcomed, especially in a combined approach that allows a reliable cross-check of new theories and models.

Convener: Ramon Egli, Ludwig-Maximilians University, Department of Earth and Environmental Sciences, Theresienstr. 41, 80333 Munich, Germany; tel: +49 89 21804238; fax: +49 89 21804205; e-mail: egli@geophysik.uni-muenchen.de
Co-Conveners: Fabio Donadini, Scripps Institution of Oceanography, USA; Karl Fabian, Norwegian Geological Survey, Norway

I.14. Geo- and paleo-magnetic data constraints on geodynamo models

Div. I and SEDI

Geodynamo models are becoming increasingly sophisticated and can now be used to elucidate specific processes such as polarity reversal, characteristics of the secular variation, and morphology of the time-averaged field. At the same time paleomagnetic studies are producing more reliable data, in increasing quantities, for the ancient geomagnetic field, and satellites are producing better resolution in both time and space for the present geomagnetic field. This three-fold advance has allowed combinations of theory and measurement at a level not possible until now.

This session will focus on studies that use dynamo theory to address specific observational characteristics of the geomagnetic field, and those that use observations to constrain dynamo theories. We solicit contributions on observation, interpretation and modelling of geomagnetic variations on all time scales. We particularly welcome contributions featuring dynamo models and theory capable of explaining field reversals and excursions, and the long term behavior of the geomagnetic field.

Convener: David Gubbins, University of Leeds, School of Earth and Environment, Leeds LS2 9JT, UK; tel: +44 113 3435255; fax: +44 113 3435259; e-mail: gubbins@earth.leeds.ac.uk

Co-Conveners: Johannes Wicht, Max-Planck-Institut für Sonnensystemforschung, Germany; Roman Leonhardt, Montanuniversität Leoben, Austria

I.15. Rock magnetism: theory, experiments and observations

Div. I

Rock magnetism underpins our interpretation of numerous paleomagnetic and environmental magnetic phenomena, yet there are a number of areas within rock magnetism that are evolving rapidly and may lead to new understandings and applications. This session welcomes contributions to applied and fundamental rock magnetic research from all areas ranging from basic mineral identification to geological interpretation. Both field and laboratory-based studies are encouraged, as well as numerical simulations and theoretical applications. Topics for this session include, but are not limited to, magnetic and non-magnetic mineral identification techniques (e.g., low-temperature magnetometry, Mössbauer spectroscopy, magnetic hysteresis, electron microscopy, etc.), challenges in recovering characteristic remanent magnetisations (ChRMs), paleointensities (both relative and absolute) of the ancient geomagnetic field, magnetic granulometry, identifying pathways and degrees of magnetic mineral alteration, and methods for distinguishing mineral fabrics from induced and remanent magnetic anisotropies.

Convener: Adrian Muxworthy, Univ. London, Imperial College Sci. Technol. & Med., Dept. Earth Sci. & Engr, S. Kensington Campus, London SW7 2 AZ, UK;

tel: +44 207 59446442; fax: +44 207 594 47444; e-mail: adrian.muxworthy@imperial.ac.uk

Co-Conveners: Joshua M. Feinberg, Univ. Minnesota, USA; Claire Carvallo, Institut de Minéralogie et de Physique des Milieux Condensés, France; Koji Fukuma, Doshisha University, Japan

I.16. Environmental magnetism and biomagnetism

Div. I

The magnetic mineral inventory in marine and terrestrial sediments reflects various processes. These may occur before or during sediment deposition (e.g., weathering of the source material, transport, steady vs. non-equilibrium sedimentation, etc.) or after sediment burial (e.g., sediment mixing, authigenesis, biomineralization, geochemical alteration and dissolution, etc.). Each process can leave a characteristic fingerprint in the magnetic record, which may be obscured later on, thereby hampering the deconvolution of the record into the underlying processes. The aim of this session is to provide a platform to discuss recent

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developments towards establishing robust quantitative magnetic proxy parameters (e.g. for humid/arid conditions, warm/cold climates, high/low productivity, biogenic minerals, redox zonation, etc.), magnetic monitoring of pollution, comparative studies (geochemical vs. magnetic proxy parameters), unmixing models, and theoretical and conceptual models of authigenic/biogenic mineral formation in a wide range of environmental and Earth science applications.

Convener: Michael Winklhofer, Univ. Munich, Dept. Earth and Environmental Science, Marchioninistrasse 15, Munich, Germany; tel: +49 89 21804207; fax: +49 89 21804207; e-mail: Michaelw@lmu.de

Co-Conveners: Liping Zhou, Peking University, China; Christoph E. Geiss, Trinity College, USA; Ana M. Sinito, Universidad Nacional del Centro, Argentina

I.17. Paleomagnetism and rock magnetism of anomaly source rocks

Divs. I and V

Interest in magnetic anomalies has increased in recent years with the observation of large remanent anomalies on Mars, with the upcoming Swarm mission investigating the Earth's field, and with renewed interest in magnetic signatures of economic mineral deposits. This session invites contributions of paleomagnetic and rock magnetic studies on magnetic anomaly source rocks at all scales, including marine magnetic anomalies and regional and local crustal anomalies.

Convener: Laurie Brown, Univ. Massachusetts, Dept. Geosciences, Amherst, MA 01003, USA; tel: +1 413 545 0245; fax: +1 413 545 1200; e-mail: lbrown@geo.umass.edu

Co-Conveners: Silvana Geuna, Universidad de Buenos Aires, Argentina; Phil Schmidt, CSIRO Exploration and Mining, Australia; Sten-Åke Elming, Luleå University of Technology, Sweden

I.18. Open poster session

Div. I

This session is addressed to a broad audience in Geomagnetism, Rock-, Palaeo- and Environmental magnetism. Topics involving magnetic studies of different past and present environments, materials (natural and synthetic) as well as new methods and developments are appreciated. Multi-disciplinary approach involving other physical and chemical methods in addition to magnetic studies is encouraged. Contributions from other fields of natural sciences demonstrating relevance and new ideas for applications in Geomagnetism and Environmental Magnetism are worthwhile. Presentations that do not fit directly into the scope of the other magnetic sessions are also welcome. Although this session comprises only contributions as posters, we encourage authors presenting novel ideas, new interpretations and provocative theories in order to trigger attractive discussions at their poster board, and hence to promote oral communication among the authors and audience.

Convener: Neli Jordanova, Geophysical Institute BAS, Acad. Bonchev str. Bl. 3, BG 1113 Sofia, Bulgaria; tel: +359 2 979 39 58; fax: +359 2 971 3005; e-mail: vanedi@geophys.bas.bg

Co-Conveners: Marcos A. E. Chaparro, Institute of Physics IFAS-UNCPSA, Argentina; Tomasz Werner, Institute of Geophysics, Warsaw, Poland

Division II.

II.01. Electrodynamical coupling from the troposphere to the magnetosphere related to thunderstorm electrical activity

Div. II

Twenty years ago, a process of “upward” transfer of electrical thunderstorm energy was discovered and named “sprites.” Since then, other forms of electrical energy transport to the upper atmosphere and space, also originating in thunderstorms, have been discovered. They can be broadly classified into different categories: the Transient Luminous Events (TLEs), Terrestrial Gamma-ray Flashes (TGFs), X-ray emissions, etc. They span the distance from the troposphere to the magnetosphere. Satellite observations of thunderstorm-related TLEs, TGFs, X-ray emissions, etc. have demonstrated that they are global phenomena. Thunderstorms can also be the origin of gravity waves, while recent results have also demonstrated that sprites can produce infrasound waves. This session welcomes papers on all the electrodynamic effects of thunderstorms on the upper atmosphere, their interaction with the local medium, chemical effects, generation mechanisms and parent thunderstorms, infrasound and gravity waves, magnetospheric effects, similar processes on other planets, and all types of associated phenomena. At the 2009 IAGA meeting we will celebrate 20 years of sprite research.

Convener: Colin Price, Department of Geophysics and Planetary Sciences, Tel Aviv University, Ramat Aviv, Israel 69978; tel: +972-3-6406029; fax: +972-3-6409282; e-mail: cprice@flash.tau.ac.il

Co-Conveners: Gabriella Satori, Department of Aeronomy, Geodetic and Geophysical Research Institute, Hungary; Fernanda T. São Sabbas, Aeronomy Division (DAE), Instituto Nacional de Pesquisas Espaciais (INPE), Brazil; Elisabeth Blanc, Laboratoire de Detection et de Geophysique, Commissariat a l’Energie Atomique (CEA), France

II.02. New findings concerning the polar summer mesosphere/lower thermosphere/ionosphere region including the role of dusty plasmas

Div. II

The mesosphere/lower thermosphere/ionosphere (MLTI) region is now thought to contain large quantities of charged dust and aerosols. During the cold polar summer, the dust can be responsible for many unusual phenomena, such as noctilucent clouds (NLC) and polar mesospheric summer echoes (PMSE). Recently, there has been a flurry of new measurements and studies concerning the MLTI including the role of the dust and aerosols. This session will concentrate on features of the polar summer mesosphere, including composition, dynamics, including the origin, shape, size, and composition of the particles composing the contained dust. Both recent measurements and theoretical considerations will be highlighted. These considerations will also include such items as event dependence on background conditions, the frequency and global distribution of the induced phenomena, southern hemisphere/northern hemisphere differences, and long-term changes.

Convener: R. A. Goldberg, NASA/Goddard Space Flight Center, Laboratory for Space Weather, Code 674, Greenbelt, MD 20771, USA; tel: +1 301 286-8603; fax: +1 301 286-1648; e-mail: richard.a.goldberg@nasa.gov

Co-Conveners: F.-J. Lübken, Leibniz Institute of Atmospheric Physics, Germany

II.03. Long-term changes in the mesosphere, thermosphere and ionosphere

Div. II

Past two decades have enriched us with a variety of observational data from space, airborne and ground-based platforms on several parameters. The primary goal of this symposium is to discuss the most updated experimental and model results on long-term changes and trends in the stratosphere, mesosphere, thermosphere and ionosphere. The symposium will emphasize the emerging trend signals under Global Change and future predictions. Natural and anthropogenic effects on the Space weather system and processes by which they interact. The relative importance of long term natural and anthropogenic influences with their identification will be addressed. Both contributory and solicited papers are welcome.

Convener: Gufran Beig, Indian Institute of Tropical Meteorology, Dr. Bhabha Road, Pashan,
PUNE-411 008 India; fax: +91-20-25893825; e-mail: beig@tropmet.res.in

Co-Convener: J. Lastovicka, Institute of Atmospheric Physics, Academy of Sciences of the Czech Republic;
R. Akmaev, Cooperative Institute for Research in Environmental Sciences, University of
Colorado, USA

II.04. Solar and lower atmospheric forcing of the middle atmosphere-ionosphere system

Div. II

The Earth's atmosphere as a whole (including the ionosphere embedded in the thermosphere) is a coupled system influenced by the solar and magnetosphere processes from above and upward propagating disturbances from below. The coupling processes are crucial to our understanding of climate change drivers and space weather events. The symposium invites observational and modelling studies that address the dynamics of the middle and upper atmosphere with emphasis on chemistry and transport, heat sources and sinks, solar and lower atmospheric forcing and the associated feedback on dynamics. Contributions are sought that focus on atmospheric waves (acoustic-gravity, planetary, tides), wave-wave and wave-mean flow interactions, atmospheric electricity and electrodynamic coupling processes. New results on the mesosphere-lower thermosphere wave seeding (wave penetration and secondary wave generation) of ionospheric disturbances and the solar influence on the vertical propagation condition of the waves in the middle atmosphere are particularly welcome. The Symposium will provide the opportunity to review the current progress in this field and suggest future direction of research.

Convener: Dora Pancheva, Geophysical Institute, Bulgarian Academy of Sciences, Acad. G. Bonchev Str.,
Block 3,1113 Sofia, Bulgaria; tel: +359 2 9793308; fax: +359 2 9713005;
e-mail: dpancheva@geophys.bas.bg

Co-Convener: Ed. Kazimirovsky, Institute of Solar-Terrestrial Physics, Russian Academy of Sciences, Russia

II.05. Energetic particle precipitation into the atmosphere: sources and consequences

Divs. II and III

Particle precipitation into the atmosphere is one of the mechanisms for energetic electron loss from the Van Allen radiation belts. This is particularly significant during and after geomagnetic storms, when the loss rate, and the source population, can both increase. This session is targeted at both ground-based and satellite experimental observations, as well as theoretical investigations, into the precipitation of energetic electrons (>20 keV) into the D-region ionosphere and below. Papers considering the precipitation drivers, the nature of the particle fluxes, or the impact of the precipitation on the ionosphere or atmosphere are welcome.

Convener: Mark Clilverd, British Antarctic Survey, Madingley Road, Cambridge CB3 0ET,
UK; tel: +44-1223-221541; fax: +44-1223-362616; e-mail: macl@bas.ac.uk

Co-Convener: Craig Rodger, University of Otago, New Zealand

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II.06. Equatorial atmosphere-ionosphere interactive processes: vertical and latitudinal coupling and magnetospheric forcing

Divs. II and III

The Earth's equatorial and low-latitude atmosphere-ionosphere system is subject to significant modification due to dynamical and electro-dynamical coupling processes arising from upward transport of energy and momentum by gravity-, tidal- and planetary waves originating from lower heights and extra-tropics, which results in its large zonal, day-to-day and inter-annual variability. Magnetospheric/interplanetary forcing through disturbance electric fields and energy deposition at high latitudes with the consequent coupling to equatorial latitudes represents another important source of variability of the system at different time scales. Important new results from ground based instruments networks, space borne observations and simulation studies on the different coupling processes and sources of variability of the system have been forthcoming in recent years. This symposium will address all aspects of the dynamics, energetics and coupling processes of the atmosphere-ionosphere-system of the latitude region extending from the equator to mid-latitudes. Results are welcome from experimental, theoretical and modelling investigations, and on manifestations of the coupling process through the responses of the system to magnetic storms and upward propagating atmospheric wave disturbances etc. in terms of small and large structures, TEC, winds and waves, temperatures, plasma drifts, electric fields, currents, precursor conditions for equatorial plasma bubble development, anomaly and electrojet variability etc.

Convener: M. A. Abdu, Instituto Nacional de Pesquisas Espaciais – INPE, Ave. dos Astronautas 1758; 12201-970 São Jose dos Campos, SP, Brazil; tel: +55 12 345 6797; fax: +55 12 345 6990; e-mail: maabdu@dae.inpe.br

Co-Conveners: Takuji Nakamura, Kyoto University, Japan; B. T. Tsurutani, Jet Propulsion Laboratory, USA

II.07. Forcing of the middle and high latitude thermosphere from above and below

Div. II

New aspects of thermospheric dynamics can now be studied based on observations from low-Earth orbiting satellites, such as CHAMP and GRACE, carrying sensitive accelerometers on board. From the recorded air drag it is possible to derive the details of mass density and wind distribution on global scale. The dependence of the thermosphere on local time, season and solar flux has clearly been revealed from these observations and can be compared with model predictions. Rather new and unpredicted are the thermospheric features related to geomagnetic field distribution, e.g. air up-welling in the cusp region and equatorial mass anomaly aligned with the dip equator. Another area of ongoing research is the response of the thermosphere to magnetic activity, which is poorly reflected by the models. Only recently the prominent influence of non-migrating tides on the thermospheric dynamics has been realized. In particular, the signatures of the eastward propagating diurnal wave-3, DE₃, are strong during large parts of the year. The origin of the DE₃ tidal mode is related to processes in thunderstorm clouds in the tropics. Papers are solicited for this session on any of the above or related topics that are of importance for determining the structure and dynamics of the thermosphere. This includes observations or modelling of the thermospheric coupling with magnetosphere, ionosphere or lower atmosphere. Papers announcing new possibilities in T-I research with the upcoming ESA constellation mission SWARM are particularly welcome.

Convener: Hermann Luehr, GeoForschungsZentrum (GFZ), Telegrafenberg, D-14473 Potsdam, Germany; tel: +49 331 288-1735; fax: +49 331 288-1732; e-mail: hluehr@gfz-potsdam.de

Co-Conveners: Alan Aylward, University College London, UK

II.08. Remote sensing of the plasmasphere, and coupling to the ionosphere

Divs. II and III

The dynamics of the plasmasphere plays an important role in Earth's space weather system, and is governed by solar activity. Also the plasmasphere is strongly coupled to the ionosphere by means of electromagnetic fields and currents. The plasmasphere forms the cold plasma background for the overlapping 'warm' (ring current) and 'hot' (radiation belts) regions and its plasma distribution is a fundamental parameter for the description and modelling of various physical processes in these regions. This session focuses on various remote-sensing techniques: active and passive ground-based measurements using ULF-ELF-VLF electromagnetic waves as well as satellite-based methods including radio sounding and imaging. Also included are the coupling processes related to cold plasma density.

Convener: János Lichtenberger, Space Research Group, Department of Geophysics, Eötvös University, Budapest, Pf 32, H-1518, Hungary; tel: +36-1-372 2934; fax: +36-1-372 2927; e-mail: lityi@sas.elte.hu

Co-Convener: Fred Menk, University of Newcastle, NSW, Australia

Division III.

III.01. Magnetopause and magnetosheath processes: reconnection, diffusion and boundary dynamics

Div. III

The magnetopause and its boundary layers are the prime sites of mass, momentum and energy transfer from the solar wind into the magnetosphere. Understanding the physics of these processes is central to magnetospheric physics. Observations of these regions are continuously ongoing owing to several dedicated spacecraft missions. Space data are further supported by observations from ground based observatories. New progresses in simulations (MHD, hybrid and kinetic) and theoretical knowledge allow the physics of reconnection and boundary layer processes to be elucidated as never before. This session invites contributions on a wide range of magnetopause-related topics, including observations of the structure of the magnetopause current layer, its boundary layers and their transient variations, the signatures of the various forms of plasma interactions, such as magnetic reconnection, and their relevance to solar wind-magnetosphere coupling. The basic physics of reconnection, plasma diffusion and boundary layer formation at the magnetopause, as well as the magnetosheath processes that influence magnetopause dynamics are highly relevant.

Convener: Claire Foullon, Mullard Space Science Laboratory, University College London, Holmbury St. Mary, Dorking, Surrey, RH5 6NT, UK; tel: +44 1483 204293; fax: +44 1483 278312; e-mail: cf2@mssl.ucl.ac.uk

Co-Convener: Charles J. Farrugia, University of New Hampshire, USA; Benoit Lavraud, Centre d'Etude Spatiale des Rayonnements – CNRS, Toulouse, France

III.02. Advances in substorm research from multi-point observations in the magnetosphere

Div. III

Substorm research has reached a new era with recent advances in the multi-point observational capabilities in the magnetosphere and simultaneous ground-based observations. THEMIS's multi-point observations allow us to study the interplay between the midtail and inner magnetospheric substorm processes covering key regions of energy transport and dissipation region simultaneously. Cluster local multi-point

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observations allow us to measure local instabilities and obtain local properties of the propagation of the current sheet disturbances. Combining THEMIS, Cluster, and other spacecraft at geosynchronous, low-altitude, solar wind, and mid/near tail region, enables studies such as evolution of phenomena along field lines and large-scale solar wind-magnetotail interaction. Comparisons with advanced modelling, specific to individual events, are expected to help bring such observations in a proper physical context. This session is devoted to multi-point observations and relevant modeling studies on substorms. We also solicit papers dealing with new analysis techniques determining propagation of the substorm disturbance using multi-point data in space and on the ground.

Convener: Rumi Nakamura, Space Research Institute, Austrian Academy of Sciences, Schmiedlstr. 6, A8042 Graz, Austria; tel: +43-316-4120573; fax: +43-316-4120590; e-mail: rumi.nakamura@oeaw.ac.at

Co-Convener: Vassilis Angelopoulos, IGPP/ESS, University of California, Los Angeles, USA

III.03. Magnetosphere-ionosphere interactions and auroral processes

Divs. III and II

Magnetosphere-ionosphere coupling entails the transport of electromagnetic power, particle energy, and mass between the ionosphere-thermosphere and the magnetosphere, and feedback between these regions. The electrodynamic response of the system gives rise to convection, the flow of electrical currents within the system, and dissipation of electromagnetic power, especially in the ionosphere. The inertial interaction involves redistribution of mass and momentum throughout the coupled system, which regulates the ring current, local plasma instabilities, and magnetic reconnection. We now recognize that the electrodynamic response is strongly influenced by the inertial response and vice versa, and that a comprehensive analysis of the coupling requires a unified approach. Moreover, the coupling spans low to high latitudes during periods of strong solar wind forcing. This symposium invites papers on observations, theory, simulation and modeling covering a broad range of topics: How are magnetospheric dynamics modified by M-I coupling, and how does the coupling influence the state of the ionospheric plasma and conductivity? What are the processes involved in plasma inflow/outflow, under what conditions do they occur, and how do they couple the magnetosphere and ionosphere? What role do waves and plasma instabilities play in scale-interactive M-I coupling? How does the M-I interaction mediate cross-latitude coupling? How are these processes manifested in auroral precipitation?

Convener: William Lotko, Thayer School of Engineering, Dartmouth College, Hanover, NH 03755 USA; tel: 1-603-646-3485; e-mail: wlotko@dartmouth.edu

Co-Conveners: Yusuke Ebihara, Nagoya University, Japan; Karl-Heinz Glassmeier, Technische Universität Braunschweig, Germany

III.04. New perspectives of the magnetosphere-ionosphere system from global models, synoptic observations, and data assimilation

Divs. III and II

Increasingly sophisticated global models and new developments in ground-based and space-borne observational capabilities have contributed greatly to the understanding of the magnetosphere-ionosphere system. Comparisons of numerical simulations from global models with observations from multiple platforms provide a means to test and improve our current understanding of the physical processes pertained to this coupled system. Papers on comparative modeling studies and ground- and space-based multi-instrument observations of global and mesoscale phenomena of the magnetosphere and ionosphere are solicited. Papers that focus on new numerical techniques and data assimilation methods to reveal new features of the magnetosphere-ionosphere system are particularly suitable to this session.

Convener: Gang Lu, NCAR, High Altitude Observatory, 3080 Center Green, Boulder, CO 80301, USA; tel: +1-303-497-1554; fax: +1-303-497-1589; e-mail: ganglu@ucar.edu
Co-Conveners: Stefan Eriksson, LASP, University of Colorado, USA; Joachim Raeder, University of New Hampshire, USA

III.05. The plasma sheet - ionosphere, a coupled system: Sinks, sources, transport and the role of Region 2 currents

Divs. III and II

Observations, modeling, and theory have now reached the point where the plasma sheet and its coupling to the ionosphere can be considered as a whole, rather than treated as separate issues within ionosphere or plasma sheet physics. Therefore, this is now a topic requiring participation from both Division II and Division III. The plasma sheet is formed from particles entering directly and indirectly from the ionosphere and solar wind. The structure and asymmetry of its pressure, temperature, density, and entropy are determined by the particle entry, transport, and loss processes. All these processes are in turn strongly affected by the electrodynamic coupling with the ionosphere. The plasma sheet dynamics, in particular through the Region 2 coupling currents, strongly affects the ionosphere via particle precipitation and Joule heating. Furthermore, the Region 2 currents cause strong modifications of the global ionospheric electric field distribution, at middle latitudes by shielding and penetrating electric fields, at higher latitudes supporting the SAPS, and in the auroral region causing the Harang electric field reversal. Papers are solicited for this session on any of the above or related topics that are of importance to determining the formation of the plasma sheet (sources and losses), its structure and dynamics and/or the effects electrodynamic coupling has on ionospheric and magnetospheric processes. Papers dealing with the system as a whole or with a near-Earth manifestation of the coupling processes are also appropriate.

Convener: Larry Lyons, Department of Atmospheric and Oceanic Sciences, UCLA, 405 Hilgard Ave., Los Angeles, CA 90095-1565, USA; tel: +1 (310) 206-7876; fax: +1 (310) 206-5219; e-mail: larry@atmos.ucla.edu

Co-Conveners: Simon Wing, The Johns Hopkins University, Applied Physics Laboratory, USA; Sorin G. Zaharia, Los Alamos National Laboratory, USA; Hermann Luehr, GeoForschungsZentrum (GFZ), Germany; Elizaveta Antonova, Lomonosov Moscow State University Skobeltsyn, Russia; Jay Johnson, Princeton Univ, Plasma Physics Lab, USA

III.06. Techniques and instrumentation in space plasma physics

Div. III

Space and ground based instrumentation has shown significant advances in technology in recent years. These developments enable a new generation both of measurements and of data acquisition and logistical support for space and ground based instrumentation. Not only have advances been made to improve performance of individual instruments, for example, space based imagers and sensors but also in distributed space and ground based systems to enable improved reliability and autonomy enabling large networks of sensors. New techniques in numerical simulation, operation and analysis of data have been developed to take full advantage of the broad range of measurements provided. This session invites papers describing instrument technologies and developments applied to space physics including both space and ground based as well as papers describing new techniques of measurement, data analysis, calibration and instrument operations not already covered by the other sessions.

Convener: Alain Hilgers, ESA-ESTEC, Keplerlaan 1, 2200AG Noordwijk, The Netherlands; tel/fax: +31 71565 3747/4999; e-mail: Alain.Hilgers@esa.int

Co-Conveners: David Cooke, Space Vehicles Directorate, Air Force Research Laboratory/VSBX Mass., USA; Hermann Luehr, GeoForschungsZentrum, Germany; Hideyuki Usui, Kyoto University, Japan

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III.07. Wave and particle dynamics in the ring current and radiation belts/geomagnetic storms

Div. III

Recent progress in the understanding of radiation-belt energization and loss processes, as well as ring-current build-up and decay, has shown that the system is highly variable, and relies on a variety of different waves and other transient phenomena to couple the dynamic processes occurring in the inner magnetosphere. Multiple energization and loss process occur simultaneously, over a variety of spatial scales ranging from microscopic wave-particle interactions, to global-scale interactions, and a variety of temporal scales, from milliseconds to hours. In this session, we will focus on the dynamical behavior of radiation-belt and ring-current particles, the global variability and coupling to the inner magnetosphere, and the nature and spatiotemporal distribution of the underlying waves that control this behavior. In particular we seek contributions demonstrating the spatiotemporal distribution of various waves, including electromagnetic ion cyclotron (EMIC) and whistler mode chorus wave activity, magnetosonic, ECH and other; the role of the ring current in global magnetopause losses due to the inflation of the geomagnetic field; and when ultra low frequency (ULF) waves are efficient in energizing radiation belt particles. Future directions and needs for the field will be captured for future meetings (and possible for a special publication issue if so decided) by holding a panel discussion at the end of the session.

Convener: Jacob Bortnik, Dept of Atmospheric and Oceanic Sciences, Room 7115, Math Sciences Bldg., UC Los Angeles, CA 90095-1565, USA; tel: +1 (310) 825-1659; fax: +1 (310) 206-5219; e-mail: jbortnik@gmail.com

Co-Convener: Sasha Ukhorskiy, Johns Hopkins University Applied Physics Laboratory, USA

III.08. Other magnetospheric worlds

Div. III

This session will focus on a comparative view of planetary magnetospheres and their interactions with satellites and rings. With global data from orbiters of both Jupiter and Saturn in hand, it is now topical to consider these and other globally magnetized planets using a comparative approach. Potential subjects of comparison include magnetic fields and current systems, planetary and satellite ionospheres, magnetospheric interactions with satellites, sources of charged particles (planet, satellite or solar wind), their energization and loss, and system periodicities. Analyses and/or modeling of data obtained in situ or remotely are welcome as are simulations. Magnetospheres of the outer planets, Mercury, and the satellite Ganymede are all within the scope of this session. An example of the spirit of this session is comparing the various periodicities that occur at Jupiter and Saturn and understanding their similarities and differences. This will lead to more general predictions about other rapidly rotating magnetospheres.

Convener: Chris Paranicas, Johns Hopkins Univ. APL MS MP3-E128, 11100 Johns Hopkins Rd., Laurel, MD 20723, USA; tel : +1 240-228-8652; fax: +1 240-228-0386; e-mail: Chris.paranicas@jhuapl.edu

Co-Conveners: Elias Roussos, Max-Planck-Institut fuer Sonnensystemforschung, Germany; Krishan Khurana, University of California at Los Angeles, USA

III.09. Conjugate and inter-hemispheric studies of polar geophysical phenomena: Results from the International Polar and Heliophysical Years (IPY/IHY)

Divs. III and II

We invite contributions from space- and ground-based observations, modelling and theory relating to the similarities and differences between the upper atmospheres of the two polar regions, and on the coupling and mapping between the magnetosphere and ionosphere. Inter-hemispheric symmetries provide stringent tests for models and theories of the coupled magnetosphere-ionosphere-thermosphere system. To this end, the IPY/IHY has provided unprecedented ground-based instrumentation in both hemispheres and in space, including the Themis and Cluster spacecraft missions and their associated ground-based support by optical, magnetometer and riometer arrays, incoherent and coherent radars (AMISR, EISCAT, SuperDARN) and much more. To deliver the full potential of this opportunity requires improved knowledge and understanding of the relationship between the magnetosphere and ionosphere and thermosphere, particularly the magnetic conjugacy.

Convener: Mervyn P. Freeman, Natural Complexity Programme, British Antarctic Survey, High Cross, Madingley Road, Cambridge, CB3 0ET, UK; tel: +44-1223-221543; fax: +44-1223-221226; e-mail: mpf@bas.ac.uk

Co-Conveners: Allan T Weatherwax, Siena College, USA; Kirsti Kauristie, Finnish Meteorological Institute, Finland

III.10. ULF Waves as magnetospheric probes

Div. III

ULF waves, ranging from ion cyclotron waves to MHD waves, can provide valuable diagnostics of the space environment, such as the mass density distribution, the ion composition, and the location of boundary regions. The timing of their occurrence also provides early signals of various dynamical processes such as the propagation of solar wind-driven sudden impulses, substorm onsets, and the enhancement of radiation belt particle fluxes. This session solicits papers that address recent progress in theoretical and/or observational ULF wave studies. Studies of the basic physics of magnetospheric waves associated with any kind of ion motions in either terrestrial or planetary magnetospheres are welcome. Investigations of the role of ULF waves as magnetospheric probes are particularly encouraged; these include the subjects of magnetoseismology, heavy ion mass loading, and new ULF wave indices.

Convener: Dong-Hun Lee, Kyung Hee University, Dept of Astronomy and Space Science, Yongin, Kyunggi 449-701, Korea; tel: +82-31-201-2449; fax: +82-31-204-7082; e-mail: dhlee@khu.ac.kr

Co-Conveners: Peter J. Chi, UCLA, Institute of Geophysics and Planetary Physics, USA; Mark J. Engebretson, Augsburg College, MN, USA; Karl-Heinz Glassmeier, TU Braunschweig, Germany

III.11. Reporter reviews

Div. III

Research activities in the past two years in 8 themes will be given by the Reporters. The themes are (1) Magnetospheres other than Earth, (2) Global dynamics, (3) Tail dynamics, (4) Auroral phenomena, (5) Magnetopause and boundary layer, (6) ULF waves, (7) Inner-magnetosphere, and (8) Wave-particle interaction in the inner-magnetosphere.

Convener: Anna Milillo, INAF/Istituto di Fisica dello Spazio Interplanetario, via del Fosso del Cavaliere 100, 00133 Rome, Italy; tel: +39 06 49934387; fax +39 06 49934383; e-mail: anna.milillo@ifs-roma.inaf.it

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Division IV

IV.01. New solar and interplanetary results

Div. IV

Continuous observations from solar and heliospheric missions have been advancing our knowledge of the physical and dynamical properties of the Sun and the solar wind. These observations, along with theory and models, continue to advance and pose challenges on our understanding of the responsible physical processes. This session invites contributions covering new results from observations from space and ground-based observatories, theory and modeling of different aspects of the Sun and the heliosphere, including its interior, extended atmospheres and the solar wind. This session is aimed at stimulating exchange and promoting discussion on the recent developments derived from observations and latest research in the field.

Convener: Yuan-Kuen Ko, Naval Research Laboratory, Code 7674YKK, 4555 Overlook Ave., SW, Washington DC, 20375-5320, USA; tel: +1 202 767-6199; fax: +1 202 404-7997; e-mail: yko@ssds.nrl.navy.mil

Co-Conveners: Michael L. Kaiser, NASA Goddard Space Flight Center, USA; Takashi Sekii, National Astronomical Observatory of Japan; Robert F. Wimmer-Schweingruber, University of Kiel, Germany

IV.02. From micro- to macro-scales in the heliosphere and magnetospheres

Divs. IV, III and II

The NRC Panel Report on Theory, Modeling, and Data Exploration identified “coupling complexity” as a central challenge facing the further development of modeling and simulation in space physics over the next decade. Here, coupling complexity refers to the class of problems or systems that consist of significantly different scales, regions, or particle populations, and for which more than one set of defining equations or concepts is necessary to understand the system. Coupling complexity is very well represented by physical processes occurring throughout the heliosphere and magnetosphere. In the far outer heliosphere, such processes may be identified within that part of the heliosphere whose properties are determined by the solar wind interaction with the local interstellar medium, and especially the coupling of neutral interstellar hydrogen to the plasma. Other problems involve the direct coupling of plasma kinetic to macroscopic processes. For example the understanding of reconnection has taken significant strides forward with the coupling of kinetic physics to the more traditionally understood MHD models, as has our understanding of collisionless shock waves. Another well studied example is particle acceleration in numerous different environments. Such examples abound throughout heliospheric and magnetospheric physics and the goal of this symposium is to explore the common elements across sets of problems that directly incorporate kinetic physics into macroscopic models, either through direct simulations or using transport equation processes.

Convener: Gary P. Zank, Institute of Geophysics and Planetary Physics, University of California, Riverside, CA 92521, USA; tel: +1 951 827-4508; fax: +1 951 827-6229; e-mail: Gary.zank@ucr.edu

Co-Conveners: Igor Veselovsky, Moscow State University, Russia; Quanming Lu, University of Science and Technology of China

IV.03. Universal heliophysical processes

Divs. IV, II and III

The study of the physical space directly influenced by Sun's mass and electromagnetic emissions has been greatly enhanced since the dawn of the space era half a century ago. This space, now known as the heliospace, serves as a great laboratory to study numerous physical processes, thanks to the vast array of ground and space-based instruments that measure various physical quantities. The observational capabilities collectively form the Great Observatory to make scientific investigations not envisioned by individual instrument teams. The International Heliospherical Year (IHY) program has been promoting scientific investigations on the universality of physical processes such as discontinuities including shocks, particle acceleration, dynamo, magnetic reconnection, magnetic flux ropes, plasma-neutral matter interactions, turbulence, among others. The session will also consider discussion on the solar-cycle variations in the heliosphere and how it is related to the solar dynamo. This session will highlight scientific investigations on these and related topics and showcase the knowledge gained since the birth of Space Science as discipline in 1957. The session will feature several invited reviews by leading experts as well as contributed talks and posters focusing on observations, theory and modeling of the universal heliophysical processes.

Convener: Nat Gopalswamy, NASA Goddard Space Flight Center, Code 695.0, Greenbelt, MD 20771, USA; tel: +1 301 286-5885; fax: +1 301 286-1433; e-mail: Nat.Gopalswamy@nasa.gov

Co-Conveners: Károly Kecskeméty, KFKI Research Institute for Particle and Nuclear Physics, Hungary; Barbara J. Thompson, NASA Goddard Space Flight Center, USA; Bojan Vrsnak, Hvar Observatory Faculty of Geodesy, Zagreb, Croatia

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IV.04. Advances in coordinated Sun-Earth system science through CAWSES and ILWS

Divs. IV, II and III

Recent observational advances have allowed us to study the changing Sun with unprecedented detail. Many dominant research topics have become broader as we seek to connect changes at the Sun and of the Heliosphere to changes in the Earth's magnetosphere and atmosphere through a deeper understanding of the physics obtained from interdisciplinary approaches to problems. The challenge of conducting interdisciplinary research in a plasma system as large and complex as one sitting between the Sun and Earth within the heliosphere, which is itself embedded in the interstellar medium, demands long-term, carefully coordinated international cooperation. In response to this need, the Climate and Weather of the Sun-Earth System (CAWSES) and International Living With a Star (ILWS) programs were created. Complementary in their nature and goals, the two programs combine resources from the national and international communities to both advance the state of our knowledge and coordinate and plan Sun-Earth System research missions of the present and future. For this session, contributions on the research highlights from the CAWSES and ILWS programs related to space weather and space climate, including external forcing of the terrestrial climate and the atmospheric response will be solicited and key research challenges for the next five years will be discussed.

Convener: W. William Liu, Space Science Branch, Canadian Space Agency, 6767 route de l'Aéroport, Saint-Hubert, Québec J3Y 8Y9, Canada; tel: 450-926-4510; fax: 450-926-4766; e-mail: william.liu@space.gc.ca

Co-Conveners: Horst Fichtner, Ruhr-Universität Bochum, Germany

IV.05. Neutral-plasma interactions for planets, moons, asteroids, and comets

Divs. IV and III

This session will be a forum for presenting recent progress in the space plasma physics of solar system bodies without measurable dynamo magnetic field. The interaction of Mars with the solar wind is mainly of the atmospheric type like Venus but with strong modifications of the local ionospheric structure by the crustal fields. Their exosphere makes these planets also share common physical processes with comets. The interaction of Titan with the fast co-rotating plasma inside the magnetosphere of Saturn is another example of such interaction in a different parameter range. The session will be in particular devoted to recent results from Mars Express, Venus Express, and from Cassini around Saturn's moons including Titan, Enceladus, Rhea and others. Paper relating to Rosetta's Mars and asteroid flybys are also encouraged. Numerous open issues include upstream waves, plasma boundaries and their dynamics, atmospheric and ionospheric escape, influence of Martian crustal fields, etc. Recent results in data analysis and theoretical results, including numerical simulations are encouraged. Papers related to forthcoming space missions (including Rosetta at its comet target and New Horizons) or other future projects are also welcome.

Convener: Christian Mazelle, Centre d'Etude Spatiale des Rayonnements, CNRS / University of Toulouse / Observatoire Midi-Pyrénées, 9, Avenue du Colonel Roche, BP 4346, 31029 Toulouse Cedex 4, France; tel. +33 5-6155-7775; fax +33 5-6155-6701; e-mail: christian.mazelle@cesr.fr

Co-Conveners: A.J. Coates, Mullard Space Science Laboratory, UK; N. Terada, National Institute of Information and Communications Technology, Japan

IV.06. Solar and interplanetary radio emissions

Div. IV

The main goal of this session is to present and discuss recent developments and achievements concerning non-thermal radio emissions from the Sun and the heliosphere, with their links with solar energetic particles events and/or CMEs. Contributions to theoretical, numerical and observational aspects are welcome. From the theoretical and numerical perspectives, topics cover all aspects concerning the modelling of radio, plasma wave and particle phenomena. From the observational point of view, new developments and results in the fields of ground-based giant radio telescopes (e.g. LOFAR, FASR) and space-borne observatories (STEREO, Wind, Ulysses) are encouraged.

Convener: Milan Maksimovic, CNRS & LESIA, Observatoire de Paris, 92195 Meudon, France; tel: +33 1 4507 7669; fax: +33 1 4507 2806; e-mail: milan.maksimovic@obspm.fr

Co-Conveners: Bo Li, University of Sydney, Sydney, Australia; Dalmiro Maia, Porto University, Portugal

IV.07. Reporter reviews

Div. IV

This session contains reviews of recent advances, both theoretical and observational, on the Sun, solar wind, and heliosphere. Given by active researchers, these reviews will cover a comprehensive range of topics in a manner that is accessible to researchers from other IAGA Divisions, while offering synthesis and context to Division IV scientists. All talks in this session are by invitation only.

Convener: Mari Paz Miralles, Harvard-Smithsonian Center for Astrophysics, 60 Garden St., MS-50, Cambridge, MA 02138, USA; tel: +1 617 496-7925; fax: +1 617 495-7455; e-mail: mmiralles@cfa.harvard.edu

Division V

V.01. Connecting space and ground-based magnetic data for scientific benefit

Div. V

In the early 21st century continuing advances in observatory practice, ongoing surveys, and unprecedented continuous monitoring by satellite missions present a wealth of geomagnetic data. Each type of observation has different advantages in terms of spatial and temporal coverage, amplitudes of the various sources recorded, and measurement accuracy. In order that maximum scientific benefit is extracted, strategies for combining these diverse data classes are required. Contributions are solicited describing how ground and space-based geomagnetic data might be effectively combined to improve scientific knowledge of the terrestrial magnetic field and its space environment. We welcome papers dealing with topics including the core-field, lithospheric field and induction effects as well as those studying ionospheric or magnetospheric current systems and solar-terrestrial interactions.

Convener: Christopher C. Finlay, Institut für Geophysik, ETH Zurich, Honggerberg, CH-8093, Zurich, Switzerland; tel: +41 44 633 75 28; fax: +41 44 633 10 65; e-mail: cfinlay@erdw.ethz.ch

Co-Conveners: Manuel Catalan, Real Instituto y Observatorio de la Armada, Spain; Terence J. Sabaka, NASA Goddard Space Flight Center, USA

V.02. Geomagnetic observatory practice, instrumentation and network

Div. V

High-quality data from magnetic observatories are crucial to understand the evolution of the geomagnetic field on a variety of time-scales from seconds to centuries. This session aims at bringing together those who are involved in all aspects of data collection, from the measurements to making data available to the community. We invite contributions that examine these processes from all points of view. New contributions on magnetic observatory instrumentation, data collection and measurement practice, as well as the scientific evaluation of these observations are especially welcome.

Convener: Aude Chambodut, Ecole et Observatoires des Sciences de la Terre, Department of Magnetic Observatories, Strasbourg, France; tel: +33 (0)3 90 24 00 81; fax: +33 (0)3 90 24 01 25; e-mail: aude.chambodut@eost.u-strasbg.fr

Co-Conveners: Ikuko Fujii, Kakioka Magnetic Observatory, Kakioka, Japan

V.03. Geomagnetic jerks and rapid core field variations

Divs. V and I, SEDI

Despite some decades of studying geomagnetic jerks and some progress in understanding these phenomena, some of their characteristics are still in question. The session aims at discussing recent advances of our knowledge on the present state and recent evolution of the Earth's core. We welcome all contributions that open new ways to make inferences on this aspect of core dynamics. Improved combination and analysis of ground and satellite data may help us to make inferences on rapid temporal changes of the core field, from monthly to decadal scales. Comparison of flows within the liquid core with other geophysical and planetary parameters may also be very useful. Geodynamo models, both numerical and experimental, showing short-term variations would be particularly appropriate.

Convener: Mioara Manda, GeoForschungsZentrum Potsdam, Telegrafenberg, 14473 Potsdam, Germany; tel: +49 331 288 1230; fax: +49 331 288 1235; e-mail: mioara@gfz-potsdam.de

Co-Conveners: Richard Holme, Univ. of Liverpool, UK; Jonathan Mound, Univ. of Leeds, UK

V.04. Application, history and evolution of geomagnetic indices

Div. V

The first continuous recordings at magnetic observatories revealed the high morphological complexity and variability of the geomagnetic field transient variations. It was then discovered that the degree of smoothness of observed magnetic variations significantly change from one day to the other. The first geomagnetic indices thus aimed at characterizing the degree of disturbance of geomagnetic variations observed during a UT day.

Two milestones mark the history of geomagnetic indices. The first one is the introduction by Bartels, Mayaud, and Sugiura of geomagnetic indices making it possible to achieve a quantitative monitoring of the various components of geomagnetic activity. The second one is the ongoing digital revolution that began at the turn of the millennium with the massive development of facilities for the acquisition and dissemination of digital magnetic data.

For decades, geomagnetic indices proved to be efficient tools in Earth's magnetospheric and ionospheric dynamics, and still they do. In particular, geomagnetic indices are key data for Space Weather investigations. Recently, geomagnetic indices have also been used to study the long-term development of the Sun and the solar wind. These studies form an essential part of Space Climate.

This session aims at revisiting the history of geomagnetic indices, in particular as a tribute to the fathers of modern geomagnetic indices. It also aims at making a panorama of the present situation in the field of geomagnetic indices: already proposed indices that take advantage of facilities of the digital era; user needs and scientific challenges; which indices for the future?

Convenor: Michel Menvielle, C. E. T. P., 4, Avenue de Neptune, F-94107 Saint Maur Des Fosses, France; tel: + 33 1 45 11 42 34; fax: + 33 1 48 99 44 33; e-mail: michel.menvielle@cetp.ipsl.fr

Co-Convenors Nandini Nagarajan, National Geophysical Research Institute, India; Kalevi Mursula, Univ. of Oulu, Finland

V.05. Improved modelling of the lithospheric magnetic field

Div. V

During the last years, the determination of magnetic fields has been improved thanks to the amount of available data from the Earth's surface to the satellite altitudes. Concerted international efforts to compile and publish existing data, like the World Digital Magnetic Anomaly Map project, represented a key motivation for merging airborne and satellite data. These improvements were also possible thanks to the development of new modelling techniques that were prompted by present and forthcoming satellite missions. This abundance of data offers unprecedented possibilities, as well as new challenges, to model the magnetic field at very various spatial scales.

In this session, we invite contributions on all topics related to high resolution mapping and modelling of the magnetic field with a special focus on its lithospheric part using satellite, aeromagnetic and ground magnetic datasets (individually or jointly). We particularly welcome contributions that interpret high resolution spatial modelling and their physical processes at various altitudes.

Convenor: Erwan Thebault, Institut de Physique du Globe, Laboratoire de Geomagnetisme, 4 place Jussieu, Paris, 75252, France; tel: +33 1 44 27 49 34; fax: +33 1 44 27 37 77; e-mail: ethebault@ipgp.jussieu.fr

Co-Convenors: Juha Korhonen, Geological Survey of Finland

V.06. Tectonic interpretation of satellite, air-borne, ground and marine geomagnetic data

Div. V

The multitude of geomagnetic data available from satellite, ship- and air-borne, and ground observations are now available for geological and tectonic interpretation of the structure, composition and dynamics of the Earth's crust. Recently, much of these available data were combined together to derive the first ever World Digital Magnetic Anomaly Map (WDMAM) and is available to the geomagnetic community in digital form. We solicit contributions relating to the modelling and interpretational studies of any or a combination of the available geomagnetic data. We also invite papers relating to the interpretation of WDMAM map and modelling strategies being developed for new versions.

Convener: Kumar Hemant, Planetary Geodynamics Laboratory, Goddard Space Flight Center, NASA, Code 698, 8800 Greenbelt Road, Greenbelt, MD 20771 USA; tel: +1 (301)614-6472; fax: +1 (301)614-6522; e-mail: hemant@puuoo.gsfc.nasa.gov

Co-Conveners: Isabel Blanco Montenegro, Universidad de Burgos, Spain; D. Ravat, Southern Illinois University, USA

V.07. Results from the decade of geopotential research and future prospects

Div. V

The 'Decade of Geopotential' Research, inaugurated with the launch of Ørsted in 1999, and continuing with CHAMP, is an international effort to promote and coordinate a continuous monitoring of the geopotential (magnetic and gravity) field variability in the near-Earth environment. This year will mark the end of the Decade, and this session is intended both as a retrospective on the accomplishments to date from the high quality data returned from several near-Earth satellites, and an opportunity to look forward to future geopotential field missions such as the three-satellite constellation mission Swarm, scheduled for launch in 2011. Combined with ground based data, the new data has opened numerous opportunities for studies ranging from core flow, mantle conductivity, lithospheric composition and ocean flow to the dynamics of ionospheric and magnetospheric currents. Contributions to these topics and the new satellite missions are solicited for this session.

Convener: Michael Purucker, Plan. Geodynamics Lab., Raytheon @ GSFC/NASA, Code 698, Greenbelt, MD 20771, USA; tel: +1 (0)301 614 6473; fax: +1 (0)301 614 6522; e-mail: michael.e.purucker@nasa.gov

Co-Conveners: Nils Olsen, Danish National Space Center, Denmark; Vincent Lesur, GeoForschungsZentrum Potsdam, Germany

V.08. Reporter reviews

Div. V

This session is composed of invited papers which review important progress, innovation or discovery in observation, modelling and interpretation of the geomagnetic field. All Division-V research topics are covered: geomagnetic data acquisition systems; magnetic field observations (ground and satellite measurements and survey programs); field modelling and interpretation; geomagnetic indices; data dissemination and analysis; all in the context of improved understanding of the geomagnetic field and its sources.

Convener: Alan Thomson, British Geological Survey, Murchison House, West Mains Rd/Scotland, Edinburgh, EH9 3LA, UK; tel: +44 131 650 0257; fax: +44 131 668 4368; e-mail: awpt@bgs.ac.uk

Co-Convener: Monika Korte, GeoForschungsZentrum Potsdam; Germany

DC.01. Atmospheric coupling processes in the equatorial region

ICDC

Convective processes occurring in the equatorial atmosphere play important roles in the various upper layers of the atmosphere owing to a spectrum of waves they generate at lower levels. A variety of field experiments conducted over Indonesia, India and Brazil has demonstrated the role of tropical convection in the dynamical coupling of atmospheric and ionospheric regions over the tropics. Radio occultation experiments performed on LEO satellites have yielded useful information on tropospheric and stratospheric gravity waves originating from various sources. A number of rocket experiments performed in India have led to quantification of gravity wave contributions to the middle atmospheric SAO and QBO. GCMs have begun to address gravity wave effects by resolving them in high spatial and temporal scales. This symposium aims to address the recent advances made in our understanding of the generation and propagation characteristics of small-, intermediate-scale and large-scale wave motions generated in the lower and middle atmosphere. Papers that deal with electrical processes of lower atmospheric origin that produce noticeable transient effects in the mesosphere are also solicited.

Convener: S. Gurubaran, Equatorial Geophysical Research Laboratory, Indian Institute of Geomagnetism, Krishnapuram, Tirunelveli 627 011, India; tel +91-462-2521465; fax +91-462-2520305; e-mail: gurubara@iigs.iigm.res.in

Co-Conveners: T. Nakamura, Research Institute for Sustainable Humanosphere, Kyoto University, Japan; D.V. Pancheva, Geophysical Institute, Bulgarian Academy of Sciences, Academy, Bulgaria

DC.02. Low latitude ionosphere-thermosphere system in quiet and magnetically disturbed periods

ICDC and Div. II

Sources that contribute to the day-to-day variability of the low latitude ionosphere-thermosphere system during quiet periods need to be identified in order to quantify changes in the low latitude ionosphere and thermosphere, which arise due to magnetic activity. Further, the roles of promptly penetrating and disturbance dynamo electric fields in the low latitude ionosphere are yet to be understood. This session seeks papers that present new results on the variability of the low latitude ionosphere-thermosphere system during quiet periods; observations of the effects of magnetic activity on low latitude ionosphere/thermosphere, and modeling of the associated physical processes. In particular, case studies from different longitude regions are encouraged.

Convener: A. Bhattacharyya, Indian Institute of Geomagnetism, Kalamboli Highway, New Panvel, Navi Mumbai, 410218, India; tel:+91 22 2748 0763; fax: +91 22 2748 0762; e-mail: abh@iigs.iigm.res.in

Co-Conveners: H. Takahashi, Instituto Nacional de Pesquisas Espaciais, Brazil; V. Doumouya, Département de Physique, Université de Cocody, Abidjan 22, République de Côte d'Ivoire

IDCH

H.01. von Humboldt's legacy after 150 years

IDCH and Divs. I and V

The year 2009 marks the 150th anniversary of the death of Alexander von Humboldt (1769-1859), the renowned German natural philosopher. This session of invited talks focuses on von Humboldt's contributions to geomagnetism and aeronomy, including his influence on Gauss's studies, role in establishment of the Magnetic Union, and catalytic function for the birth of solar-terrestrial physics. In addition, speakers will examine broader topics surrounding von Humboldt such as generalists vs. specialists in science and the evolution of a scientific reputation over time. Contributed talks will be given in an associated poster session.

Convener: Edward W. Cliver, Air Force Research Laboratory, AFRL/VSBXS, 29 Randolph Rd., Hanscom AFB, MA 01731-3010, USA; tel: +1-781-377-3975; fax: +1-781-377-3160;
e-mail: edward.cliver@hanscom.af.mil

Co-Convener: Wilfried Schröder, Geophysical Institute, Germany

H.02. History of geomagnetic observations, observatories, & indices

IDCH and Divs. I and V

This session of invited talks will trace the history of the study of earth's magnetism including: Gilbert's De Magnete, early studies of geomagnetic activity by Graham and Celsius, Gauss and Weber's Magnetic Union, Sabine's British Colonial Observatories, establishment of the solar-terrestrial connection, Bartels' development of geomagnetic indices, and the modern Intermagnet and space borne observation programs. Contributed talks will be given in an associated poster session.

Convener: Gregory A. Good, History Department, West Virginia University, Morgantown WV 26506-6303, USA; tel: +1-304-293-2421; fax: +1-304-293-3616; e-mail: ggood@wvu.edu

Co-Convener: Edward W. Cliver, Air Force Research Laboratory, USA

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**Description
of Symposia**

Programme Committee

Chair:

– IAGA Secretary General:

Bengt Hultqvist (Sweden), The Swedish Institute of Space Physics, Box 812, S-98128 Kiruna, Sweden, e-mail: hultqv@irf.se, tel: 46 980 79060, fax: 46 980 79091

Members:

- Division I Chair: **Özden Özdemir** (Canada), e-mail: ozdemir@physics.utoronto.ca
- Division II Chair: **Alan Rodger** (UK), e-mail: a.rodger@bas.ac.uk
- Division III Chair: **Masaki Fujimoto** (Japan), e-mail: fujimoto@stp.isas.jaxa.jp
- Division IV Chair: **Mari Paz Miralles** (USA), e-mail: mmiralles@cfa.harvard.edu
- Division V Chair: **Monika Korte** (Germany), e-mail: monika@gfz-potsdam.de
- Chair of Interdivisional Commission on History: **Edward Cliver** (USA), Edward.Cliver@hanscom.af.mil
- Chair of Interdivisional Commission on Developing Countries: **Archana Bhattacharyya** (India), abh@iigs.iigm.res.in
- Chair of Interdivisional Working Group on Education and Outreach: **Emily Cobabe-Ammann** (USA), ecobabe@lasp.colorado.edu

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Proposal from Springer

Springer, as an International Partner of the International Year of Planet Earth, has proposed an International Partnership between Springer and IAGA with regard to the publication of a special series of volumes as a legacy to 11th Scientific Assembly in Sopron, Hungary (23-30 August 2009). Springer has proposed to the IAGA EC that 5 titles on the 5 main division themes be published to summarize the main outcomes of these divisions and conference proceedings at the 11th IAGA Scientific Assembly. Springer has proposed that these titles would either be included within the existing IYPE book series or as a sub-series to this.

Scientific Freedom Policy Statement

The organisers of the IAGA 2009 Scientific Assembly shall observe the universality of science and shall affirm the rights of scientists throughout the world to adhere to or associate with international scientific activity without discrimination based on citizenship, religion, creed, political stance, ethnic origin, race, colour, language, age or sex, in accordance with the statutes of the International Council of Scientific Unions (ICSU).

Liability and Insurance

The organisers cannot accept liability for any personal accidents, loss of belongings or damage to private property of participants and accompanying persons that may occur during the Congress. Participants are advised to make their own arrangements to obtain health, travel and property insurance before their departure.

Travel To Sopron

Passport and Visa

For exact information please contact the Hungarian Embassy or Consulate in your country and/or the local Authorities. At the end of 2007, Hungary adhered to the Schengen Agreement. Citizens of countries not adhering to this agreement may be allowed entry to Hungary on the following conditions:

- Entry must be at regular customs,
- Valid passport or equivalent travel documents acknowledged by the Hungarian authorities,
- Papers proving the purpose of the voyage and stating means of transportation,
- Financial information about travel, accommodation and local expenses,
- Valid visa, where necessary, for entry or transit,
- Exclusion from “persona non grata” lists of the Schengen system,
- Exclusion from international lists considered to be socially dangerous.

Any foreigner, although holding a valid visa, who cannot provide all of the above requirements, can be turned down even at customs. Financial information can be proven by showing cash, bank or insurance bonds, shares, prepaid service receipts or legalized papers showing revenue sources in Hungary. All foreigners must prove accommodation in Hungary and the appropriate amount of money to return home (a return ticket is sufficient). These requirements are not only necessary to obtain a valid visa but they are also necessary at moment of entry. Apply early: visa applicants are advised to apply as soon as they decide to attend the conference. Please allow at least 90 days for visas to be issued.

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By Plane

Schwechat (Vienna) airport is only 70 km from Sopron; Ferihegy (Budapest) airport is 250 km away. You may arrive by plane either in Vienna or in Budapest; in both cases you can get to Sopron by train from downtown. We are planning to assure from/to Schwechat a direct shuttle service (travel time: 1 h). Bratislava is a third international airport (at a distance of 100 km from Sopron), with railway connection either via Vienna or Győr. Further airports: Graz, Balaton, etc.

By Train

From Budapest: IC trains departing from Budapest Keleti railway station are recommended (travel time: 2 h 40 min, for details see www.elvira.hu). From Vienna Südbahnhof there are trains every hour during daytime (travel time: 1 h 15 min, for details see www.vor.at). If you are planning to arrive in Sopron by train from anywhere else, it is worth visiting the web (e.g., www.oebb.at/en/index.jsp).

By Car

Arriving from the West, you just take the Austrian A3 highway to Eisenstadt, from where there is a short junction to the border station Klingenbach-Sopron and you have arrived. In Sopron's neighbourhood, you may also use the Deutschkreutz-Kópháza (SW) or the Pamhagen-Fertőd (NE) border station. We strongly expect that a large underground parking area in the direct neighbourhood of the Conference Centre will have been put into operation by the time of the Assembly.

Hotel List

All prices include 20% VAT, breakfast and taxes.

Reservation should be made online, via our website www.iaga2009sopron.hu

Suggested deadline: 31 May, 2009

Cancellation is possible before 30 June, 2009

Hotel Wollner *** ①

Address: H-9400 Sopron, Templom u. 20.

Location from congress venue: 2 minutes, 140 m (on foot)

Single room 74 €/night, Double room 82 €/night

Hotel Palatinus *** ②

Address: 9400 Sopron, Új utca 23.

Location from congress venue: 2 minutes, 200 m (on foot)

Single room 50 €/night, Double room 55 €/night

Best Western Hotel Pannonia **** ③

Address: 9400 Sopron, Várkerület 75.

Location from congress venue: 5 minutes, 300 m (on foot)

Classic room for 1 person: 80 €/night, for 2 persons 85 €/night

Comfort room for 1 person: 90 €/night, for 2 persons 100 €/night

Hotel Sopron **** ④

Address: 9400 Sopron, Fövényverem utca 7.

Location from congress venue: 1000 m (10 minutes on foot, or partly by bus)

Single room 85 €/night, Double room 95 €/night

All rooms are air conditioned.

Hostel of the University ⑤

Address: 9400 Sopron, Ady Endre út 5.

Location from congress venue: 1000 m (10 minutes on foot)

Further details will be published later.

Single room 25 €/night (preliminary price)

Double room 40 €/night (preliminary price)

Double room 30 €/night shower, WC in the corridor (preliminary price)

Hotel Szieszta *** ⑥

Address: 9400 Sopron, Lővér körút 37.

Location from congress venue: 20 minutes, 2500 m (12 minutes by bus from

“Várkerület 87. (Ötvös utca)” to “Hotel Maróni”, then 3 minutes on foot or in total 25 minutes on foot

Classic room: for 1 person 40 €/night, for 2 persons 56 €/night

Standard Plus room: for 1 person 50 €/night, for 2 persons 78 €/night

Hotel Lóvér**** ⑦

Address: 9400 Sopron, Várisi út 4.

Location from congress venue: 20 minutes, 2500 m (17 minutes by bus from "Várkerület 87. (Ötvös utca)" to "Lóvér Szálló", then 3 minutes on foot, or 30 minutes on foot)

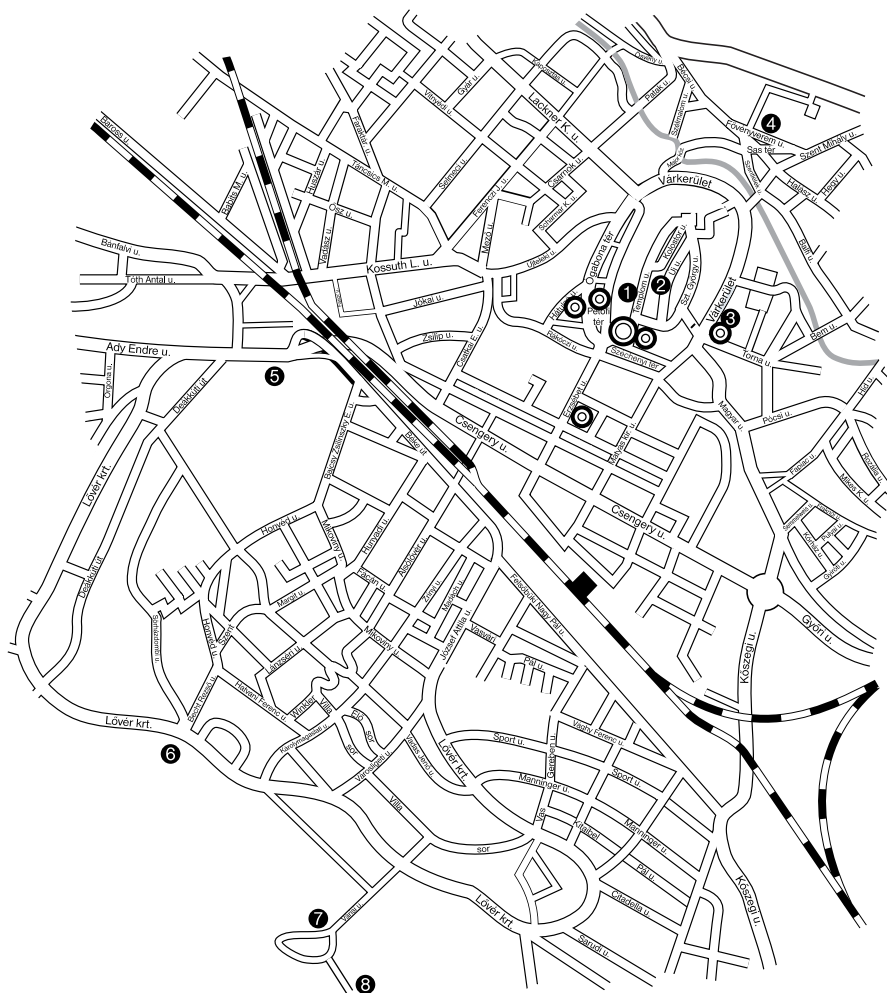
Single room 80 €/night, Double room 90 €/night

Hotel Fagus**** ⑧

Address: 9400 Sopron, Ojtózi fasor 3.

Location from congress venue: 20 minutes, 2800 m (16 minutes by bus from "Várkerület 87. (Ötvös utca)" to "Állami Szanatórium", then 4 minutes on foot, or 30 minutes on foot)

Single room 95 €/night, Double room 120 €/night



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Map of Sopron

A Few Words about Hungary

Hungary is located in Central Europe, embraced by the arc of the Carpathians. The landscape is dominated by plains and gentle hills of the Pannonian Basin. Some inselbergs form 600–900 m high mountain ranges. The landscape is characterized by temperate grasslands, agricultural land, meadows and deciduous forests. Two major rivers: the Danube and the Tisza flow across the country from North to South and provide natural links to the immediate neighbours and the more distant European partners. Lake Balaton, the largest still-water lake in Central Europe is a favourite touristic target because of its warm water and nice landscape. The geothermally hot Pannonian Basin provides excellent spas and cure resorts for the country.

During its more than 1000 years the Hungarian state has experienced every possible historical sort. It was several times invaded by different empires, coming from the east. It survived several subdivisions, lost world wars, civil wars and revolutions. Today Hungary is a member of the European Union. The Schengen Treaty was implemented at the end of 2007.

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Hungary has a slowly diminishing population of 10 million. The capital: Budapest is the most densely populated area with its 2 million inhabitants. Several major cities of some 100.000 inhabitants are found in country centres. The biggest cities are Miskolc, Debrecen, Szeged, Pécs, and Győr.

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The dominant Hungarian (Magyar) population (arrived from the east, from the Ural region) is different in language and folklore from the surrounding Slavic, German and Romanian populations. Today's Hungary hosts ethnic minorities (altogether 10 p.c.) including Roma (Gipsies), Schwabs and Saxons (Germans), Slovaks, Vends (Croats), Serbians, Romanians, Polish, Jewish, Armenians. Hungarians live outside Hungary as minorities, mostly (nearly 3 millions) at the immediate neighbourhood.

Cultural highlights as well as culinary interests are found everywhere in the country. Nice museums, monuments wait to be discovered in greater cities, around Lake Balaton, in the Danube Bend and in the Pusztas (Great Hungarian Plain), and also in Sopron.

Hungary has Central European climate, with subalpine features. The weather is usually fine and warm in the end of August. The average temperature in August is 19 °C, the monthly precipitation is about 60 mm. (Between 23–30 August 2009, the weather in Sopron can be anything from a sunny 35 °C to a rainy 15 °C. . .) The standard nominal voltage in Hungary is 230 V (50 Hz, AC). The official currency in Hungary is the Hungarian Forint (HUF). Money can be changed at banks and at exchange points located in the city. In 2001 Forint became fully convertible. In 2009 we shall not have euro yet. At the time of preparation of the conference the exchange rates are around 230–250 HUF/1 € (2008). All major credit cards are accepted in Hungary in places displaying the emblem at the entrance. Hungary has an extensive network of ATM machines where you can get cash with Visa, MasterCard and other common bank cards.
www.magyarorszag.hu/english

Sopron in Nutshell

Sopron (www.sopron.hu), a real gem, is situated near the western border of Hungary, at the foot of the Alps, 70 km from Vienna and 220 km from Budapest. It acts as a bridge between Hungary and its western neighbours, opening a gate to foreign guests wanting to visit Hungary. Sopron offers a wide variety of accommodation and excellent tourist infrastructure. The city and its surroundings are a microcosm of Hun-

gary. A university town, Sopron has an active cultural life. The countryside is famous for its composers Liszt and Haydn (musician of Prince Eszterházy), the Lake Fertő/Neusiedlersee Cultural Landscape as UNESCO World Heritage site, and the site of the Paneuropean Picnic (held on 19 August, 1989, which triggered the pulling down of the Berlin Wall).

History of Sopron

There were already human settlements on the eastern outskirts of the Alps near Lake Fertő (Neusiedlersee) as early as in Palaeolithic times. Illyrians lived there in the 6-4 centuries B.C., followed by a Celtic tribe, who were conquered by the Roman legions of Augustus. Their main settlement became a Roman town called Scarbantia. Situated at the junction of the N-S Amber Trade Road and the W-E military road connecting Vindobona (Vienna) with Aquincum (Óbuda, now part of Budapest), the capital of the province Lower Pannonia, the town developed rapidly, and had even an amphitheatre.

After the withdrawal of the legions and the turmoil of the Great Migration of Peoples, Scarbantia reappeared in German chronicles under the name Ödenburg (845). After the Hungarian conquest (when its name became Sopron), it was a frontier town at the often contested boundary between Hungary and the Holy German-Roman Empire.

In 1277, King László IV granted Sopron the title and the privileges of a royal free town, and settled an elite corps of archers (Lövéér) there. Although the Mongol-Tartar invasion (1241) did not affect Sopron, in the early 14th century the inner town was surrounded by an oval fortified wall. Between 1441 and 1461 Sopron was mortgaged to Emperor Frederic III. In the 16-17th centuries, when the central part of Hungary was under Ottoman Turk domination, altogether five National Assemblies were held and three Hungarian kings and queens were crowned in Sopron. The Turks have never occupied the town. It was ravaged by a disastrous fire in 1676.

The first coal deposit of Hungary was discovered next to Sopron, at Brennbérg ("Burning Hill"). This Middle Miocene brown coal was mined from 1792 through 1957. Sopron, having become a major cultural, educational, economic and administrative centre, was a county capital from 1788 till 1950. Its occupation by Napoleon's army in 1809 was only a short episode.

After World War I, the Trianon Peace Treaty included also Sopron/Ödenburg in the area of Burgenland, ordered to be detached from Hungary and attached to the Republic of Austria. However, in this case a referendum was exceptionally allowed. The majority of the inhabitants of the town voted to stay with Hungary. In this manner, Sopron merited the epithet "Civitas fidelissima" (the most loyal town).

During World War II, Sopron was heavily damaged by U.S. Air Force bombing in December 1944 – March 1945. After the war, part of its population, the German-speaking "Bohnenzüchter", most regrettably was forcibly expatriated from Hungary. This resulted in the considerable breakdown of the renowned viticulture of the region. From 1948 on, the Iron Curtain separated the town from Austria, rendering commerce and communication with Vienna impossible. A special border zone was created, making access difficult even to Hungarian citizens. The inevitable result was economic stagnation.

A new upswing came after the removal of the Iron Curtain in autumn 1989. The Paneuropean Picnic, held on August 19, 1989 near Sopron, triggered the pulling down of the Berlin wall. Sopron, which at present has about 60000 inhabitants, is not only a centre of education and culture (theatre, museums, etc.), but also wine production (Kékfrankos, Blaufränkisch), domestic and international tourism and recreation (due to its subalpine climate and vegetation, as well as to the medicinal waters of the area).

The historical heritage has been preserved and restored. There are altogether 115 historical monuments and 240 buildings of historic interest in Sopron. To mention only a few of them: the (partly excavated)

Roman Forum, a number of the medieval (13–15 century) Romanic and Gothic style buildings such as the Old Synagogue, the Fire Tower, the St. Michael Church, the “Goat Church” of the Benedictine Order, further on Renaissance and Baroque style churches and mansions, e.g. the Fabricius House, the Liszt Memorial Museum, the Eszterházy Mansion, the Storno House, etc.

Research and and higher education in earth- and environmental sciences

The Hungarian Academy of Mining, Metallurgy and Forestry of Selmecbánya (Schemnitz, Banská Štiavnica) was founded as a Mining School in 1735, promoted to the rank of an Academy of Mining and Metallurgy by Queen Maria Theresia in 1763. Forestry was added in 1808. After the Trianon Peace Treaty, which incorporated Northern Hungary into the new state of Czechoslovakia, this Academy moved to Sopron, and eventually became a University. In the 1950-ies the faculties of Metallurgy and Mining were moved step-by-step to the NE-Hungarian town Miskolc, to become the core of the University of Heavy Industry created there. Only the Faculty of Forestry was allowed to stay in Sopron. (Also the Lutheran College of Theology left the town.) In 2000, by integrating several other institutions of higher education located in Sopron, Mosonmagyaróvár, Győr, Székesfehérvár (completed in 2008 with Szombathely) it became the University of West Hungary (“The Green University”) with eight faculties. In 1955 earth science research laboratories were established under the umbrella of the Hungarian Academy of Sciences, and, in 1972, the Geodetic and Geophysical Research Institute of the Hungarian Academy of Sciences was founded as the successor of two of them. The LOC is mainly formed from scientists of this institute, who actively take part in earth- and environmental higher education at the local university.

The Sopron Wine District

The bedrock of the soil is rather varied: Palaeo- to Mesozoic mica schist and gneiss, Middle Miocene, sand, sandstone, siltstone, limestone and gravel, Pannonian clay, marl, sand, and Pleistocene loess. The excellent soil cover, the mild and humid summer and the mild winter create favourable conditions for wine production. Wine is known to have been produced here since the 14th century. The bulk of the production is red wine, mainly Kékfrankos (Blaufränkisch), along with Pinot noir, Merlot and Cabernet. These have higher tannin content than usual, making them pleasantly tart. The best known sorts of white wines are Traminer, Leányka (Königsmädchen) and Zöld Veltelini (Grüner Veltliner).

Excursions by Bus

(before, during and after the assembly)

Programme 1:

Meeting the guide at the hotel. Trip to the *Pan-European Picnic Memorial*. Almost twenty years ago on both sides of the then standing Iron Curtain at the Hungarian-Austrian border Austrian and Hungarian inhabitants and local residents were celebrating a common barbecue party. The sudden appearance of East-German refugees who then had already been staying for a longer time in Hungary and the humanity of the border guards initiated the breakthrough on August 19 1989 into a historic event, triggering the reunification of Germany. After the visit to the site also having a great impact on the *political changes of Eastern-Europe* we continue our trip to *Fertőrákos*. In Fertőrákos we can enjoy the limestone quarry reminding on the mystic world of the Egyptian temples, and also admire the beautiful nature panorama of the near Lake Fertő. *Lake Fertő* (Lake Neusiedl, Neusiedlersee) is a shallow water body, located on the Austro-Hungarian border, with an average depth of less than 1 m and it has had large water fluctuations over the historical period. More than one half of its total surface (of appr. 317 km²) is now overgrown with water and marshy plants. The lake bordered partly by the Fertő-Neusiedler See hills, that consisting of 12 million year-old Lajta (Leitha) limestone from the Miocene Age. The limestone quarry at Fertőrákos (opened about two

thousand years ago in a near-shore, calcareous deposit, abundant in fossils skeletal remains of red algae (Lithothamnium genus), associated with the bryozoans, large foraminifers, molluscan and crustaceans fauna, and shark-teeth) does not work nowadays anymore. The limestone ceiling along with the remaining pillars serves as natural scenery to the summer opera performances. After this rare sight we can participate a goulash-party and a Sopron-wines' tasting on a boat-trip at Lake Fertő both on the Hungarian and on the Austrian side of the border. After the closing of the programme we trip back to the hotel.

Price: 58,- €/person. Services provided: bus, guide, wine-tasting and gulyas soup, Fertőrákos cave admission

Programme 2:

Meeting the guide at the hotel. Trip to *Fertőd*, to the “Hungarian Versailles”, a marvellous palace built from 1720 to 1766 by the Esterházy, one of the richest aristocratic families of the country. The palace restored and rebuilt in the splendour of its period is an important cultural site and the centre of the Hungarian Haydn-research works. Joseph Haydn, the world famous Austrian composer lived and composed here almost half of his prolific period from 1766 to 1790. There has been here an exhibition remembering him – and one can also enjoy concerts during the summer. The main idea behind the Haydn-centre is to re-create the spirit of his glorious historical period. The marvellous palace buildings – except the baroque theatre – survived the centuries safe and sound. The exhibition mentioned above, recalls mainly *the glorious period of the building i.e. the era of Miklós Esterházy (The Glorious, from 1762 to 1790)*. Rich gold covered rooms, frescos of the period, original shellacked wooden boards brought here from China, 18th century gobelin ornamented furniture and china show and present the glamour of the period, the baroque-rococo ducal court. After having visited the Esterházy palace the „Hungarian Versailles”, the trip continues to *Fertőszéplak*, where we visit the open-air village museum showing everyday lives of people around Lake Fertő during the last centuries. A short visit at the Railway Lamp Museum showing 300 railway lamps collected from all over the world closes the museum visits of the day. The programme ends with a wine-tasting near Sopron and we return to the hotels.

Price: 52,- €/person. Services provided: admission Fertőd, bus, guide, admission Railway Lamp Museum, and admission Fertőszéplak open air village, wine-tasting

Programme 3:

Meeting the guide at the hotel, then a bus-tour and later a walking sightseeing tour in *Sopron* follows. Trip to *Nagyecenk*, visiting the *Széchenyi Palace*. The baroque palace is also of architectural interest. It is of stressed importance because *István Széchenyi* who has been honoured as the greatest Hungarian *lived here*. The main building and the western wing of the palace host the István Széchenyi Memorial Museum, the eastern farm-building provide place for the stud-farm and for the Carriage Museum. The Red Palace has been functioning as a hotel, restaurant and a café. The Memorial Museum is of two parts. The rooms on the ground floor show the lives of the Széchenyi family members and that of István Széchenyi. The second part of the exhibition is about Széchenyi's political and economic activities. A great number of original documents, objects, models show the period's traffic, horse breeding, agriculture and industry. The exhibition ends with a numismatic presentation from King Saint Stephen I. until nowadays. A short visit to the museum park, close to the palace garden, where *lots of old locomotives* are shown. Almost 2 miles we can travel with the narrow-gauge railway. A folklore dinner with gypsy music near Sopron will close down the day after which we travel back to the hotel.

Price: 55,- €/person. Services provided: guide, bus, admission Nagyecenk palace, narrow-gauge railway, dinner with gypsy music

Programme 4:

Meeting the guide at the hotel. Trip to *Raiding (Doborján)*, where *Ferenc Liszt* was born on 22nd October 1811 in a building being part of the former palace's eastern wing. He was a versatile personality of the 19th century's Romantic music, a spiritual leader of his period, greatest piano artist of all times. He was a performer, a virtuoso piano player and writer, a most educated person. Most of his almost 400 original written pieces of work are virtuoso piano plays, symphonies, symphonic poems, masses. His main concern was to make people

understand his works. Liszt's nationality has been debated by many. His confessions, correspondence and further documents are evidence enough always declaring himself a Hungarian. He was a devoted patriot. After visiting the Liszt Memorial House we travel to *Forchtenstein (Fraknó)* Castle. At the peak of the Rosalia Mountains the huge fortress *Forchtenstein (Fraknó)* Castle can be found. It was the only of its kind in the region during the Turkish Wars that was never taken by the Ottomans. It was the top "safety box" to the *Esterházy dukes'* expensive and valuable jewellery. Nowadays the century's old family collections can be visited, too. The castle has been in the Esterházy family's property since 1626. Based on the plans by Italian master builders it was turned into a fortress during the 17th century. Parallel to this, the unique collection of arts was also born. Goldsmith works, ivory carvings, curiosities, textiles and valuable weapons filled the baroque treasury. Rare, interesting printed material came into the archives. The halls were decorated with portraits and paintings. In our days the ancient gallery of the Esterházy's has been the largest baroque painting gallery of Central-Europe. The more than 300 pieces of art shown at the ancient gallery introduce the historic roots of the ducal dynasty rising around those times. The Esterházy family's weapon collection has been the largest private collection in Central-Europe. During the guided tour weapons from the period of the 30 years war, alabasters further Turkish, Prussian and French spoils of war. Among the most excellent pieces there are the Ottoman gem-tent and the Prussian tent. These are among the most important and best surviving pieces of spoils of war in Central-Europe. After this a tour to *Eisenstadt (Kismarton)*, the capital of the province Burgenland follows. Here we take a short walk through the historic town of Eisenstadt and finally travel back to the hotel.

Price: 34,- €/person. Services provided: bus, admission Forchtenstein, guide

Budapest:

Meeting the guide at the hotel. Trip to *Budapest*. A bus-tour and later a walking sightseeing tour in the Hungarian capital follows. Short free-time in the afternoon, then travelling back to Sopron.

Price: 50,- €/person. Services provided: bus, guide

Vienna:

Meeting the guide at the hotel. Trip to the Austrian capital *Vienna*. A bus-tour in the capital follows. Short free-time in the afternoon, visit to the Schönbrunn Royal Palace then travelling back to Sopron.

Price: 35,- €/person. Services provided: bus, guide

Balaton Highlands:

Situated near Balaton, the largest lake in Central Europe, close to the Bakony hills is *Herend*, Hungary's "porcelain city" with the biggest porcelain manufactory in Europe - the largest collection of porcelain treasures on the globe – where visitors see the magic of technology unfolding behind the scenes.

-Veszprém The historic centre of *Veszprém* is the castle, which - together with the surrounding town - was one of the significant centre of our country until the Turkish occupation: it was the King's and Queen's seat and an episcopal seat. The medieval castle and town suffered large-scale destruction in the Turkish period. The present-day historic town evolved during the town development constructions of the 18–19th and the early 20th century. World War II and the following period caused relatively little damage to the old centre. *Hegyestű* ("Sharp Needle"): columnar basaltic lava lake rocks and spectacular view to the Balaton and to the basaltic volcanoes of Balaton Highlands. Tihany is a jewel of not only the Balaton but also Hungary. Since the nineteen sixties masses of tourists, both Hungarians and foreigners, have been visiting the place. Its main assets are the historical and cultural relics related to the monastery, the unique landscape and the recreational possibilities of Balaton. *Badacsony* is a famous wine region. Back to *Sopron*.

Price: 60,- €/person. Services provided: bus, guide, admission Herend, admission Hegyestű, lunch

Shuttle prices: Vienna–Sopron 30,- € , Budapest–Sopron 80,- €

You may apply for these excursions either via our website (www.iagazoo9sopron.hu), also on site.

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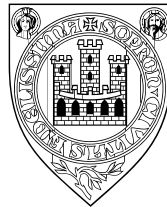
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ICDC

IDCH

Monday, Aug 24

A.M.	I.01		I.09		II.01	II.07	III.01	III.02	IV.01	×	V.02		×	×
P.M.	I.01		I.13							IV.02	V.02		×	×
Posters	I.01	I.09	I.13		II.01	II.07	III.01	III.02	IV.01	IV.02	V.02		×	×

Tuesday, Aug 25

A.M.	I.01		I.02		I.11	II.03		III.07	III.05	IV.01	IV.02	V.05		×	×
P.M.	I.01		I.10			II.03		III.07	III.05	IV.01	IV.02	V.06		×	×
Posters	I.01	I.02	I.10	I.11		II.03		III.07	III.05	IV.01	IV.02	V05	V06	×	×

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Preliminary schedule
 version of July 23, 2008

Wednesday, Aug 26

A.M.	I.03		I.15		II.02	II.05	III.11		IV.03	IV.06	V.07		×	×
P.M.	I.07						III.11		IV.03	IV.06	V.07		DC01	
Posters	I.03	I.07	I.15		II.02	II.05	III.11		IV.03	IV.06	V.07		DC01	

Thursday, Aug 27

A.M.	I.04		I.16		II.04		III.03	III.06	IV.03		V.04		V.03	DC02	
P.M.	I.08				II.04		III.03	III.06	IV.07		V.04		V.03	H01	
Posters	I.04	I.08	I.16		II.04		III.03	III.06	IV.03	IV.07	V.04	V.03	DC02	H01	

Friday, Aug 28

A.M.	I.05		I.14		II.08		III.04	III.08	IV.04		V.01		H02	
P.M.	I.06		I.17		II.08		III.04	III.08	IV.04		V.01		×	×
Posters	I.05	I.06	I.14	I.17	II.08		III.04	III.08	IV.04		V.01		H02	

Saturday, Aug 29

A.M.	I.12				II.06		III.09	III.10	×	IV.05		V.08		×	×	
P.M.	I.18				II.06		III.09	III.10	IV.04		IV.05		×	×	×	×
Posters	I.12	I.18			II.06		III.09	III.10	IV.04	IV.05	V.08		×	×		

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