

Perugia, Italy July 2-13, 2007



COMPTES RENDUS

**PART I:
PROCEEDINGS OF
THE GENERAL ASSEMBLY**



UNION GEODESIQUE ET GEOPHYSIQUE INTERNATIONALE
INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS

XXIV GENERAL ASSEMBLY
2-13 JULY 2007
PERUGIA, ITALY

COMPTES RENDUS

**IUGG XXIV GENERAL ASSEMBLY
2 – 13 JULY 2007 PERUGIA, ITALY**

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PART I

PROCEEDINGS OF THE GENERAL ASSEMBLY

OFFICERS OF THE UNION, ASSOCIATIONS, AND COMMISSIONS
OFFICERS OF THE UNION FOR 2004-2007

Bureau of the Union

<i>President:</i>	Uri Shamir	ISRAEL
<i>Vice-President:</i>	Tom Beer	AUSTRALIA
<i>Secretary General:</i>	Jo Ann Joselyn	USA
<i>Treasurer:</i>	Aksel W. Hansen	DENMARK
<i>Members:</i>	Yun-tai Chen	CHINA
	Harsh Gupta	INDIA
	Ali A.A. Tealeb	EGYPT

The following Officers are not voting Members of the Bureau:

<i>Assistant Secretary General:</i>	Katina Rogers	USA
<i>Assistant Treasurer:</i>	Anders Svensson	DENMARK

Executive Committee of the Union

According to Article 10 of the Statutes of IUGG the Executive Committee consists of:

- the Bureau (see above),
- the Retiring President of the Union, M. Kono (JAPAN)
- the Presidents of the International Associations:

<i>IAG:</i>	Gerhard Beutler	SWITZERLAND
<i>IAGA:</i>	Charles Barton	AUSTRALIA
<i>IAHS:</i>	Arthur Askew	AUSTRALIA/UK
<i>IAMAS:</i>	Michael C. MacCracken	USA
<i>IAPSO:</i>	Shiro Imawaki	JAPAN
<i>IASPEI:</i>	E. Robert Engdahl	USA
<i>IAVCEI:</i>	Oded Navon	ISRAEL

Finance Committee of the Union

<i>Chair:</i>	Michael J. Hamlin	UNITED KINGDOM
<i>Members:</i>	David D. Jackson	USA
	Kiyoshi Suyehiro	JAPAN
	Juan Francisco Vilas	ARGENTINA

Secretaries General of the International Associations

<i>IAG:</i>	Christian Tscherning	DENMARK
<i>IAGA:</i>	Bengt Hultqvist	SWEDEN
<i>IAHS:</i>	Pierre Hubert	FRANCE
<i>IAMAS:</i>	Roland List	CANADA
<i>IAPSO:</i>	Fred Camfield	USA
<i>IASPEI:</i>	Peter Suhadolc	ITALY
<i>IAVCEI:</i>	Steve McNutt	USA

Union Commissions

Union Commission on Mathematical Geophysics:

<i>Chair:</i>	Daniel H. Rothman	USA
<i>Secretary General:</i>	Claudia Pasquero	USA
<i>Vice-Chair:</i>	Einat Aharonov	ISRAEL
<i>Vice-Chair:</i>	Ray Pierrehumbert	USA
<i>Vice-Chair:</i>	Antonello Provenzale	ITALY
<i>Vice-Chair:</i>	Eli Tziperman	USA

Union Commission on the Study of Earth's Deep Interior (SEDI):

www.sedigroup.org

<i>Chair:</i>	Bruce Buffett	CANADA/USA
<i>Vice-Chair:</i>	Gauthier Hulot	FRANCE
<i>Secretary General:</i>	Mike Bergman	USA

Union Commission on Geophysical Risk and Sustainability (GeoRisk):

www.iugg-georisk.org

<i>Chair:</i>	Alik Ismail-Zadeh	GERMANY
<i>Vice-Chair:</i>	Ramesh Singh	INDIA
<i>Vice-Chair:</i>	Kuniyoshi Takeuchi	JAPAN
<i>Secretary General:</i>	Gerd Tetzlaff	GERMANY
<i>Treasurer:</i>	Paula Dunbar	USA

Union Commission on Cryospheric Sciences (CCS):

www.glaciology.su.se/ICSI/

<i>President:</i>	Georg Kaser	CANADA
<i>Past President:</i>	Gerry Jones	AUSTRIA
<i>Secretary/Treasurer:</i>	Peter Jansson	SWEDEN
<i>Vice President:</i>	Jon Ove Hagen	NORWAY
<i>Vice President:</i>	Koni Steffen	USA
<i>Vice President:</i>	Kumiko Goto-Azuma	JAPAN

Inter-Union Commission on the Lithosphere: The International Lithosphere program

www.scl-ilp.org

Officers Appointed for the Term 2006-2010

<i>President:</i>	Sierd Cloetingh	NETHERLANDS
<i>Secretary General:</i>	Jørg Negendank (until mid 2008)	GERMANY
<i>Bureau Members:</i>	IUGG: E. R. Engdahl	USA
	IUGG: K.C. Sain	INDIA
	IUGS: Y. Tatsumi	JAPAN
	IUGS: J.-P. Cadet	FRANCE
	IUGS and IUGG: A. Green	

<i>Chair of National Members:</i>	Soren Gregersen	DENMARK
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IUGG Liaison Officers with Intergovernmental Organizations

<i>Cartographic Office of the United Nations:</i>	Hermann Drewes	GERMANY
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United Nations Educational, Scientific and Cultural Organization (UNESCO):

<i>International Hydrological Programme:</i>	Pierre Hubert	FRANCE
<i>International Oceanographic Commission (IOC):</i>	Paola Rizzoli	ITALY/USA

<i>World Meteorological Organization (WMO):</i>	Roland List	CANADA
	Pierre Hubert	FRANCE

XXIV General Assembly of the International Union of Geodesy and Geophysics
Organizing Committees for the 24th IUGG General Assembly

IUGG Representatives on ICSU Committees

<i>Committee on Space Research (COSPAR):</i>	Eigil Friis-Christensen	DENMARK
<i>Committee on Science and Technology in Developing Countries - incorporating International Biosciences and other Scientific Networks (COSTED/IBN):</i>	Harsh Gupta	INDIA
<i>Federation of Astronomical and Geophysical Data Analysis Services (FAGS):</i>	David T. Pugh	UNITED KINGDOM
	Ruth Neilan	USA
<i>Scientific Committee for the International Geosphere-Biosphere Programme (IGBP):</i>	Tom Beer	AUSTRALIA
<i>Scientific Committee on Antarctic Research (SCAR):</i>	Roland Schlich	FRANCE
<i>Scientific Committee on the Problems of the Environment (SCOPE):</i>	Norman Jake Peters	USA
<i>Scientific Committee on Oceanic Research (SCOR):</i>		
<i>President IAMAS:</i>	Michael C. MacCracken	USA
<i>President IAPSO:</i>	Shiro Imawaki	JAPAN
<i>Scientific Committee on Solar-Terrestrial Physics (SCOSTEP):</i>	Wolfgang Baumjohann	AUSTRIA
<i>World Climate Research Programme (WCRP):</i>	Roland List	CANADA

IUGG Representatives on Other Bodies

<i>International Civil Aviation Organization (ICAO):</i>	William I. Rose	USA
<i>Instituto Panamericano de Geografía e Historia (IPGH):</i>	Hermann Drewes	GERMANY

IUGG 2007 LOCAL ORGANIZING COMMITTEE

IUGG National Committee for Italy

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Prof. Dr. Iginio MARSON
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Preside della Facoltà di Ingegneria
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IUGG Local Organizing Committee

Lucio Ubertini
Piergiorgio Manciola
Arnaldo Pierleoni
Salvatore Grimaldi
Michela Mala

**REPORT OF THE CHAIR OF THE LOCAL ORGANIZING COMMITTEE
PROF. LUCIO UBERTINI**

Report of the Chair of the Local Organising Committee

The XXIV^o General Assembly of the International Union of Geodesy and Geophysics (IUGG) was held in Perugia (Italy) from July 2 to July 13, 2007. It is the first time for such a major scientific event that the hosting town itself, with its all resources and those of many other cities all over the Umbria Region, becomes the venue of the Assembly.

This Assembly registered the presence of more than 4'500 participants coming from 91 countries. Scientists and researchers from all over the world contributed with their works submitting more than 7200 abstracts. These works were presented during the 14 days in which the 240 scheduled symposia and workshops were held.

This edition of the IUGG General Assembly has also a particular meaning for the Union itself; in fact, we witnessed the birth of a new Association amongst the existing seven. The UCCS changing its name into IACS is now the eighth Association therefore this event can be considered historic and it also brings up the high relevance that the issues connected to the Cryosphere have among the Geosciences.

It is also a great pleasure for the LOC to announce that in this occasion, the Union, the Associations and the LOC itself through many initiatives such as "Adotta un ricercatore" were able to grant the possibility to attend the Assembly to 550 young scientists mainly from countries in need.

The title and main theme of the XXIV^o General Assembly "Earth: Our Changing Planet" has provided a major platform for discussion at the numerous sessions that took into consideration the following overarching issues: forecast of catastrophes, global climate changes, the solar radiation and its influence on the planetary ecosystem. Many were also the works highlighting the importance of a new comparative geology. All these studies together with those about scale invariability for the dynamics of natural phenomena are aimed towards providing models of our planet that are more and more accurate and reliable.

The magnificent "IV November" square in the center of Perugia has offered to the participants an amazing setting for the Welcome Ceremony held on July 2. Messages from many local and national authorities, the President and Secretary General of the Union were delivered. In this occasion we also assisted to the traditional performance of the Gubbio Color Guard followed by the mythological exhibition of the Sun and the Moon.

The outreach program for the people of Perugia, the many interested in the field of Geosciences and even just curious was prepared and offered in close collaboration with many partners and media networks. We also thank the many initiatives that participants, research centers, institutions and the Associations proposed and set up in order to highlight to the populace the urgency of several planetary issues. Amongst those we have to remember the: eGY, the IGY.

A varied social program has been made available and enjoyed by many accompanying persons. It included city sightseeing Italian culture experience, such as courses of typical cuisine, ceramic craftsmanship, medieval handy crafts.

The successful organization and holding of the General Assembly owes much to the scientific leadership of the IUGG Bureau, its seven Associations and the Scientific Program Committee in co-operation the National Research Council of Italy and the University of Perugia. On the other hand, we also have to mention the efforts made by USMA (Umbrian Scientific Meeting Association) in order to gather all the local logistic resources toward the organization of the event and successfully combine the well known historical Etruscan and Roman heritage with a modern flair. We have also to thank all the police forces that with their silent but attentive presence, granted a serene atmosphere during the conferences.

We wish to express our warm compliments to all the people and institutions who were involved in hosting the General Assembly, but most of all to the many participants who with their works contributed to make this event a successful and historic one.

The next IUGG General Assembly will be held in Melbourne (Australia). We would like to express our best wishes to the Melbourne LOC for a successful event and gladly share our experience with them in the common effort of offering science itself always the best.

IUGG SCIENTIFIC PROGRAM COMMITTEE FOR 2007

<i>Chair:</i>	Paola Malanotte-Rizzoli, IAPSO	rizzoli@mit.edu
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	Christian Tscherning, IAG	iag@gfy.ku.dk
	Bengt Hultqvist, IAGA	hultqv@irf.se
	Pierre Hubert, IAHS	hubert@cig.ensmp.fr
	Roland List, IAMAS	list@atmosph.physics.utoronto.ca
	Fred Camfield, IAPSO	camfield@vicksburg.com
	Peter Suhadolc, IASPEI	suhadolc@dst.units.it
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**LIST OF LECTURES AND SYMPOSIA HELD AT THE 24TH GENERAL ASSEMBLY
OF THE INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS**

Union Lectures

- UL001 Our Changing Climate: A Global Policy Issue (Robert W. Corell, USA)
- UL002 Inside the terrestrial planets (Maria Zuber, USA)
- UL003 Subduction and Mantle Convection in the Mediterranean (Claudio Faccenna, Italy)
- UL004 Lessons from the 2004 Sumatra-Andaman earthquake and the Asian tsunami (Kenji Satake, Japan)

Union Symposia

- US001 Our Changing Planet (Part 1)
- US002 IGY+50 and I*Y: The International Geophysical Year 1957/58 and the international years of 2007/08
- US003 Global Earth Observing Systems
- US004 Digital geophysical data exchange: remote access, virtual observatories, GEOSS, and eGY
- US005 Solar and planetary geophysics
- US006 Challenges and Advances in Nonlinear Geophysics
- US007 High-Performance Computations in Geosciences
- US008 Our Changing Planet (Part 2)
- US010 Earth System Interactions
- US011 Modelling and simulation of geophysical flows: present and future
- US012 Early Warning of Natural Hazards
- USSE013 Our Understanding of Climate Change
- USSE014 The WMO/IUGG Assessment of the Effect of Pollution on Precipitation
- USX015 The electronic Geophysical Year 2007 - 2008
- USX016 Geo-Sciences in Africa

Inter-Association Symposia and Workshops

- JGS001 Ocean Circulation and contributions from new satellite missions (IAG, IAPSO)
- JGS002 Global sea-level change: Altimetry, GNSS and tide gauge measurements (IAG, IAPSO)
- JGS003 Earthquake and Volcano Geodesy (IAG, IASPEI, IAVCEI)
- JGS005 Observations of the Cryosphere from Space (IAG and UCCS Symposium hosted by IAG - merged with JGS004) (IAG, IAHS, IAMAS, IAPSO, UCCS, CliC)

- JAS001 Planetary cores: physics, chemistry and dynamics (IAGA, IAG, IASPEI, IAVCEI, SEDI)
- JAS002 Large scale imaging of the continental and oceanic lithosphere (IAGA, IASPEI)
- JAS003 Distribution of water and heat in the crust: Indication from EM studies (IAGA, IAHS, IAPSO, IASPEI)
- JAS004 Methodology in EM studies: Theory, modelling and inversion (IAGA, IASPEI)
- JAS005 The role of aerosols and dust in the middle atmosphere (IAGA, ICMA)
- JAS006 Electrodynamical and chemical effects in the middle and upper atmosphere generated by thunderstorms (IAGA, IAMAS)
- JAS007 Response of the atmosphere/ionosphere coupling system to forcing from the Sun and the lower atmosphere (IAGA, ICMA)
- JAS008 Long-term trends and changes in the atmosphere-ionosphere system (IAGA, ICMA)
- JAS009 Equatorial atmosphere-ionosphere coupling processes: responses to forcing from lower atmosphere and magnetosphere (IAGA, IAMAS)
- JAS010 Magnetic field forcing of the thermosphere (IAGA, IAG, IAMAS)
- JAS011 The Sound of Physics: Advances in coronal, helio-, astero- and terrestrial seismology (IAGA, IAMAS, IASPEI)
- JAS012 Seismological, geological and tectonic interpretation of geomagnetic anomalies on continents and oceans (IAGA, IASPEI)

- JHS001 Debris Transport in Glaciers (UCCS Symposium hosted by IAHS) (IAHS, UCCS, INQUA and IGS)
- JHS002 Natural Ice Microstructures (UCCS Symposium hosted by IAHS) (IAHS, UCCS, IAMAS, IGS)
- JHW001 Interactions between snow, vegetation and the atmosphere (UCCS Symposium hosted by IAHS) (IAHS, UCCS, ICSIH, IAMAS-ICPM, iLEAPS and IGS)
- JHW002 Climate-Permafrost-Hydrology Interactions: The Impact of Changing Climate on Cold Regions Hydrology (UCCS Symposium hosted by IAHS) (IAHS, UCCS and ICSIH)

- JMS001 Our Changing Planet (IAMAS, IAHS, IAPSO)

XXIV General Assembly of the International Union of Geodesy and Geophysics
List of Lectures and Symposia

- JMS002 Earth System Interactions (IAMAS)
JMS003 Satellite Observations: Products and Applications (IAMAS, IAGA, IAG, IAHS, IAPSO, UCCS)
JMS004 Intercontinental Transport of Substances and its Consequences (IAMAS, IAHS, IAPSO)
JMS005 Aerosols, Biomass Burning and Precipitation (IAMAS, IAHS, IGAC)
JMS006 Glacial-Interglacial Cycles: New Records, Analyses, and Modelling (IAMAS, IAHS, IAPSO, UCCS)
JMS007 Stable Water Isotopes: from Basin to Global Scale (IAMAS, IAHS)
JMS008 Clouds and Radiation and Air-Sea-Ice Interactions (IAMAS, IAPSO, SCAR)
JMS009 Hydrological Cycle, Precipitation and Precipitation Systems (IAMAS, IAG, IAHS, IAPSO, UCCS)
JMS010 Tropical Cyclones (IAMAS, IAHS, IAPSO)
JMS011 Monsoon Systems (IAMAS, IAHS, IAPSO, THORPEX)
JMS012 Planetary Atmospheres and Their Evolution (IAMAS, (ICPAE), IAGA)
JMS013 Aeronomy of Planetary Atmospheres: Comparative Planetology (IAMAS, (ICPAE, ICMA), IAGA)
JMS014 Ocean-Atmosphere Coupling (IAMAS, IAPSO)
JMS015 Mid-latitude Droughts in a Changing Climate (IAMAS, IAHS)
JMS016 Cryospheric Change and Sea Level (IAMAS, IAHS, UCCS (plus SCAR and CliC))
JMS017 The Holocene-Anthropocene Transition: From Natural to Human-Dominance of the Earth System (IAMAS, IAPSO)
JMS018 High Latitude Modes of Climate Variability (IAMAS, (ICPM, ICDM), SCAR, IAHS, IAPSO, UCCS)
JMS019 Toward Bridging the Gap Between Weather and Inter-Annual Climate Variability: Processes, Phenomena and Prediction (IAMAS, IAHS, IAPSO)
JMS020 Assessing & Exploiting Re-analysis Data Sets (IAMAS, IAHS, IAPSO)
JMS021 Energetic Particles and Geomagnetic Storm Influence on Chemical and Dynamical Processes in the Polar Stratosphere and Mesosphere (IAMAS, (ICMA), IAGA Div. II)
JMS022 Solar Impact on the Mesosphere-Stratosphere-Troposphere System (IAMAS, (ICMA), IAGA)
JMS023 Instabilities in the Neutral Atmosphere, Ionosphere and Magnetosphere (IAMAS, (ICMA), IAGA, Div II)
JMS024 Data Assimilation for the Atmosphere, Ocean and Land Surface (IAMAS, IAHS, IAPSO)
JMS025 3D Radiative Transfer in Complex Geophysical Media Including Clouds, Vegetation, Ice and Snow (IAMAS, IAHS, UCCS)
JMS026 Ice Cores and Climate (UCCS Symposium hosted by IAMAS) (IAMAS, UCCS, IGS)
JMS027 Glacier Fluctuations in the Asian High Mountains (UCCS Symposium hosted by IAMAS) (IAMAS, UCCS, IAHS, CGI, Ev-K2-CRN, ICIMOD, HKH-FRIEND, IG)
JMS028 Consequences of Large Scale Circulation Variability on Snow and Ice Extent (UCCS Symposia hosted by IAMAS) (IAMAS, UCCS, IAHS-ICSIH, GEWEX, IGS)
JMS029 Snow Avalanches Field Observations and Modelling (UCCS Symposium hosted by IAMAS) (IAMAS, UCCS, IGS)
JMS030 Extraterrestrial Ice (UCCS Symposium hosted by IAMAS) (IAMAS, UCCS, IAG, IGS)
- JPS001 Interannual and Interdecadal Climate Variability (IAPSO, IAMAS, UCCS)
JPS002 Abrupt Climate Change (IAPSO, IAMAS, UCCS)
JPS003 Environmental Controls on Marine Biota (IAPSO, ISPSO, IABO)
- JSS001 Physics and Chemistry of Earth Materials (IASPEI, IAGA, IAVCEI, SEDI)
JSS002 Tsunami: generation and hazard (IASPEI, IAPSO, IAVCEI)
JSS003 Early-Warning Systems (IASPEI, IAGA, IAMAS, IAPSO, IAVCEI, UCCS)
JSS004 Non-instrumental seismometry - Quantification of past and future earthquakes: balancing the geological, historical and contemporary strain records (IASPEI, IAGA, ILP)
JSS005 Non-instrumental seismometry - Global and regional parameters of paleoseismology; implications for fault scaling and future earthquake hazard (IASPEI, IAGA, ILP)
JSS006 Non-instrumental seismometry - New Approaches to Paleoseismology and Earthquake Recurrence in the 21st Century (IASPEI, IAGA, ILP)
JSS007 Progress in electromagnetic studies on earthquakes and volcanoes - Volcanic structure and activities (same as JVS002) (IASPEI, IAGA, IAVCEI)
JSS008 Progress in electromagnetic studies on earthquakes and volcanoes - Electromagnetic fields associated with earthquakes and active faulting (IASPEI, IAGA, IAVCEI)
JSS009 Progress in electromagnetic studies on earthquakes and volcanoes - Crustal instabilities and earthquake precursors (IASPEI, IAGA, IAVCEI)
JSS010 Progress in electromagnetic studies on earthquakes and volcanoes - Seismo-electromagnetic studies using space technology (IASPEI, IAGA, IAVCEI)
JSS011 Earth Structure and Geodynamics (IASPEI, IAGA, IAG, IAVCEI, ILP, SEDI)

XXIV General Assembly of the International Union of Geodesy and Geophysics
List of Lectures and Symposia

- JSS012 Earth Structure and Geodynamics - Dynamics of Deep Mantle Slabs (IASPEI, IAGA, IAVCEI, ILP, SEDI)
JSS013 The lithosphere (IASPEI, IAGA, IAVCEI, ILP)
JSS014 Crustal structure and Tectonophysics - Crustal and lithospheric structure in active continental blocks and their boundaries (IASPEI, IAGA)
JSS015 Crustal structure and Tectonophysics - Large-scale multi-disciplinary programs for continental imaging (IASPEI, IAGA)
JSS016 Underwater observatories (IASPEI, IAGA, IAPSO, IAVCEI, ION)
JSS017 Lithosphere thermal state and geodynamic processes: from measurements to models (IASPEI, IAGA)
JSW001 Subduction zone related volcanism and hazard mitigation (IASPEI, IAVCEI)
- JVS001 Large-volume eruptions, including environmental effects (IAVCEI, IAMAS)
JVS003 Ice Volcano Interactions (IAVCEI, IAHS, UCCS, IGS)
JVS004 Volcano seismology (IAVCEI, IASPEI)
JVS005 The 25 Anniversary of the El Chichn Eruption (IAVCEI, IAMAS)

Association Symposia and Workshops

IAG

- GS001 Reference Frames
GS002 Gravity Field
GS003 Earth Rotation and Geodynamics
GS004 Positioning and Applications
GS005 The Global Geodetic Observation System (GGOS)

IAGA

- ASI001 Planetary Dynamos: theory, models, observation and experiment
ASI002 Paleomagnetism and geodynamics neotectonics, continental reconstruction, reference frames
ASI003 Magnetic dating on all time scales
ASI004 Palaeointensity studies progress and challenges
ASI005 Magnetic anisotropy different scales, different parameters, different stories?
ASI006 Acquisition and stability of natural and laboratory-produced remanence
ASI007 Magnetic signature of past and present environmental changes
ASI008 Magnetism of extraterrestrial materials and bodies
ASI009 Progress in palaeo- and rock-magnetic methodologies
ASI010 Open Poster Session
ASI011 Environmental studies
ASII012 Small- and meso-scale structure in the thermosphere and ionosphere: observations and modeling
ASII013 Response of the ionosphere-thermosphere to large geomagnetic storms: data availability and modeling
ASII015 Conjugate and interhemispheric polar studies (Division II and III)
ASII016 Data assimilation and space weather (Division II, III and IV)
ASII017 Sun-Earth system: science and impacts (Divisions II, III and IV)
ASIII018 Magnetopause and magnetosheath processes: reconnection, diffusion and boundary dynamics (Divisions III and IV)
ASIII019 Progressing to closure in magnetotail plasma sheet and substorm processes
ASIII020 Magnetosphere-ionosphere interactions and auroral processes (Divisions III and II)
ASIII021 Geomagnetic storms: toward a coupled system level understanding (Divisions III and II)
ASIII022 Perspectives from global models and synoptic observations (Divisions III and II)
ASIII023 Causes and evolution of plasma pressure distributions
ASIII025 Techniques and instrumentation in space plasma physics
ASIII026 Wave and particle dynamics in the ring current and radiation belts
ASIII027 Other magnetospheric worlds and planetary ionospheres and thermospheres (ASII014 merged with this symposium)
ASIII028 Reporter reviews
ASIV029 The International Geophysical Year and its impact on space science (Division IV and IDCH, Divisions II, III and V)
ASIV030 New results from solar and heliospheric missions
ASIV031 From micro- to macro-scales in the heliosphere and magnetospheres (Divisions IV, II, and III)
ASIV032 IHY and universal processes (Divisions IV, II, and III)
ASIV033 Neutral-plasma interactions for planets, moons, asteroids, and comets
ASIV034 Reporter Reviews

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List of Lectures and Symposia

- ASV035 The role of magnetic observatories in monitoring and modeling Earth's magnetic field
ASV036 Geomagnetic measurements in remote regions (Division V and ICDC)
ASV037 International Decade of Geopotential Field Research: Current achievements and expected impact of Swarm (Divisions V, and I, II, III)
ASV038 World Digital Magnetic Anomaly Map
ASV039 Use of geomagnetic data and indices in space weather and space climatology
ASV040 Division V Reporter Reviews
ASICDC041 The investigation of low-latitude and equatorial geomagnetic variations since the International Geophysical Year 1957
ASICDC042 Advances in the investigation of equatorial aeronomical processes since the International Geophysical Year 1957
ASIDCH043 The International Geophysical Year: A 50-yr Retrospective

IAHS

- HS1001 A New Focus on Groundwater-Seawater Interactions (Sponsors ICGW and IAPSO)
HS1002 A New Focus on Integrated Analysis of Groundwater/Surface-Water Systems: Process Understanding, Conceptualisation and Modelling. (Sponsors ICGW, ICSW and ICCLAS)
HS1003 Hydrology in Mountain Regions: Observations, Processes and Dynamics (Sponsor ICSIH with co-sponsorship of UCCS, ICRS, ICSW, ICCLAS, ICGW, PUB)
HS2004 Quantification and Reduction of Predictive Uncertainty for Sustainable Water Resources Management (Sponsors ICCLAS, IAHS/WMO Working Group on GEWEX, ICWRS, ICRS, IAMAS-ICCL and PUB)
HS2005 Water Quality and Sediment Behaviour of the Future: Predictions for the 21st Century (Sponsor ICWQ, ICCE, ICGW, PUB and ICT)
HS3006 Changes in Water Resources Systems - Methodologies to Maintain Water Security and Ensure Integrated Management (Sponsor ICWRS)
HS3007 Remote Sensing for Environmental Monitoring and Change Detection (Sponsor ICRS)
HW1001 Isotope Tracing of Water Balance, Hydrodynamics and Hydrological Processes (Sponsor ICT)
HW1002 Patterns, thresholds and non-linearities: Towards a new theory of catchment hydrology (Sponsor PUB)
HW2003 Analysis of Variability in Hydrological Data Series
HW2004 Towards Improved Evaluation of Hydrological Models: The Need to Understand and Characterize Uncertainties in the Modelling Process (Sponsor ICCLAS, PUB)
HW2005 From Measurements and Calibration to Understanding and Predictions (Sponsor PUB with the support of ICWRS and ICGW)
HW2006 New Avenues for Contemporary Water Resources Management (Sponsor ICWRS)
HW3007 The Impact of Environmental Change on Sediment Sources and Sediment Delivery (Sponsor ICCE)
HW3008 Changes to Hydrological Extremes and Water Quality (Sponsors ICWQ and ICSW)
HW3009 Loss of Knowledge (with support of WMO and UNITAR)
HW1011 Cryosphere: Observations, processes, and future evolution (UCCS and IGS Workshop hosted by IAHS) (Merges JPSCCS004 and JPSCCS005)

IAMAS

- MS002 Global Observing Systems, Past, Present and Future (ICCL)
MS003 Aerosols, Radiation and Clouds (IRC, ICCP, ICACGP)
MS004 Mineral Dust Cycle and its Impact on Clouds and Radiation (ICCP)
MS005 Biological Ice Nucleators in the Atmosphere at the Crossroads of Physics and Biology (IAMAS/ICCP)
MS006 Ice Microphysics: Theory and Measurement (ICCP) merged with MW001
MS007 Theoretical advances in atmospheric dynamics (ICDM)
MS008 Ensembles and Probabilistic Forecasting (ICDM)
MS009 Dynamics and Predictability of Severe Weather Events (ICDM)
MS010 Dynamics of Convectively-Coupled Equatorial Waves and the Madden-Julian Oscillation (ICDM)
MS011 The Dynamics of Eastern Tropical Oceans and Subtropical Highs (ICDM)
MS012 Impacts of Biosphere-Atmosphere Interaction on Atmospheric Composition from Synoptic to Annual and Decadal Timescales
MS013 Topographic Effects on Weather and Climate (ICDM)
MS014 Interactions of Land Cover and Climate (ICCL)
MS015 Extreme Weather and Climate Events: Past Occurrences and Future Likelihoods (ICCL)
MS016 Downscaling to Local and Regional Scales (ICCL)
MS017 Climate Sensitivity and Climate Feedbacks: Progress and Remaining Questions (ICCL)
MS018 The Role of the Stratosphere in the Climate System (ICMA, IRC, ICCL)

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- MS019 Middle Atmosphere Science (ICMA)
MS020 Solar Activity and its Influences on the Earth's Weather and Climate (IRC)

IAPSO

- PS001 Biogeochemical Budget and Cycles in the Mediterranean Sea
PS002 Variability of the Antarctic Circulation and Water Masses and Their Sensitivity to Climate Change
PS003 Mediterranean Circulation and Climate: Their Variability and Sensitivity to Future Emission Scenarios
PS004 Ocean Mixing (co-sponsored by SCOR)
PS005 Flows and Waves in Straits
PS006 Arctic Ocean Processes
PS007 Biogeochemical Fluxes Between the Shelf and Open Seas
PS008 Processes in Oceanic Fronts
PS009 Impact of CO₂ Changes on Biogeochemical Processes and Ecosystem Functioning
PS010 New Insights into the Ocean and Its Circulation from Argo and GODAE
PS011 Fundamental Physical and Chemical Principles Underpinning Ocean Science
PS012 The Oceans - Their Past and Present; Considerations on their Future Behaviour (invited abstracts only)

IASPEI

- SS001 Seismic Observations And Interpretation
SS002 Earthquake Hazard, Risk, and Strong Ground Motion
SS003 Earthquake Hazard, Risk, and Strong Ground Motion - Site effects (and their dependence on source and propagation-path)
SS004 Earthquake Hazard, Risk, and Strong Ground Motion - Estimation of strong ground motion
SS005 Earthquake Sources - Modelling and Prediction
SS006 Education and Outreach
SW001 Earthquake data in archaeological and historical studies
SW002 Geophysical studies of active faults
SW003 Seismogenic zones: emergence of in situ fault zone observations to the understanding of earthquake physics
SW004 Modernizing ISC procedures: model evaluation and magnitudes
SW005 Reference Events for Improved Locations
SW006 Induced seismicity

IAVCEI

- VS001 Sediment-laden gravity flows in volcanic settings: generation, sedimentation, prediction and hazard assessment
VS002 Submarine volcanism: eruption processes, transport mechanisms and links with hydrothermal systems
VS003 Volcanic Flows: Observation, Experiment, and Theory
VS004 Intraplate monogenetic basaltic and kimberlite volcanic provinces and processes
VS005 The Magma Feeding System of Persistently Active Basaltic Volcanoes: Mount Etna and Others
VS006 Calderas I - Calderas and resurgent calderas
VS007 Calderas II: Calderas and caldera forming eruptions
VS008 Volcanic hazard evaluation: methodologies and applications
VS009 Models and products of mafic explosive activity
VS010 Modeling the plumbing system of active volcanoes by integrated petrological, geophysical and fluid inclusion studies
VS011 Modeling and simulation of volcanic related phenomena for hazard mitigation
VS012 Cities on Volcanoes: looking at the links between volcanology and communities issues around volcanoes (merged with VS020)
VS013 Quantifying and expressing volcanic risk: a challenge for the Millennium
VS015 New Techniques using Remote Sensing Data for Volcano Monitoring and Analysis: Observations, Integration, Hazard Assessments and Modeling
VS016 Volcanic-plutonic provinces: a tool to understand magma genesis and geodynamics
VS017 Pedagogical and didactical methods in earth science education and geopark concepts in demonstrating volcanic processes
VS018 New advances in understanding phreatomagmatism: from experiments to volcanic facies analyses
VS019 Large Igneous Provinces
VS021 Eruptions of Stromboli Volcano, Italy, March 2007
VS022 Mt Ruapehu (NZ) breakout lahar, 18 March 2007

**XXIV IUGG GENERAL ASSEMBLY OPENING CEREMONY
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007**

PROGRAMME

Monday July 2nd, 2007

OPENING CEREMONY OF THE XXIV IUGG GENERAL ASSEMBLY

“Earth: our changing planet”

Perugia – Piazza IV Novembre

Paola PIGNI	Coordinator
Lucio UBERTINI	President of the Local Organizing Committee of the IUGG XXIV General Assembly
Lamberto BOTTINI	Councillor for the Environment and Sustainable Development of Umbria Region
Giulio COZZARI	President of the Province of Perugia
Renato LOCCHI	Mayor of the city of Perugia
Thomas ROSSWALL	Executive Director of ICSU International Council for Science
Piergiorgio MANCIOLA	Professor at the University of Perugia
Stefania GIANNINI	Rector of the University for Foreigners of Perugia
Giuseppe CAVARRETTA	Director of the Department of Earth and Environment of the Italian National Research Council
Paola MALANOTTE RIZZOLI	President of the Scientific Program Committee of the IUGG XXIV General Assembly
Jo Ann JOSELYN	Secretary General of IUGG
Uri SHAMIR	President of IUGG

PAOLA PIGNI RESUMÉ

Paola Pigni is the first Italian marathoner in long and short distance race. She set the world record in different sports and won the bronze medal for the 1500 meters at the European championship in 1969 during which women were admitted for the first time. She repeated her performance at the Munich Olympics just 1 second 5 hundredth behind the Soviet winner Ljudmila Bragina. She then came in fifth in the 3000 meters at the European Championships in 1974. Other than on the track, Ms Pigni has won many competitions in cross, a very difficult, and both physically and psychologically demanding track and field specialty: it is run for 10 km on unpaved roads or on grass. She won world titles in 1970, 1973, and 1974 nationally she has won 13 Italian absolute titles.

These are her titles:

3 world records 1500 metres, the mile, and 3000 meters;
23 individual Italian titles;
7 Italian relay records;
Gold medals at the University of Munich, at the Universiades of Moscow in 1973 for 1500 metres;
Gold medal at the Games of Mediterranean in Algeri in 1975 for 1500 metres and for 800 metres;
Gold medal at the world Cross competition for the following editions:
-Vichy Francia 1970
-Waregrem (Belgio) 1973
-Monza (Italia) 1975;
Bronze medal at the Olympics in Munich in 1972 (1500 metres);
Bronze medal at the European Championship in Athens 1969 (1500 metres);
Winner of 23 Italian competitions;
She has participated on the Italian National team 33 times.

She has been appointed Cavaliere della Repubblica for her sports merits and Official Cavaliere for equality between man and woman.

Paola Pigni è la prima maratona italiana, atleta di fondo e mezzofondo. Ha conquistato il record del mondo in diverse specialità e si è aggiudicata la medaglia di bronzo nei 1500 metri ai campionati europei di Atene del 1969, nei quali la specialità, in campo femminile, era stata inserita per la prima volta. Ha bissato il piazzamento alle Olimpiadi di Monaco chiudendo ad 1 secondo e 5 centesimi dalla sovietica Ljudmila Bragina, vincitrice della gara. Successivamente si è classificata quinta nei 3000 m. agli europei del 1974. Oltre che in pista le Pigni ha ottenuto grandi risultati anche nel cross, specialità di atletica leggera, molto impegnativa dal punto di vista fisico e psicologico, che si corre su fondo sterrato o erboso e su distanze entro i 10 km. Si è aggiudicata i titoli mondiali nel 1970, 1973 e 1974. Nelle gare nazionali ha vinto 13 titoli italiani assoluti.

I numeri parlano per lei :

3 primati mondiali 1500 metri, miglio e 3000 metri;
23 primati italiani individuali;
7 primati italiani di staffette;
Medaglia d'oro alle Universiadi di Mosca del 1973 nei 1500 metri ;
Medaglia d'oro ai Giochi del Mediterraneo di Algeri del 1975 nei 1500 metri e negli 800 metri;
Medaglia d'oro al Campionato del Mondo di Corsa Campestre (Cross delle Nazioni) nelle seguenti edizioni:
-Vichy Francia 1970
-Waregrem (Belgio) 1973
-Monza (Italia) 1975;
Medaglia di bronzo alle Olimpiadi di Monaco del 1972 (1500 metri);
Medaglia di bronzo ai Campionati Europei di Atene 1969 (1500 metri);
Vincitrice di 23 titoli italiani;
Ha indossato 33 volte la maglia azzurra.

È stata nominata Cavaliere della Repubblica per meriti sportivi e Cavaliere Ufficiale per la parità uomo donna.

**ADDRESS BY LUCIO UBERTINI
PRESIDENT, LOCAL ORGANIZING COMMITTEE**

Esteemed Invited Guests, Honourable Ministers, Authorities, Fellow Colleagues, Ladies and Gentlemen, after more than half a century ago, when the first IUGG General Assembly was held in Rome, we are here again on the soil of Italy but this time in Umbria, the green heart of our dear country. Of course, green is a symbol of a healthy environment and this is tied to also historical development of the sciences of geodesy and geophysics at its very embryonic stages. First and foremost, allow me on behalf of the Local Organising Committee, to express our most profound and sincerest gratitude and thanks to the IUGG for the confidence reposed in us to host and organise the XXIV General Assembly of this august body in Perugia. This is really “a Dream come True” for us in these four years after Sapporo. In a relatively small city, as compared to some of the mega cities from which thousands of delegates and participants have converged: we are proud to say WELCOME to you all, representatives of about 130 countries from all the five continents of the world to Perugia, Umbria Region and for that matter to Italy. Now, I would like to share with you all some startling contributions of Umbria region to the development of Geodesy and Geophysics.

This region can boast of many monumental and epochal scientific and technological inventions which decisively contributed to the development of earth sciences such as the rain gauge, pendulum-type seismic gauge, cartography and engineering structures for land reclamation, dating as far back as the Etruscan Age, some 1000 years B.C. through to the Roman times to the epoch of Universal Knowledge. The presence of various geophysical processes like the Tiber river, Trasimeno Lake and frequent earthquakes all contributed to ingenious observations dating as far back as the times of Galileo Galilei. I believe most of you are aware that the first attempt at the quantification of rainfall in a given time interval was carried out by Castelli, observing the rain water over the Trasimeno Lake. This led him to invent the rain gauge in the year 1639. It is important to emphasise that the rain measuring device which is still extremely useful in Meteorology was actually designed in the Saint Peter’s Monastery here in Perugia. In a letter to his mentor and friend Galileo, dated June 18th 1639, Castelli described his invention, inter alia, as follows:

In order to satisfy my past promises to you, I would like to share with you my certain consideration made over the Trasimeno Lake which had suffered

from long severe droughts. In my recent visit to Perugia, I decided to go and see things for myself. The level of the lake has gone down so much that it was affecting agricultural production and the operation of water mills situated along the banks of the lake. Back to Perugia, I witnessed and followed a not too intensive rainfall but quite continuous and uniform which lasted about 8 hours and I had a thought of examining it, far away from the lake in Perugia, how much the level of the lake would rise assuming the rainfall in Perugia was universal and uniform over the lake surface. So, I took a glass vessel of cylindrical form, height of a roman palm and half palm wide, and put some water, as much as to cover the bottom of the mentioned vessel, exposed it outside, to receive the water of the rain for about an hour, having diligently made a mark of the water level. Having observed that the water level had risen by 9mm in a period of one hour, considering that if I had exposed to the same rainfall other similar and equal vessels the water level would rise by the same measure and therefore concluded that it was necessary that the water level over the entire surface of the lake would rise in a period of one hour by the same measure.

Having considered doubts about his observations and discussed with others in the monastery, Castelli continued his thinking and postulated that: *it has become obvious that the quantity of fallen water is proportional to the intensity of the rainfall.*

In conclusion he wrote: *I can therefore conclude that if the rain could be universal and uniform above the lake, the same lake would be increased again, always in the time interval of an hour, by the same measure of the vessel; for every time of rain in more, the correlative increase is had. Similarly we should have had the same result if the rain were to fall on the whole globe (this explanation is appropriated also to the case of the Universal Flood of the Holy Scriptures).*

Still on Trasimeno Lake, I would also like to share with you another historical feat, this time in Geodesy. The illustrious son of Italy, the Genius of the Renaissance, Leonardo da Vinci mostly known as a painter, sculptor, engineer, architect, and scientist was also a brilliant cartographer. Having studied the Euclid Geometry from 1496 to 1504, knew that transferring a spherical surface onto a plane, at that time, could not be done without errors and he therefore took recourse to graphite shading in order to make visible different orographic levels. Combining arts and science and admiring the immense beauty of the panoramic valleys of Valdichiana and Valdarno Leonardo da Vinci, produced the much celebrated maps of the two

valleys which are presently conserved in the famous Royal Library of Windsor.

It is impossible to talk about geophysical processes in Umbria without mentioning the frequent occurrences of earthquakes which laid a solid foundation for seismic monitoring in Perugia. The first pendulum type seismograph was invented within the walls of Saint Peter's Monastery of Perugia by Benedictine Priest Andrea Bina in the year 1751, considering an earthquake as a natural phenomenon and measuring it for the first time with his own instrument. In a publication entitled: *Reasoning over the Origin of Earthquakes and in particular on that of the land of Gualdo Nocera in Umbria in 1751*, Father Bina proposed his own theory regarding the origin of seismic phenomena, inspired by the knowledge at that time and described the operation of a pendulum type mechanism.

Specifically he wrote and I quote:

Earthquakes can belong to the class of Natural Phenomena on which it is permissible to speculate and to track the physical cause... The explanation to which I adhere is happily shared by all and can moreover boast of being supported by a true principle...

Father Bina thus became the creator of the "true" seismology. The theory enunciated by the Priest scientist can be briefly summarized in his own words, as follows:

As it seems that in the firing of bombs and guns, the art had imitated the admirable mastery with which nature prepares lightning, so it is believed that in the triggering of earthquakes, avails itself of a blast similar to mines... in order to explain the earth movement we imagine underground caves and very wide cavities filled with a mixture of sulphur and stone salt similar to that of the canon powder.

Apart from his research on the origin of earthquakes, the scientist was also engaged in the study of atmospheric electricity, publishing in Perugia in 1753 a pamphlet entitled "Reflections about electrification of the air". I would like to add that this long historical tradition has not been lost because these early discoveries have been continued, by establishing the Andrea Bina Seismic Observatory at the same St. Peter Monastery in 1931 and modernized in 1971 to conform with modern technological advances.

My speech would not be complete if I did not touch on an engineering wonder of the region, "Cascata delle Marmore" (Marble Cascade) in Terni, dating as far back as the year 271 B.C., and constructed by a Roman Consul Manlio Curio Dentato during the Roman era. The present panorama offered by the cascade is an epitome of modifications induced by

humans on the natural environment in the course of many centuries. This engineering feat consisted of construction of a drainage canal of reclamation of swamps at the confluence of two rivers, the Velino and Nera. Subsequent designs were also advanced to increase the carrying capacity of the structures during floods at different historical moments but not until 1787-1788 that a Terni architect by name Andrea Vici found a lasting solution which gave the cascade its present appearance. Apart from harnessing the falls for hydroenergy production it also serves as a very important tourist attraction. The Marble Falls is not only a historical engineering construction but has become an interdisciplinary laboratory for a three-dimensional mathematical modeling of the waterfall in symbiosis with its natural environment.

I would like to make a special mention of the Water Resources Research and Documentation Centre (WARREDOC) of the Perugia University for Foreigners which for more than twenty years has carried out research, training and documentation programmes in water and environment, mainly for developing countries under the Italian Development Cooperation of the Ministry of Foreign Affairs. I would be doing a disservice to myself if I do not mention the institution here in Perugia which I head, the National Research Institute for Geohydrological Protection of the National Research Council and which has become the local organizational seat of this General Assembly. Finally I would also wish to mention and thank one of the oldest universities in Italy, the University of Perugia, which has offered us its logistical facilities for the scientific programmes of the Assembly and call on all of you to join me in wishing the Rector and the staff higher and higher laurels during the celebrations of its seven hundred years of existence next year.

I would also like to seize this opportunity to express my most profound and sincerest gratitude and thanks to all the members of the many Committees (honorary, local organizing and others), the Authorities at the national, regional and local levels for their unflinching support and cooperation at all the passes of this unique initiative. Specially thanks I would express to the President of Republic and the President of the Council of Ministers of Italy. Permit me again to thank you all for finding time to be here with us at the XXIV General Assembly of the IUGG not only in the service of science but most importantly for your concerns about our Changing Planet and hope and wish that you would enjoy the very high quality of scientific presentations, both oral and posters, that are awaiting you in about 300 sessions of this General Assembly.

Welcome again to Perugia and enjoy your stay.

ADDRESS BY GIULIO COZZARI, PRESIDENT OF THE PROVINCE OF PERUGIA

It is with great pleasure that I welcome you - many for the very first time - to the Province of Perugia, to our region and to the city of Perugia. Thanks to intense work on behalf of the highest representatives of this initiative, today we inaugurate the XXIV General Assembly of Geodesy and Geophysics. This is an event in which the Province of Perugia has believed in from the very beginning. We are in fact, founding members along with the municipality of Perugia, the CNR and other important institutions of the USMA Associations (Umbria Scientific Meeting Association) which has organized this very important world event.

By choosing Perugia, the scientific community has conferred our city the capability to host a qualified representation of the scientific community, fully aware that the sensitivity and welcoming spirit is a characteristic of the Umbrian people; A spirit animating life, history, art and Umbrian civilization. The Umbrian population has always searched, along with freedom, democracy and economic wellbeing, serenity and spirituality as the supporting structure for a civilization which pursues the future without losing its roots. This is the land of Saint Benedict, of Saint Francis; mysticism which has deep roots in the past but nevertheless aware that there is a precious commodity to protect with intelligence while fully respecting tradition and offering at the same time hospitality with high qualitative standards. Choosing Perugia, Umbria to host the Assembly over other candidates undoubtedly represents a preference to live a unique experience; a land which attracts with its antique charm but astonishes with its modernity.

Knowing also that here during this Assembly many findings will help protect our environment in the near future and they will be incentive to respect our surroundings: this is something to be proud of.

The province of Perugia has always had an active role in this field. The promotion of micro-plants for renewable energy and of photo-voltaic plants on schools, spreading dio-edile practices, promoting the creation of biomass energy generators and encouraging eco-tourism are only some of the initiatives that are being carried out. Sustainable development is the fundamental objective of whoever guides this area by enhancing its environmental characteristics and increasing its potentialities. Lake Trasimeno was defined by Guido Pompili, poet and writer, "...a true national monument", with its islands, convents, churches and greenery, favorite oasis for grand tour travelers; a landscape which changes while the traveler experiences, going through centuries of history, the meeting of nature and history; this is a true journey of discoveries. Our entire region is marvelous, a patrimony of richness that I invite you to see taking this opportunity of being here in Umbria.

Special thanks to professor Lucio Ubertini and to his team of collaborators who have been working for some time now by taking care of every organizing detail to make your stay a pleasant and memorable experience.

Giulio Cozzari
President of the Province of Perugia

ADDRESS BY GIULIO COZZARI, PRESIDENT OF THE PROVINCE OF PERUGIA, CONTINUED

E' con profonda soddisfazione che rivolgo a tutti voi il saluto della Provincia di Perugia e do a tutti quanti sono qui per la prima volta il benvenuto nella nostra regione e a Perugia. Grazie ad un intenso lavoro da parte dei massimi responsabili dell'iniziativa oggi si inaugura la XXIV Assemblea Generale di Geodesia e Geofisica, un evento a cui la Provincia di Perugia ha creduto fortemente e con entusiasmo, fin dall'inizio. Siamo infatti soci fondatori, insieme con il Comune di Perugia, il C.N.R. e altre importanti istituzioni, della Associazione USMA (Umbria Scientific Meeting Association) che ha organizzato questo importante evento di portata mondiale.

Scegliendo Perugia la comunità scientifica ha collocato questa città tra quelle in grado di accogliere una rappresentanza nutrita e qualificata della comunità scientifica, consapevoli che la sensibilità e la cultura dell'accoglienza sono una caratteristica dell'animo umbro. La spiritualità ha permeato la vita, la storia, l'arte e la civiltà umbra. Il popolo umbro ha sempre ricercato, unitamente alla libertà, alla democrazia, al benessere economico, la serenità e la spiritualità, quale struttura portante per una civiltà dell'avvenire che conserva le radici del passato. Viviamo nella terra di San Benedetto, di San Francesco, il misticismo affonda le sue radici in tempi lontani, consapevoli di avere un bene prezioso da valorizzare con intelligenza nel pieno rispetto della tradizione e al tempo stesso in grado di proporre una offerta ricettiva con alti standard qualitativi. Scegliere Perugia, l'Umbria, per lo svolgimento dell'Assemblea, rispetto ad altre candidature è stata indubbiamente una scelta legata al fatto di vivere un'esperienza unica. Una terra che attrae con

il fascino dell'antico e sorprende con la ricchezza della modernità.

Sapere inoltre, che proprio qui emergeranno delle risposte che favoriranno la tutela ambientale e uno stimolo ad un corretto godimento dell'ambiente, costituisce motivo di orgoglio per noi tutti. La Provincia di Perugia su queste tematiche svolge un ruolo attivo. Promuovere la diffusione di micro-impianti di energia rinnovabile e di impianti fotovoltaici nelle scuole, diffondere la pratica della bio-edilizia, favorire la creazione di impianti generatori di energia a biomasse e incoraggiare l'ecoturismo, sono alcune delle iniziative che stiamo mettendo in campo. Lo sviluppo sostenibile è l'obiettivo fondamentale di chi è chiamato a governare questo territorio esaltando le peculiarità ambientali ed incrementandone le potenzialità. Il lago Trasimeno che è stato definito da Guido Gozzano, poeta e scrittore, "un vero e proprio monumento nazionale," con le sue isole, conventi, chiese e verde, oasi prediletta per i viaggiatori del grand tour un paesaggio che cambia sotto l'occhio del viaggiatore che sperimenta, passando attraverso secoli di storia, l'esperienza del incontro tra natura e storia, racchiude in se la meraviglia di un vero viaggio di scoperta. Tutta la nostra regione racchiude meraviglie, un patrimonio di ricchezze che vi invito ad andare a visitare, cogliendo l'opportunità della vostra presenza in Umbria.

Un ringraziamento speciale infine va al professore Lucio Ubertini e a tutta la sua squadra di collaboratori che da tempo lavorano, curando ogni aspetto organizzativo per rendere la vostra permanenza un'esperienza piacevole ed indimenticabile.

ADDRESS BY RENATO LOCCHI, MAYOR OF PERUGIA

Welcome to Perugia. We hope your stay in Perugia is a pleasant one.

For our city this is an important and unprecedented event. This is the first time that our city has had the privilege to host such a prestigious scientific event. Also, this is the first time that such a numerous group of people from the academic world, from research, and such complex subject matters will come together in our university classrooms and in the public rooms to come to an update on the latest results of their work and on future perspectives. On the eve of the celebration of the 700th anniversary of the foundation of the University of Perugia, this is a wonderful exemplary way to celebrate a tradition of excellence and scientific integrity. Seven centuries mean a major part of the city's history in which the university and the Perugian community have followed a common path. Today we follow a path, which is of extraordinary collaboration with the rationalization of the university's presence within the city so that the university can increase its competitiveness and the city can receive beneficial returns from the university in its developmental projects. We work together on numerous aspects with mutual respect and open to the needs of one another. We know that the future of the city and of the university are intertwined. The IUGG Assembly is here to assert this moment.

The entire city, including the municipal administration will do its best so that so many illustrious guests will have a pleasant image of this welcoming city. This is the image along with the prestige of our university, which made a difference in attaining the sponsorship to be able to host this XXIV General Assembly.

We are proud of such an international acknowledgement, which also goes to the academic world that has worked very hard in this direction.

Perugia has always been open to the international world. It is a city of art with many important art museums such as the National Gallery of Art, important especially for its Middle Ages and Renaissance collection. It has just hosted a very successful collection, dedicated to Perugino and another to Pinturicchio, which will be held in a few months.

It is a city of peace because the peace march, which leaves from here and arrives in Assisi, was created here. Here the UN is holding its works on the assembly of populations, a sort of diplomatic approach which in no way replaces that of governments but stems from the heart, from needs above all.

It is also the location of the University for Foreigners which in not remote times, even before globalization was still unheard of, began hosting and opening up to the world. Today, thousands of foreign students come here to learn the Italian language and culture to then become ambassadors of dialogue and collaboration among peoples and nations from all continents.

These are also reasons why Perugia won the bid to host this Assembly. To win this bid, Perugia displayed all the excellence it is capable of. Everyone has done his/her share towards this goal – this is in fact the only way to promote a city, in the common belief of all its energy and strength. In this case, the result is a major scientific event. But the very topic it deals with is in the interest of nonscientists as well. The study of the planet in its different aspects, especially when huge changes are occurring so fast that we do not even notice are all a concern of ours. Today the IUGG Assembly will gain the media's attention and that of the population. The Earth's health is everyone's concern.

The city will know how to be a good patron also with the help of another majestic event: Umbria Jazz. Two faces of contemporary Perugia, different but united by an international bond represented by the high international aspects, IUGG and Umbria Jazz. A unique event: first a key event and a key event of the cultural life of Perugia. On the one hand, the assembly of important scientists of the Earth; on the other, one of the most famous events in the world. Undoubtedly, these stimulating events will happen in the streets of Perugia. Stimulating but consistent and natural like two aspects of contemporaneity, which cannot do without the other.

Perugia will be the perfect stage. For our city this will be another demonstration of a positive phase of the international growth of Perugia and Umbria; a phase in which the city is changing and developing to meet the needs of a modern city without renouncing the peculiarities of its identity.

ADDRESS BY RENATO LOCCHI, MAYOR OF PERUGIA, CONTINUED

Siete i benvenuti a Perugia. Vi auguro, a nome dei perugini, un felice soggiorno nella nostra città ed un proficuo lavoro.

Per Perugia è un appuntamento importante, per non dire inedito. Mai prima la città ha avuto la soddisfazione di ospitare un evento così prestigioso a livello scientifico. Mai prima di oggi un numero così cospicuo di personalità del mondo accademico, della ricerca, dello studio di discipline tanto complesse, si era ritrovato nelle aule universitarie e nelle sale pubbliche della nostra città per fare il punto sui risultati del proprio lavoro e le prospettive future. Alla vigilia della celebrazione del settecentesimo anniversario della nascita dell'Università di Perugia, è anche un modo appropriato, per non dire esemplare, per celebrare una tradizione di eccellenze e serietà scientifica. Sette secoli significano una parte non trascurabile della storia cittadina in cui l'Università e la comunità perugina hanno percorso assieme le tappe del loro sviluppo conoscendo fasi alterne. Oggi è una fase di straordinaria collaborazione, che si sta traducendo in un razionalizzazione della presenza universitaria nel territorio urbano, affinché l'Ateneo possa accrescere la sua competitività e nello stesso tempo la città ricavi dall'Università vantaggi decisivi nei suoi progetti di sviluppo. Lavoriamo assieme su diversi aspetti, rispettosi delle competenze di ciascuno, disponibili alle esigenze prospettate. Sappiamo che il futuro della città e quello dell'Ateneo si intrecciano. L'Assemblea della IUGG arriva a sancire questo momento.

La città tutta, a partire dall'Amministrazione comunale, farà quanto in suo potere e di sua competenza affinché a tanti ospiti illustri sia offerto il volto migliore di una comunità accogliente e civile. Su questa immagine del resto abbiamo puntato, assieme al prestigio del nostro Ateneo, per ottenere la responsabilità di organizzare qui la XXIV Assemblea dell'IUGG. Ci siamo riusciti. Siamo orgogliosi di una credibilità internazionale di cui evidentemente gode la città, e che viene senza dubbio riconosciuta agli ambienti accademici perugini che si sono battuti in questa direzione.

Perugia non è certamente nuova ad una ribalta internazionale. E' una città d'arte sede di uno dei musei italiani più importanti, la Galleria Nazionale dell'Umbria, soprattutto per le collezioni del medio Evo e del Rinascimento. E' reduce da una mostra che ha riscosso un grandissimo successo, quella dedicata al Perugino, ed un'altra mostra, questa volta sul Pintoricchio, allestirà tra qualche mese.

E' anche la città della pace, perché qui è stata ideata, e da qui parte ogni volta, la Marcia che si

conclude ad Assisi. In questo contesto si svolgono anche i lavori dell'assemblea dell'ONU dei popoli, una sorta di diplomazia dal basso che non vuole certamente sostituirsi a quella degli Stati ma che offre una visione del mondo diversa, ovvero a partire dai sentimenti, dalle aspirazioni, dalle necessità delle persone prima che dalle agenzie ministeriali e sovranazionali.

E' la città che da 80 anni è sede dell'Università per stranieri, chi quindi in tempi lontani, quando di globalizzazione non si parlava e nemmeno si pensava, ha intuito di poter acquisire una vocazione di ospitalità e nello stesso tempo di apertura al mondo. Oggi, per le aule ed i laboratori di questa Università passano migliaia di cittadini stranieri che imparano la lingua e la cultura degli italiani, e che diventano quindi amasciatori del dialogo e della collaborazione con popoli e nazioni di tutti i continenti.

Anche per tutti questi motivi Perugia ha ritenuto dunque di avere i requisiti adatti ad ospitare un evento come l'Assemblea dell'IUGG. Per essere prescelta ha messo in campo le eccellenze di cui dispone. E' stato uno sforzo di tanti, ciascuno per la propria parte. Del resto non esiste altro metodo di lavoro, se si vuol promuovere un territorio, della convinta collaborazione di tutte le sue forze vive e vitali. In questo caso, il risultato si è tradotto in una manifestazione di grandissimo significato scientifico, ma che, per gli argomenti di cui si occupa, è anche tale da suscitare l'interesse di chi scienziato non è. Lo studio del pianeta nei suoi diversi aspetti, soprattutto nel momento in cui grandi - troppo grandi e troppo veloci per non preoccuparci - cambiamenti stanno accadendo, ci riguarda tutti. Credo che ancor più oggi l'Assemblea dell'IUGG avrà l'attenzione dei media e dei non addetti ai lavori. Lo stato di salute della Terra interessa tutti.

La città saprà offrire uno scenario degno, reso anche più gustoso e culturalmente accattivante dal quasi contemporaneo svolgimento di Umbria Jazz. Due facce di Perugia complementari, diverse ma unite da un filo rosso che è rappresentato dall'alta valenza internazionale, la IUGG e Umbria Jazz. Un evento unico, la prima; un appuntamento chiave della vita culturale perugina, la seconda. Da un lato, l'assemblea dei maggiori scienziati delle discipline che studiano la Terra; dall'altro, una delle manifestazioni più famose al mondo. E' senza dubbio stimolante l'intreccio che si realizzerà nelle strade di Perugia tra il rigore della scienza e l'estemporaneità della musica. Stimolante ma coerente e perfino naturale, come due facce diverse

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di una contemporaneità che non può fare a meno di entrambe.

Perugia offrirà a questa suggestiva interazione il palcoscenico adatto. Per la nostra città sarà una ulteriore dimostrazione di una fase felice della

crescita dell'immagine internazionale di Perugia e dell'Umbria, una fase in cui la città sta trasformandosi e si sviluppa per rispondere alle esigenze della modernità senza rinunciare ai tratti peculiari della sua identità.

**ADDRESS BY PROFESSOR THOMAS ROSSWALL
EXECUTIVE DIRECTOR, INTERNATIONAL COUNCIL FOR SCIENCE (ICSU)**

President of IUGG, Professor Uri Shamir,
Dignitaries,
Dear Colleagues,
Ladies and Gentlemen.

In 2006, the International Council for Science, ICSU, celebrated its 75th Anniversary. ICSU has its origin in the International Association of Academies, established in 1899. This body was succeeded in 1919 by the International Research Council (IRC), which was also an international body of National Members. However, some International Scientific Unions became affiliated to IRC one by one but with limited powers. Thus, when ICSU was established in 1931, it took over 40 National Members and 8 International Scientific Unions. Since IUGG had been affiliated with IRC since 1922, it became one of the founding members of ICSU.

ICSU's mission is to strengthen international science for the benefit of society. Its broad membership currently includes 29 International Scientific Unions, representing different scientific disciplines, and 112 National Members, representing multiple disciplines within individual countries. Thousands of scientists, be they anthropologists working with local communities in Senegal or chemists working on the latest applications of nanotechnology in California, are affiliated with ICSU via their professional organizations. Because of this, ICSU is uniquely able to bring together the intellectual resources of the international scientific community to explore complex issues at the interface between different disciplines.

Since its establishment in 1931 the Council has strived to ensure that the best scientific knowledge is made available to policy makers and it has taken the lead in exploring areas, such as global environmental change, which are critically important to society as a whole. This has often necessitated the establishment of Interdisciplinary Bodies, which provide a focus for scientists to work together internationally in key priority areas where multidisciplinary approaches are necessary. Many of these bodies are co-sponsored by various UN agencies and non-governmental partners. In addition to planning and coordinating research, they help ICSU provide independent scientific input to various intergovernmental fora.

The Principle of the Universality of Science has been embedded in the statutes of ICSU from its very early days. All Members agree to adhere to this Principle and it provides a model of equity and non-discrimination across the international science

community. Open communication and exchange have been critical for the progress of science and the Principle is as pertinent today as at any time during the past.

Over the past few years, ICSU has developed a Strategic Plan based on the views of its National and Union Members. In developing an ICSU strategy for the next six years, it has been important to build on the organization's established structure and values. At the same time, it was recognized that both science and society are changing rapidly. The landscape for international science is very different today from that which existed even a decade ago. ICSU needs to situate itself within this continuously evolving landscape in order to define its future priorities.

The Strategic Plan focuses on three priority tasks:

- Planning and coordinating major international research programmes
- Ensuring that best available scientific knowledge is available to decision makers
- Promoting Universality of Science

The launch of major new international and interdisciplinary research programmes has been one of the hallmarks of ICSU's success over the past half century. On 1 July 1957, ICSU launched the International Geophysical Year with three of the Scientific Unions as sponsors; IUGG, IAU and URSI. Initially this was planned as a 3rd International Polar Year, but during the planning the focus expanded beyond the polar regions and the programme became truly global. In the history of ICSU published 1996, it was stated that "IGY would not have existed without ICSU, but IGY changed ICSU". From that first major ICSU international research programme, strongly supported by the relevant Scientific Unions, ICSU could confidently continue to initiate programmes on a large scale. In 1964-1974, IGY was followed by the International Biological Programme. In 1970, the World Climate Research programme was established, which has later been joined by three additional ICSU sponsored global change research programmes to understand the functioning of Planet Earth and the influence of Man on the Planet, our home.

The policy relevance of ICSU's programmes can be exemplified by the global change research programmes. Together with ICSU sponsored global monitoring systems, they constitute the basis for the IPCC assessments on climate change and the political discussions related to the UN Framework Convention on Climate Change and its Kyoto

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Protocol. ICSU, with partners, have thus been successful in bridging the gap between science and policy.

On 1 March this year, ICSU and WMO launched the fourth International Polar Year 2007-2008, which has been received enthusiastically by the international science community and have garnered substantial increased financial support for polar science. The next ICSU programme will probably be on Natural and Human Induced Hazards and Disasters, the plans for which will be presented at our General Assembly in 2008.

IUGG and the broader geoscience community have essential roles to play in both IPY and a new Hazards programme. The success of ICSU programmes is crucially dependent on the ability to

build on the disciplinary expertise within Scientific Unions such as IUGG.

In 2007, we celebrate the 50th Anniversary of IGY. The IPY is part of a bouquet of birthday flowers to IGY, others being the eGY, the International Heliophysical Year and the International Year of Planet Earth. IUGG is a key player in all these initiatives and I wish to congratulate you on your past achievements and look forward to strengthened collaboration as new initiatives emerge.

It is an honour and pleasure to be with you today and I am looking forward to a scientifically exciting Assembly. On behalf of the ICSU Executive Board, I wish you all the best for a successful event.

**ADDRESS BY PIERGIORGIO MANCIOLA
PROFESSOR OF HYDRAULIC WORKS, UNIVERSITY OF PERUGIA**

Ladies and gentlemen,

It is a great honour for me as a professor at the University of Perugia to welcome so many scientists coming from all of the continents of our planet.

It is also a great honour to be here on this stage, together with many illustrious persons and to be in front of the buildings that tell the story of our city.

This important scientific event that we are about to inaugurate has been supported and organized by the University of Perugia together with the National Research Council, after more than fifty years since the last edition in Rome.

I would like to therefore thank The Chancellor of the University, Professor Francesco Bistoni, the Administrative Direction, the Academic Deans, and the Department Chairmen who have made available their teaching facilities, all teaching and non-teaching staff who have contributed to the organization of the Twenty-Fourth general assembly of the IUGG. The atheneum of Perugia worthily celebrates the Seventh Centenary of its foundation with this event.

Just a special mention regarding the organizational effort:

Seven departments have been involved, in addition to the Academy of Fine Arts and the University for Foreigners, Perugia:

The Departments of:

Chemistry
Physics
Mathematics
Economics
Political Science
Pharmacy
Education
And the Law School

A total of seven thousand forty-seven abstracts have been submitted and six-thousand nine-hundred fifteen accepted of which four-thousand two-hundred seventeen for oral presentations and two-thousand and two for poster sessions.

Some numerical information on the General Assembly: To date, the number of registrations are three-thousand eight-hundred and forty-five. The number of Log-ins to the web-site, seven-thousand five-hundred and fifty-six. There are seventy exhibitors. Just to give an idea of the size of the organizational impact, I point out that in the last few months more than 32,000 (thirty-two thousand) e-mails have been processed by the LOC secretary's office. Please excuse any inconveniences which do not nevertheless take anything away from the merit and commitment of our young secretariat.

I wish you prosperous work, rich in the results that society awaits from you.

I hope that Perugia and its cultural resources, as well as UmbriaJazz are able to reward you for your work carried out.

Thank-you to all once again.

**ADDRESS BY STEFANIA GIANNINI
RECTOR, UNIVERSITY OF FOREIGNERS OF PERUGIA**

The changed global environmental scenario and the new earth emergencies deserve our attention from multiple points of view. The scientific research and the cooperation in this field are necessary to face the situation properly. The University for Foreigners of Perugia through the WARREDOC centre (Water Resources Research and Documentation Centre) has been involved in the environmental sector since many years, basing its activities on training and education, research and documentation, with a specific stress on water resources development and management.

In this brief speech, the history and the development of the WARREDOC will be outlined considering the recent experience of the "Higher Education Programme for Mitigation of Natural Disasters" for Sri Lankan officers and students, implemented thanks to the co-operation with the Università Politecnica delle Marche, the University of Peradeniya and the UN programme ILO/Universitas within the framework of the activities following the December 26th 2004 tsunami.

The WARREDOC training courses allow experts from different countries, often with difficult diplomatic relations, to share and participate to the solution of important problems such as the water resources management. The University for Foreigners of Perugia represents a real multi-linguistic and multiethnic laboratory. Its institutional mandate consists in a full opening to the world, proposing an original didactic model: the study of Italian language as a way to exchange cultural values, crucial also to reflect upon important and dramatic issues such as the environment.

I recenti sviluppi dell'emergenza ambientale planetaria richiamano necessariamente la nostra attenzione su diversi fronti. La ricerca scientifica e la cooperazione in questo ambito sono senza dubbio degli strumenti necessari per far fronte ed intervenire efficacemente in questo scenario. L'Università per Stranieri di Perugia attraverso il centro WARREDOC (Water Resources Research and Documentation Centre) da molti anni è impegnata nel settore ambientale, con particolare riferimento alle attività di preparazione e formazione, ricerca e raccolta di documentazione, in relazione al problema dello sviluppo e dell'impiego risorse idriche.

In questo breve indirizzo di saluto verranno tracciate la storia e le linee di sviluppo del centro WARREDOC, anche alla luce della recente realizzazione del Programma di Alta Formazione per la Prevenzione delle Catastrofi Naturali, rivolto ad alti funzionari e studenti srilankesi, istituito, in collaborazione con l'Università Politecnica delle Marche, l'Università di Peradeniya ed il Programma ILO/Universitas, nell'ambito delle attività di supporto alla ricostruzione materiale e strutturale in seguito allo tsunami del dicembre 2004.

I corsi di formazione realizzati dal WARREDOC si basano essenzialmente sul principio di far lavorare a stretto contatto tecnici provenienti da paesi differenti, spesso in rapporti diplomatici conflittuali, e di partecipare attivamente, in tale modo, alla rielaborazione e alla soluzione di problemi rilevanti come quello della gestione delle risorse idriche. Di fatto, l'Università per Stranieri di Perugia rappresenta un vero e proprio laboratorio multilinguistico e multietnico. La vocazione istituzionale della Straniere consiste, in fatti, nell'apertura verso il mondo esterno e verso i paesi altri e nella proposta di un modello didattico originale: lo studio della lingua italiana come strumento di interazione e di scambio di valori culturali, necessario per riflettere anche su temi di più ampio respiro e, talvolta, di drammatica attualità. Fra essi, senza dubbio, si pone il tema dell'ambiente.

**ADDRESS BY PAOLA MALANOTTE RIZZOLI
CHAIR, SCIENTIFIC PROGRAM COMMITTEE**

It is my privilege and my honor to be here, in my home country, to welcome the scientists of the International Union of geodesy and Geophysics (IUGG) to Perugia and Umbria, arguably the most beautiful region in Italy. First of all, I wish to thank the Chair of the Local Organizing Committee (LOC), my dear friend Prof. Lucio Ubertini, and the entire LOC for their work in organizing the logistics of this huge event.

And, in the name of all the IUGG scientists and my own personally, I wish to thank the Mayor of Perugia, the President of the Perugia Province, and the Rector of the Perugia University for Foreigners and the Assessor of Environment for honoring us with their presence here.

As Chair of the IUGG Scientific program Committee, I wish to give you all a few details about the structure of IUGG, which presently comprises seven international Associations, covering all the different sciences of the earth. As such, IUGG is the world biggest organization for the earth sciences and the only one truly international.

The IUGG Associations are presently:
International Association of Geodesy - IAG
International Association of Geomagnetism and Aeronomy – IAGA
International Association of Hydrological Sciences – IAHS
International Association of Meteorology and Atmospheric Sciences – IAMAS
International Association of the Physical Sciences of the Ocean – IAPSO
International Association of Seismology and Physics of the Earth's Interior – IASPEI
International Association of Volcanology and Chemistry of the Earth's Interior - IAVCEI

We have here scientists not only from North America, Canada and Europe, but from all over the world, including Russia, Ukraine, China, India, South America, Australia, Iran, Tunisia, Algeria, South Africa etc.

To give you an idea about the vastness of our Assembly, we have received 7,253 abstracts of which 6,925 were accepted.

Grants were given to scientists from developing countries, especially young scientists, in the form of support for registration fees, food and lodging expenses, travel expenses. These grants were given through funds provided directly by IUGG and each individual Association. The LOC and Prof. Lucio

Ubertini very generously provided 250,000 Euros. In total, the amount given to grants was of 428,502 Euros.

The Scientific Program Committee, which I had the honor to chair, comprises the Secretaries General of the Associations and the IUGG Secretary General, Dr. JoAnn Joselyn.

Our committee met first in Perugia in September 2006 and then in March 2007. The remainder of the work to establish, coordinate and finalize the scientific program was carried out electronically. As a result, we have 13 Union Symposia related directly to the IUGG and 4 Union lectures chosen by IUGG President, Prof. Uri Shamir, and delivered by most distinguished scientists.

We have 122 Symposia sponsored by the individual Associations and 75 Joint Symposia sponsored by two or more Associations.

We have a number of special events and I wish to bring two of them to your attention to insure we have an audience commensurate to their importance. Dr. Joselyn will relate about other special events.

The first one is IAPSO special event, that is the Prince Albert I memorial lecture and the presentation of the Prince Albert I Gold Medal to Prof. Russ Davis of Scripps Institution of Oceanography.

The lecture will be held on Wednesday July 4 at 9.30 a.m.

This event is to honor the memory of Prince Albert I of Monaco who in 1919 founded, and was the first President of, the Commission for Physical Oceanography which later became IAPSO. The Gold Medal was established in 2000 by HMS Highness Prince Rainier III of Monaco to honor a most eminent scientist in the Physical Sciences of the Ocean and is presented at every IAPSO General Assembly held every other year.

On Thursday July 5 at 7 p.m. there is the IAMAS special event, devoted to the findings of the 4th report of the International Panel for Climate Change, i.e. "Our Understanding of Climate Change". In view of the paramount importance and challenge that the changing climate of our planet presents to us, especially because of the anthropogenically induced global warming, I urge the all of you to attend this important event.

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I wish to conclude by thanking all the Secretaries general of the Associations, my colleagues in the Scientific Program Committee. We have worked closely and collegially for more than one year, and in these last months frantically!

Now we are here, in this gorgeous city, in this cultural environment. We are starting the largest and most important Assembly in our disciplines. We are ready to enjoy our sciences and, equally importantly, the wonderful hospitality of Umbria.

Again, welcome to you all!

ADDRESS BY JOANN JOSELYN, SECRETARY GENERAL OF IUGG

Dear Honored Guests, Colleagues,
Ladies and Gentlemen,

It is my pleasure to report to the Assembly certain aspects of the administration of the Union. A complete report has been sent to the IUGG Council members seated here, and has also been posted on the IUGG Website. A final report of matters transacted at this General Assembly will be made at the Closing Ceremony on July 13th. I hope that many of you will join us then.

In particular, at the Closing Ceremony we will name and remember those colleagues who have passed away since the 2003 General Assembly. Even so, today we must take note of the loss of Paul Melchior in September 2004. This extraordinary scientist had served IUGG as Secretary General from 1973 to 1991, and was still the Honorary Secretary General at the time of his death. His legacy of service will remain with us for years to come.

As of this 24th General Assembly, IUGG has 65 Members. Since the closing of the 23rd General Assembly in 2003 in Sapporo, Japan, we have added Bolivia, the Democratic Republic of the Congo, and Ghana. We are in discussions with several other countries, and soon hope to add additional partners with which to promote and enable worldwide research in the geosciences.

Dr. Shamir will summarize many of the activities of the Union during the past quadrennium, but a few are worthy of special note.

On 26 December 2004, a magnitude 9 great earthquake occurred off the west coast of northern Sumatra, South Asia. It triggered tsunamis that inundated the coastal zones around the Indian Ocean resulting in tragic and historic loss of life and property. The IUGG Union Commission on Geophysical Risk and Sustainability (GeoRisk), in cooperation with the IAPSO/IASPEI/IAVCEI Tsunami Commission, immediately responded with analysis and a statement. An IUGG Resolution based on this document was presented at the World Conference on Disaster Reduction in Kobe Japan (18-22 January 2005) by Tom Beer, IUGG Vice President and Past Chair of the GeoRisk Commission. The general topic of geohazards has been and continues to be a priority both within IUGG, its Commissions and Associations, and the entire scientific community.

As you have already been reminded, this is the 50th anniversary of the 1957-1958 International Geophysical Year. In response to a call to plan a

scientific activity that would build on the legacy of the IGY, the International Association of Geomagnetism and Aeronomy (IAGA) initiated a major project to provide an internationally coordinated framework and focus for a 21st-Century approach to geoscience data stewardship, capacity building, education and public outreach. This initiative, known as the Electronic Geophysical Year (eGY), was adopted as an IUGG initiative by the Executive Committee in 2005 and has been endorsed by a number of international bodies and programs, particularly the International Year of Planet Earth, the International Heliophysical Year, and the International Polar Year. The launch of the eGY is planned for next Saturday afternoon and we invite you to enjoy the exhibits and ceremonies that will be held then.

Dr. Shamir will say that the new Union Commission on Cryospheric Sciences is prepared to propose the formation of a new Association. If successful this will be an historic event. The last new Associations were added to IUGG in 1922, 85 years ago!

In the past four years, a total of \$65,000 in grants to support meetings was allocated to the organizers of 32 symposia, workshops, schools or meetings in 25 different countries, most of them in developing countries. In addition, a total of \$50,000 in grants was allocated in the years 2004 and 2005 to support 8 inter-Association initiatives that specifically benefited developing countries. By action of the 2005 Executive Committee, the grants were suspended for 2006-2007 in order to build a reserve of \$50,000 that could be used to seed a potential major project in Africa, an action still in progress. There will be presentations on the GeoSciences in Africa programme on Saturday as well.

An important part of my duties during the past quadrennium has been service to the International Council for Science (ICSU), here represented by their Executive Director, Thomas Rosswall. IUGG was successful in winning a total of \$73,000 in competitive grants to promote IAGA and IAHS research objectives; nominated persons for numerous panels and working groups, and endorsed the ICSU "Agenda for Action" with regard to Science in the Information Society. IUGG officers and representatives attended multiple ICSU meetings, and sent three young scientists to an extraordinary ICSU Young Scientists Conference organized this year in celebration of ICSU's 75th Anniversary. In addition, at the 2005 General Assembly, IUGG and its sister Union, the International Union of Geological Sciences, assumed responsibility for the

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International Lithospheric Programme, formerly an ICSU Interdisciplinary Body. During the past 4 years, IUGG spent more than \$147,000 to support inter-Union activities, including ILP, the World Climate Research Programme and the Federation of Astronomical and Geophysical Data Analysis Services. We look forward to continuing positive collaborations within this active consortium of international Unions and national members.

Along with Dr. Shamir, I would like to add my personal thanks to the Local Organizing Committee under the leadership of Dr. Lucio Ubertini, and the Scientific Programme Committee, chaired by Dr. Paola Malanotte-Rizzoli. Of particular importance, the Local Organizing Committee raised more than 250,000 Euros and acquired sponsorships to support scientists who could not otherwise afford to travel to Perugia. We understand the challenges of hosting a General Assembly and are grateful for their hard work.

During these past 8 years, the office of the Secretariat has been hosted by the University of Colorado within the Cooperative Institute for Research in Environmental Sciences (CIRES), and was financially supported by a grant from the US

National Research Foundation in cooperation with the National Research Council of the National Academies. The grant permitted the hire of assistants who managed the database, corresponded with the Member Adhering Bodies and IUGG officers, and prepared reports and mailings. During the past 4 years, it has been my special pleasure to work with Katina Rogers, whose support cannot be underestimated. I have appreciated her language skills, computer skills, dedication, laughter and friendship.

Finally, as I conclude my work with IUGG at this General Assembly, I wish to thank the IUGG Bureau members, Association Officers, and the Inter-Associations Committees for their work of the past 8 years. In particular, the IUGG Presidents, Dr. Uri Shamir, and before him Dr. Masaru Kono, and the IUGG Treasurer Dr. Aksel Hansen have served the Union with passion and dedication. It has truly been an honor to stand beside them.

Best Wishes to all for a successful General Assembly and the quadrennium to come.
Thank you.

ADDRESS BY URI SHAMIR, PRESIDENT OF IUGG

IUGG Colleagues, Excellencies,
Ladies and Gentlemen,

We gather again for IUGG's General Assembly. Four years ago the current Bureau and the Executive Committee assumed responsibility for the Union and worked together to advance the state of our science and to ensure the participation of colleagues from all around the world, with special attention to those of us from countries and regions that are less developed and in greatest need.

The culmination of this four-year period is in this 24th General Assembly. We are grateful for the Patronage of the President of Italy, of the National Council for Research, the University of Perugia, the Region of Umbria, the Province and City of Perugia, and many sponsoring entities, and appreciate the extensive work of the Local Organizing Committee.

This General Assembly convenes under the title "Earth: Our Changing Planet", which reflects the dynamic nature of the geophysical world, evolving and changing due to natural forces and man-made influences, and the consequences of these forces. Dynamism and change also characterize our programmes in science and social responsibility. We pursue scientific objectives in geophysics to increase understanding of the terrestrial world that we share with its fauna and flora, looking also to the space and planets beyond and their influence on Earth, and using this knowledge for creating the foundation upon which society can make wise choices.

While doing so we must keep in mind that society and the decision makers may not accept and apply readily the knowledge and advice that we are offering, especially when our work leads to a conclusion that more caution and prudence should be exercised in policies and action. We are therefore called upon to formulate and present our knowledge in forms and formats that make the knowledge understandable and convincing to broad audiences and to politicians. Some of the sessions in this Assembly deal specifically with such cases, for example climate change, monitoring and preparedness for tsunamis and earthquakes, and the effect of aerosols on precipitation. In these cases we must maintain our responsibility as scientists, by creating a well founded knowledge base and through informed and responsible advocacy.

IUGG is a union of seven Associations, which cover all components of earth and its environment: geodesy, aeronomy and geomagnetism, hydrology and water resources, the atmosphere and oceans,

the earth's interior and its volcanoes. An eighth Association, which deals with the cryosphere, will be brought for approval during this Assembly. The challenge is ever present: to expand and improve our understanding in all these domains - individually and jointly.

In the years leading up to the Sapporo GA, IUGG was engaged in a process of self-examination, defining its goals and mode of operation. The process was prompted by the sense that IUGG needs to evolve in view of changing conditions. Some of the reasons that motivated the statement of a renewed mission were:

- our science must cover the entire globe and integrate colleagues from around the world;
- the increasing importance of the social context of our scientific work; and
- the continuing revolution in Information Technology, and the effect that it has on scientific work.

The resulting conclusions have been and remain a valuable road-map for the Union.

Let me mention a few highlights of IUGG's activities during the last quadrennium, and leading into the next:

- The Associations, which are the pillars of the Union, continue their creative and active scientific work with projects, working groups and meetings.
- The Union Commissions – on GeoRisk and Sustainability, on Mathematical Geophysics, and on the Lithosphere - conducted projects and meetings.
- The Executive Committee is recommending to the Council to approve a new International Association for Cryospheric Sciences, our eighth Association.
- We created and greatly strengthened the Geo-Unions consortium, a cluster of eight Unions, cooperating in science programs – on cities and mega-cities, desertification, groundwater, hazards, health, and the International Year of Planet Earth - and operating jointly within ICSU, the International Council of Science.
- The "Geo-Sciences in Africa" initiative, which supports geoscientists in Sub-Saharan Africa, was also adopted as a component of the Geo-Unions work plan, to be conducted in collaboration with ICSU's Regional Office in Africa. Similar cooperation is being built with the other ICSU Regional Offices, in Asia and Pacific, and in Latin America and Caribbean.
- We continue to promote our involvement and presence within ICSU – the International Council of Science.

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Opening Ceremony

- IUGG also continues to maintain its cooperation with the international agencies, including UNESCO and the WMO.
- Next Saturday we will be celebrating the 50th Anniversary of the International Geophysical Year IGY+50, and the other anniversary years: eGY – the Electronic Geophysical Year, led by the Association for Aeronomy and Geomagnetism; IHY – the International Heliophysical Year; IPY – the International Polar Year; and IYPE – the International Year of Planet Earth.
- The Secretariat, led by our very able Secretary General JoAnn Joselyn, made great improvements to the IUGG site page and the communication with the Associations and membership, and continues to disseminate monthly the E-Journal.
- The Science Programme Committee, constituted from the Secretaries General of the Associations and chaired by Paola Rizzoli, prepared the programme for this Assembly. It emphasizes Union level, Inter-Association and Association symposia and workshops.
- A Nominations Committee, chaired by Soren Gregersen, solicited proposals, prepared a slate, and will present to Council recommendations for appointment of the President and other members of the incoming Bureau of the Union.
- The Statutes and By-Laws Committee, chaired by David Kerridge, and a Resolutions Committee chaired by Masaru Kono, have been appointed, and will carry out on their respective responsibilities during this Assembly.
- The Site Evaluation Committee, chaired by Bob Engdahl, is considering invitation for hosting the next General Assembly.
- The Local Organizing Committee, chaired by Lucio Ubertini and managed by Salvatore Grimaldi and Arnaldo Pierleoni, with many others helping, have worked long and hard to make the arrangements for the Assembly, for which we are grateful.

I have held various offices in the Union since the 1970s, four years as President of IAHS, then eight years Vice President of IUGG and in the last four years as President. It has been an exciting and eventful time, and I am grateful for the opportunity to serve my scientific community, jointly with the Bureau: Vice President Tom Beer, Secretary General JoAnn Joselyn, Treasurer Aksel Hansen, Bureau members Yun-Tai Chen, Harsh Gupta and Ali Tealeb. A strong, dedicated and cooperative Executive Committee of Association Presidents, ably aided by their Secretaries General, greatly facilitated carrying out the task of leading the Union. To all these colleagues and friends I extend my gratitude for their support.

The Council will be electing a new group of officers, who will be taking over at the end of this Assembly, to lead the Union in the coming four years. To them we send our thanks for being prepared to undertake the task, and wish them well.

And to us all I wish a successful and fruitful Assembly. May it be an opportunity to advance our science and strengthen collaboration and friendships.

MINUTES OF THE COUNCIL MEETINGS
MINUTES OF THE FIRST SESSION OF THE IUGG COUNCIL MEETING
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007

FIRST SESSION

WEDNESDAY JULY 4, 2007 (2 PM – 6 PM), ROOM 8 OF THE RECTORATE BUILDING

PARTICIPANTS

NATIONAL DELEGATES

Australia	Ian Jackson
Austria	Christoph Twaroch Michael Kuhn (alternate)
Belgium	Prof. Bernard Ducarme
Brazil	Luiz Paulo Souto Fortes
Canada	Zoltan Hajnal
Chile	Rodrigo Barriga Vargas
China	Guoxiong Wu
China – Taipei	Yih-Hsiung Yeh
<i>Colombia</i>	<i>William Martinez-Diaz</i>
Czech Republic	Petr Holota
Denmark	Søren Gregersen
Egypt	Salah Mahmoud
Estonia	Rein Room
Finland	Pentti Malkki
France	Roland Schlich
Germany	Rainer Kind
Hungary	Jozsef Adam
Iceland	Arni Snorrason
India	V.P. Dimri
Indonesia	Cecep Subarya
Israel	Zev Levin
Italy	Lucio Ubertini
Japan	Kuniyoshi Takeuchi
Korea	Wooil M. Moon
Luxembourg	Nicolas Schares
New Zealand	David Rhoades
Nigeria	C.U. Ezeigbo (alternate)
Norway	Bente Lilja Bye
Poland	Lubomir W. Baran
Portugal	Luis Alberto Mendes-Victor
Romania	Constantin Sava
Russia	Alexei D. Gvishiani
Slovak Republic	Ladislav Brimich
Slovenia	Dr. Mitja Brilly
South Africa	Charles Merry Isabelle Ansorge (Alternate)
Spain	Alicia García García
Sweden	Goran Marklund
Switzerland	Charles Fierz
Turkey	Ali Kilicoglu
United Kingdom	David Collins
USA	Priscilla Grew

Italics for Countries in Observer Status

MEMBERS OF THE BUREAU

President	Uri Shamir
Vice President	Tom Beer
Treasurer	Aksel Hansen
Secretary General	Jo Ann Joselyn
Member	Yun-tai Chen
Member	Harsh Gupta
Member	Ali Tealeb

Katina Rogers, Assistant Secretary General

MEMBERS OF THE FINANCE COMMITTEE

Chair	Michael Hamlin
Member	David Jackson
Member	Juan Francisco Vilas

IUGG PAST PRESIDENT AND PRESIDENTS OF THE ASSOCIATIONS

Past President	Masaru Kono
President IAG	Gerhard Beutler
President IAGA	Charles Barton
President IAHS	Arthur Askew
President IAMAS	Michael MacCracken
President IAPSO	Shiro Imawaki
President IASPEI	E. Robert Engdahl
President IAVCEI	Oded Navon

GUESTS OF THE PRESIDENT ATTENDING THE FIRST SESSION OF THE COUNCIL

Secretaries General of the Associations

IAG	Christian Tscherning
IAHS	Pierre Hubert
IAMAS	Roland List
IAPSO	Cintia Piccolo for Fred Camfield
IASPEI	Peter Suhadolc
IAVCEI	Steve McNutt

Czango Baag (candidate for IUGG Finance Committee)

Ray Cas (representing the Australia/New Zealand bid for the 2011 General Assembly)

Alik Ismail-Zadeh (candidate for IUGG Secretary General)

Zhang Hongren (President of the International Union of Geological Sciences)

Georg Kaser (President of the Union Commission on Cryospheric Sciences)

David Kerridge (candidate for IUGG Vice-President, and Chair of Statutes and By-Laws Committee)

Jan Krynski (candidate for IUGG Finance

Committee)

François Lefeuvre (President of the Union of Radio Science International)

Thomas Rosswall (Executive Director, International Council for Science (ICSU))

Ester Szein (USA National Academies Board of International Scientific Organizations)

1. Greetings; Presentation of the credentials

The meeting was called to order at 2 pm and began with a roll call of delegates. 38 delegates were present at the opening, 37 eligible to vote. The total number of countries eligible to vote was 50 (65 minus 7 in observer status, minus 8 in associate status). The quorum (17) was reached. Other delegates arrived in the course of the meeting, bringing the total to 41 with 40 eligible to vote.

2. Approval of the Agenda

Uri Shamir announced a request on behalf of Argentina to allow adding to the agenda a vote to lower their category from 4 to 3 under Agenda item 7. The President asked for a show of cards to ascertain if a 2/3rds majority vote of the Council would agree that this could be added. None dissented. Shamir then asked if the amended Agenda could be approved, and again there was no dissent.

3. Approval of the minutes of the Council Meeting in Sapporo (2003)

The Minutes of the 2003 Council Meeting were printed and distributed to the participants of the 2003 General Assembly for their comments, were published in the Comptes Rendus of the 23rd General Assembly, and were also posted on the IUGG web page. President Shamir asked if the 2003 Council Minutes could be approved; there was no dissent.

4. Brief Reports of the Officers

President Uri Shamir

Uri Shamir summarized the activities of the Union since 2003 as detailed in his report in the Council Agenda Book.

Vice-president Tom Beer

Tom Beer summarized the activities of the Union Commissions since 2003 as detailed in his report in the Council Agenda Book. Allocation of responsibility for the Union Commissions to the Vice-President was a decision of the Bureau at their 2004 meeting

Secretary General Jo Ann Joselyn

JoAnn Joselyn summarized activities of the Secretariat, especially including membership issues. Her full report was included in the Council Agenda Book.

Treasurer Aksel Hansen

Aksel Hansen summarized his report in the Council Agenda Book. Of special note were the following 2004-2007 estimates in thousands of US Dollars, comparing the budget to the estimated "reality" results (figures will be finalized only after the GA):

Budgeted Income: 1.531

Budgeted Expenditures: 1.624

Expected Result: loss of 92

Reality:

Estimated Income: 1.735

Estimated Expenditures: 1.590

Expected Result: gain of 145

The positive outcome - estimated to be 235,000 US Dollars - is the result of higher income from the 2003 General Assembly than budgeted, and lower administrative expenses for the past quadrennium than budgeted.

5. Introduction of the Guidelines on IUGG Administration

JoAnn Joselyn explained that the guidelines allowed for easier application of separate sections of the Statutes and By-Laws and increased understanding of IUGG procedures. It also preserves the rationale for why/how certain decisions are made, such as those regarding Union Commissions (agreed at the meeting of the 2004 Executive Committee) and the rules used for the annual allocations to the Associations. It was proposed that maintenance of this document become a responsibility of the Bureau, and that this duty be explicitly noted in the Statutes and By Laws under Agenda item 8.

6. Report of the Nominations Committee and Introduction of the Candidates

Søren Gregersen, Chair of the Nomination Committee reviewed his preliminary report in the Council Agenda Book, including the role/actions of the Nominations Committee. He thanked the members of the Nominations Committee (Prof. Attia Ashour (Egypt), Prof. Robert Duce (USA), and Prof. Seiya Uyeda (Japan)) and introduced the nominees. For each position, one or two candidates have been nominated, as required by the By-Laws (10b). The positions and the nominated candidates were:

President: Tom Beer (Australia)

Vice-President: Harsh K. Gupta (India), and David Kerridge (U.K.)

Treasurer: Aksel W. Hansen (Denmark)

Secretary General:

Alik Ismail-Zadeh (Germany)

Bureau Members

Position #1 Yun-Tai Chen (China)

Position #2 Ali Tealeb (Egypt)

Position #3 David Jackson (U.S.A.)

Finance Committee

Position #1	Jan Krynski (Poland)
Position #2	Kyoshi Suyehiro (Japan)
Position #3	Juan Francisco Vilas (Argentina)
Position #4	Czango Baag (Korea)

He explained that additional nominations could be received for the Finance Committee. There must be two new members and two continuing members. The continuing members were K. Suyehiro and J.F. Vilas, and no other continuing members were eligible. However, new nominations for the other two positions on the Finance Committee were open until 3 days before the election (Sunday July 8, considering that the elections take place on Wednesday July 11). Only those who have served on Council can be nominated and no member of the Finance Committee may at the same time be a member of the Bureau or the executive body of the Union or of an Association or of a governing body of one of the permanent services or programs supported by the Union. Nominations could be delivered to the Chair of the Committee or placed in his mailbox in the IUGG office.

Uri Shamir added that he hopes for a higher number of nominations for all offices in the future.

7. Matters of Membership

Uri Shamir introduced this important item of business, which required written ballots that had been distributed at the beginning of the Council session. David Collins (United Kingdom) and Alik Ismail-Zadeh volunteered to tally the votes with the help of Katina Rogers.

The matters requiring votes (for, against, or abstain) were presented in detail in the Council Agenda Book. Ballots for admission of new members required a 2/3rds majority vote; all other matters of membership required a majority vote. The results were as follows:

Admission of D.R. Congo as an Associate Member	For 39; Against 0; Abstain 1
Admission of Ghana as an Associate Member	For 39; Against 0; Abstain 1
Admission of Bolivia as an Associate Member	For 39; Against 0; Abstain 1
Transfer of Bulgaria to Associate Status	For 38; Against 0; Abstain 2
Deletion of Serbia & Montenegro as a member Country	For 38; Against 0; Abstain 2

A letter from Argentina's National Committee explaining the circumstances that led to the request to reduce their category from 4 to 3 was read.

Michael Hamlin, Chair of the Finance Committee, commented that the Committee had examined these circumstances and endorsed the request. An extra ballot had been distributed to record this vote. Reduction of Category of Argentina from 4 to 3
For 38; Against 0; Abstain 2

During the past term, 4 members that had been in Associate status had petitioned to the Bureau to once again become regular members. Uri Shamir expressed his appreciation to these members and also his hope that additional Associate members could follow these examples.

Associate Members that have resumed dues payments and are again regular Members:

- Pakistan
- Nigeria
- Armenia
- Albania

8. Proposal to add a new constituent Association: the International Association for Cryospheric Sciences (IACS)

Uri Shamir invited Georg Kaser to give a presentation on behalf of the current UCCS. Specific questions from Council Members and the responses included the following.

- What is the relationship between the proposed new Association and existing Associations? At the 2005 Executive Committee meeting, all Associations agreed that Cryospheric Sciences has matured into an independent scientific discipline and unanimously approved the formation of a new Association. IAHS, which had previously included some aspects of the new Association within their International Commission on Snow and Ice, has been the strongest supporter of the new Association.
- What is the relationship between the proposed new Association and the ICSU Scientific Committee for Antarctic Research? The new Association expects to collaborate with SCAR as opportunity arises, and in fact should strengthen the IUGG presence within SCAR.
- Will all countries be able to have a correspondent? While it is true that some countries may not have cryospheric scientists within their borders, that is also true for other disciplines such as volcanology. We expect that at least a quorum of countries (one-third) represented within IUGG will be able to name correspondents.
- What will be the impact on the IUGG budget? The budget to be presented to the Council provides for support for the new Association from that portion of the budget allocated to Union activities. That is, for the next term, there will be no reduction in the budgetary

allocations to the present Associations as a result of the new Association. For the following term, a new proposal will be made to slowly integrate IACS into the algorithm for distribution of IUGG income to the Associations.

- Does this action fragment IUGG sciences? The opinion of the other Associations is that this clarifies and strengthens the disciplinary work of IUGG. Inter-disciplinary activities are always encouraged, and are a specific goal of the IUGG General Assemblies.

Delegates from Finland, France, and Norway spoke in support of the new Association, as did officers of IAHS, IAMAS, and IAPSO.

The vote was taken: 35 yes, 3 no, 2 abstain. This satisfies the requirement for a simple majority, and IACS is now established as a new Association, in effect at the closing of the current GA.

9. Proposed Changes of Statutes and By-Laws

Uri Shamir invited David Kerridge, Chair of the Committee on Statutes and By-laws, to present the report given in the Agenda. He first thanked the members of the Committee (Pierre Barriot, Priscilla Grew, and Ronald Stewart), and corrected an error in the material on page 60 – the proposal for the changes regarding languages was submitted by Denmark, not the United States of America.

Kerridge first presented the proposed editorial changes, explaining that the reasons for each were clarification, primarily through changes in the choice of words. He noted the three instances in which the words proposed could alter the original meaning. A number of questions were raised and discussed.

Kerridge then discussed each of the seven substantive changes as presented in the Council Agenda Book.

1. Introduces the changes necessary to admit the new association, IACS.
2. Clarifies who may be nominated for the Finance Committee; extend possibility to any who have served as Council Delegates at present or previous General Assembly.
3. Extend the range of categories to 14, such that Category 13 carries 45 units, and 14 carries 50 unit.
4. Clarifies the definition of Union Commissions.
5. Adds a responsibility to the duties of the Bureau, the SG, and the Treasurer with regard to the administration (to include maintenance of the document “Guidelines on IUGG Administration”)

6. Modifies Statute 26 to specify which revision of Robert’s Rules of Order is to be applied at meetings.
7. Clarifies that French and English are the official languages of the Union, and modifies Statute 27 so that the English version of the Statutes becomes the definitive version of the text.

Following discussion, the delegates were asked to vote on each proposal. The results were as follows (for Proposal 3, votes are weighted by category):

Proposal	For	Against	Abstain
Editorial changes	36	0	4
1. IACS	37	0	3
2. Finance Committee	36	0	4
3. Increase in membership categories	108	15	7
4. Clarification of Union Commissions	34	1	5
5. Addition of Admin. Guidelines document	37	0	3
6. Clarification of Edition of Robert’s Rules	36	0	4
7. Clarification of official languages	30	4	6

Thus, all proposed changes were approved, with the necessary majority.

10. Adoption of IACS Statutes and By-laws Appointment of IACS Officers, 2007-2011

The Council, having approved the formation of the International Association for Cryospheric Sciences, was asked to approve their proposed Statutes and By-laws, and to appoint the first officers of the Association. The Statutes and By-laws were included in the Council Agenda Book, as well as a partial slate of officers. The completed slate was presented as follows:

President: Georg Kaser (Austria)
 President Elect: Ian Allison (Australia)
 Vice President: Kumiko Goto-Azuma (Japan)
 Vice President: Peter Jansson (Sweden)
 Vice President: Gino Casassa (Chile)
 Secretary General: Manfred Lange (Germany)

Head of Division I: "Snow and Avalanches":
 Charles Fierz (Switzerland)
 Head of Division II: "Glaciers and Ice-sheets":
 Julian Dowdeswell (UK)
 Head of Division III: "Marine and Freshwater Ice":
 Claude Duguay (Canada)

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Head of Division IV: "Cryosphere, Atmosphere and Climate":

Valérie Masson Delmotte (France)

Head of Division V: "Planetary and other Ices of the Solar System": Ralf Greve (Japan)

The Council vote was taken up at the second session of the Council. The results were

For 39; Against 0; Abstain 1

11. Presentation of the Proposals for the XXV General Assembly in 2011

Uri Shamir invited Ray Cas to give a presentation on the joint bid of Australia and New Zealand to host the 2011 General Assembly. Ray Cas discussed the strengths of Melbourne for hosting a conference such as convenient international access, excellent rail and bus transportation within the city, the Convention and Exhibition space (MECC), and the availability of a wide variety of accommodations, including University dormitories if the Assembly can be planned so that it coincides with semester break. He also pointed out the

scientific value of a General Assembly in the Southern Hemisphere and particularly Australia and New Zealand, enumerated possible scientific and cultural field trips and their proposal for a public scientific outreach program. 500,000 Aus \$ is being contributed by the Victorian State Government to provide organization costs and to help support the attendance of scientists in need to attend, and a further 60,000 Aus \$ by the Melbourne Convention and Visitors Bureau to help promote the conference between now and 2011. In reply to a specific question about the expected registration fee, Cas replied that it was a goal of the Local Organizing Committee to make the Assembly affordable, keeping the fees in line with prior Assemblies but allowing for inflation. They will seek further funding and sponsorship.

He noted that the bid document is available on the web and a booth has been set up in the exhibition area.

The Council recessed until Friday July 6.

SECOND SESSION
FRIDAY JULY 6, 2007 (4 PM – 7 PM), ROOM 8 OF THE RECTORATE BUILDING

PARTICIPANTS

Member Harsh Gupta
Member Ali Tealeb

NATIONAL DELEGATES

Argentina Alfredo Augusto Stahlschmidt
Australia Ian Jackson
Austria Christoph Twaroch
Belgium Bernard Ducarme
Bosnia and Herzegovina
Medzida Mulic
Brazil Luiz Paulo Souto Fortes
Canada Zoltan Hajnal
Chile Rodrigo Barriga Vargas
China Guoxiong Wu
China – Taipei Yih-Hsiung Yeh
Colombia William Martinez-Diaz
Czech Republic Petr Holota
Denmark Søren Gregersen
Egypt Salah Mahmoud
Estonia Rein Room
Finland Pentti Malkki
France Roland Schlich
Germany Rainer Kind
Hungary Jozsef Adam
Iceland Arni Snorrason
India V.P. Dimri
Indonesia Cecep Subarya
Israel Zev Levin
Italy Lucio Ubertini
Japan Kuniyoshi Takeuchi
Korea Woil M. Moon
Luxembourg Nicolas Schares
New Zealand David Rhoades
Nigeria Francis Fajimirokun
Norway Bente Lilja Bye
Poland Lubomir W. Baran
Portugal Luis Alberto Mendes-Victor
Romania Constantin Sava
Russia Alexei D. Gvishiani
Slovak Republic Ladislav Brimich
Slovenia Dr. Mitja Brilly
South Africa Charles Merry
Spain Alicia García García
Sweden Goran Marklund
Switzerland Charles Fierz
Turkey Ali Kilicoglu
United Kingdom David Collins
USA Priscilla Grew

Katina Rogers, Assistant Secretary General

Members of the Finance Committee

Chair Michael Hamlin
Member David Jackson
Member Kiyoshi Suyehiro
Member Juan Francisco Vilas

IUGG Past President and Presidents of the Associations

Past President Masaru Kono
President IAG Gerhard Beutler
President IAGA Charles Barton
President IAHS Arthur Askew
President IAMAS Michael MacCracken
President IAPSO Shiro Imawaki
President IASPEI E. Robert Engdahl
President IAVCEI Oded Navon

Guests of the President attending the second session of the Council meeting

Secretaries General of the Associations
IAHS Pierre Hubert
IAMAS Roland List
IASPEI Peter Suhadolc
IAVCEI Steve McNutt
Hermann Drewes (candidate for IAG Secretary General)
Alik Ismail-Zadeh (candidate for IUGG Secretary General)
Georg Kaser (President of the Union Commission on Cryospheric Sciences)
Ester Szein (USA National Academies Board of International Scientific Organizations)

The Council Meeting resumed at 4 pm with a roll call of delegates. 41 delegates were present at the opening, 40 eligible to vote. The quorum (17) was reached.

12. Reports by Association Presidents

Council Delegates were asked to note the reports of the Associations available in the Council Agenda book.

□ IAG

Gerhard Beutler reported for IAG. He described the Association's work and the technology used. He also delineated the various services and projects, as well as several minor changes made to the Statutes and By-Laws. Of special interest, is their new logo.

□ IAGA

Charles Barton reported on behalf of IAGA, first asking formal permission from the president to

Italics for Countries in Observer Status

Members of the Bureau

President Uri Shamir
Vice President Tom Beer
Treasurer Aksel Hansen
Secretary General Jo Ann Joselyn
Member Yun-tai Chen

continue his report, considering that Aeronomy is not included in the first Statute of IUGG; he suggested that this lacuna should be corrected.. He then described the general work of IAGA, as well as the previous and upcoming assemblies. He announced the new EC members: President Eigel Friis-Christensen (Denmark); VP Kathryn Whaler (UK); and the election of 7 members from Brazil, China, Czech Republic, France, India, and USA.

□ IAHS

Arthur Askew reported for IAHS. He announced that during the coming week, they would be voting for officers for the coming quadrennium. He noted that, in view of the establishment of IACS, a slight change would need to be made to the name of one IAHS commission so that it reads International Commissions on Snow and Ice Hydrology; this change will be included in their By-Laws. He described the various Commissions and Working Groups, the Journal and Red Books. He also announced the winners of the 2007 International Hydrology Prize (Des Walling, UK) and the Tison Award (Christophe Cudennec, France and Houda Boudrhaâ, Tunisia).

□ IAMAS

Michael MacCracken reported on behalf of IAMAS. He described the various activities that are the focus of IAMAS, and the recent international meetings held by the groups within IAMAS. He described the work of IAPSAG (International Aerosol-Precipitation Assessment Group), which was jointly established by IUGG and WMO pursuant to a resolution passed at the Sapporo Assembly, indicating that they had completed their work and were releasing their report on the effects of aerosol emissions on precipitation in a special symposium at this General Assembly. In addition, he indicated that IAMAS would be submitting two resolutions, one dealing with the follow-up effort to IAPSAG and one regarding the urgency of addressing climate change. He announced a few anticipated changes to IAMAS Statutes and By-laws. There will be many changes among the officers when elections take place, as many are retiring, and particularly noted the long and faithful service of retiring Secretary General, Roland List.

□ IAPSO

Shiro Imawaki presented on behalf of IAPSO. He announced the work of IAPSO, recent assemblies, and joint projects. He also announced the winner of 2007 Prince Albert I Medal (Russ Davis, USA). He discussed proposed changes to the Statutes and By-Laws, the most important of which involves the division of duties of the Secretary General and the addition of a Treasurer. The next IAPSO assembly will be held jointly with IAMAS and IACS in Montreal, Canada, in 2009.

□ IASPEI

Bob Engdahl reported for IASPEI. Their 2005 Assembly in Santiago, Chile had participants from 42 countries (including all countries in South America). He described the upcoming projects of IASPEI, many of which involve risk analysis and risk management. He discussed IASPEI publications and announced the new officers.

□ IAVCEI

Oded Navon presented on behalf of IAVCEI. He described the basic work, website, and publications of IAVCEI, especially recent 'super volcano' studies. He delineated attendance and locations of recent assemblies and described the commissions, which carry out much of IAVCEI's work. He announced details of membership, and also the results of the elections. He noted the addition of elected national correspondents in Romania and Mexico, which had a positive effect on membership.

13. Review of IUGG Union Commissions

Tom Beer reported on the Union Commissions, noting that the existence of these entities is from one General Assembly to the next, depending on the recommendations of the Executive Committee and the approval of the Council. Detailed reports from each Union Commission are included in the Council Agenda Book.

- Commission on Geophysical Risk and Sustainability (GeoRisk)
- Committee on Mathematical Geophysics (CMG)
- Committee on Studies of Earth's Deep Interior (SEDI)
- Commission on Cryospheric Sciences (CCS)

Following Beer's presentation, the following questions were raised.

- Is there a formal mechanism by which the Union keeps track of these organizations? Yes, the IUGG Vice President has the responsibility of communicating with each Commission. Reports are required before each meeting of the Executive Committee.
- Is there an effort made to hold meetings in common? The Union Commissions meet separately, but in coordination with the Association meeting. Union Commissions are expected to co-convene symposia especially at General Assemblies.

14. Review of Inter-Union Activities

- International Lithosphere Program (ILP)

Uri Shamir introduced the ILP, which is an inter-Union body between IUGG and the International Union of Geological Sciences. Bob Engdahl, IUGG representative to ILP, then presented a detailed report, describing the transformation of ILP over time and their present activities. K.C. Sain is the other IUGG representative to the ILP

Bureau, and Alan Green, a former Chair of ILP, is the joint IUGS/IUGG member. In addition, Søren Gregersen is Chair of ILP National Members. ILP financial support from IUGG this past term (2004-2007) was \$68,000 (USD). The same amount, \$17,000/year, is proposed for the next term.

The GeoUnions Consortium

Uri Shamir described the Consortium as an informal grouping of eight of the ICSU Unions. There are four clusters of unions within ICSU; the GeoUnions Consortium is based on one of them. Representatives of the GeoUnions have met together 5 times since 2004 in order to collaborate on scientific programs and to discuss issues of mutual interest, including their position with ICSU. Examples of specific issues were a perceived disregard by ICSU for Union expertise, and lack of transparency particularly with regard to the selection of members of ICSU working groups. A joint letter to ICSU was prepared and sent, and a reply was received. The GeoUnions welcomed the response and sent a second letter praising the improvements. The GeoUnions have established a website including Terms of Reference at www.geounions.org.

15. Relations with ICSU

Summary of Matters Arising

Uri Shamir explained that ICSU - the International Council for Science - is a non-governmental organization that seeks to coordinate the activities of scientific unions (29, including IUGG) with the aim of strengthening international science for the benefit of society. IUGG pays dues to ICSU of approximately \$16,000/year. At the 2005 ICSU General Assembly in China, Uri Shamir was proposed by the GeoUnions and elected by the ICSU General Assembly to the ICSU Executive Board, and Harsh Gupta was named to the Committee for Scientific Planning and Review, which carries critical responsibilities with regard to the ICSU Strategic Plan. IUGG is fortunate to have officers in these key roles.

Of particular interest to IUGG, ICSU has established 3 Regional Offices in the past few years in Africa, Asia and the Pacific, and Latin America and the Caribbean. IUGG has sent representatives to the inaugural meetings of these offices: Charles Merry to the office in Pretoria, Africa, Tom Beer and Harsh Gupta to the office Kuala Lumpur, and Luiz Paolo Fortes to the office in Rio de Janeiro. It was proposed that IUGG liaisons to each of these offices be formally appointed by the Council so that IUGG can be better involved in activities that build the scientific capacities within each region.

Federation of Astronomical and Geophysical Data Analysis Services (FAGS)

At the 2005 ICSU General Assembly, it was proposed that FAGS be discontinued as an Interdisciplinary Body. IUGG has significant interest in FAGS, primarily through the several Permanent Services affiliated with IAG. IUGG supports FAGS at the level of \$12,000/year, and shares responsibility for some of the Permanent Services with URSI and IAU. Ultimately, as explained in the Council Agenda Book, ICSU decided to continue FAGS until 2008 while they re-examine all ICSU activities relating to data and information such as CODATA and the Panel on World Data Centers. ICSU has formed a Scientific Committee on Information and Data (SCID) to consider the possibilities and report to the 2008 ICSU General Assembly in Maputo, Mozambique. Until then, it was proposed that IUGG maintain a liaison with FAGS and continue financial support at the same level as last term,

16. Reports from liaison appointments to ICSU Commissions and Committees

In order to conserve time, Uri Shamir referred the Council to reports in the Agenda Book and only briefly reviewed each of the organizations. He announced that following the next Agenda item, a table of appointments for the 2007-2011 terms would be presented for Council approval.

Scientific Committee

- on Antarctic Research (SCAR)
- on the International Geosphere-Biosphere Programme (IGBP)

Note – it was recommended that this liaison appointment be discontinued and liaison activities with IGBP programmes be carried out as appropriate at the Association level.

- on Oceanic Research (SCOR)
- on the Problems of the Environment (SCOPE)
- on Science and Technology in Developing Countries (COSTED)

Note – COSTED no longer exists; has it has been replaced by the ICSU Regional Offices.

- on Solar-Terrestrial Research (SCOSTEP)
- on Space Research (COSPAR)
- on World Climate Research Program (WCRP)

Roland Schlich (France), the IUGG liaison to SCAR for the past term, commented that he had felt isolated in his role and thought there should be more interaction between the liaisons and the IUGG Executive Committee. Shamir responded that Executive Committee understands this comment and seeks to remedy this issue through better communication.

17. Relations with inter-governmental and other organizations (renewal of liaison officers)

Uri Shamir continued to highlight these reports in the Council Agenda Book.

- Cartographic Office of the United Nations
- International Civil Aviation Organization (ICAO)
- Panamerican Institute of Geography and History (PAIGH)
- UNESCO International Hydrological Programme (IHP)
- UNESCO International Oceanographic Commission (IOC)
- World Meteorological Organization (WMO)

Finally, the following table of proposed appointments was presented. Shamir asked if the Council could approve the appointments and there was no dissent.

Organization	Proposed Liaison 2007-2011
FAGS	Ruth Neilan (USA)
SCAR	V. Papatashvili (USA)
IGBP	None (delete)
SCOR	M. MacCracken (USA), L. Mysak (Canada)
SCOPE	N. Jake Peters (USA)
ICSU RO Africa	R. Wonnacott (S. Africa)
ICSU RO Asia & Pacific	S. Widiyantoro (Indonesia)
ICSU RO Latin America & Caribbean	Luiz Fortes (Brazil)
SCOSTEP	Robert Vincent (Australia)
COSPAR	Eigil Friis-Christensen (Denmark)
WCRP	Guoxiong Wu (China)
CODATA	Charles Barton (Australia)
UN Cartogr.	Luiz Fortes (Brazil)
ICAO	William Rose (M. Gufanti, Alternate) (USA)
PAIGH	Hermann Drewes (Germany)
IHP	Pierre Hubert (France)
IOC	Eugene Morozov (Russia)
WMO	Arthur Askew (Aus/UK); John Turner (UK)

18. Report of the IUGG Finance Committee

- Review of the 2003-2007 Quadrennium

Michael Hamlin, Chair of the Finance Committee, reported on the healthy status of IUGG's finances (formally presented in the Council Agenda Book), as well as his own tenure in the Finance Committee and the need for continuity. While it has been planned that IUGG would spend more than its income for the past quadrennium, thereby drawing down the reserves, instead the quadrennium is ending with a surplus. Reasons for the surplus include healthy economies, increased payment by member countries, and low spending.

- Review of Categories of Member Adhering Bodies (By-Law 11.g)

Hamlin explained how the category of a member country is determined and applauded the decision by Switzerland to raise their category from 3 to 5. He noted that a number of countries belonged in higher categories than their present subscription, and that he and the IUGG President had written to each of those countries asking for a voluntary raise. They had also written to each member in observer status, asking that they seek the means to pay their dues and regain their right to vote and hold office. Further, Associate members had been encouraged to begin payment of dues.

19. Presentation and Adoption of the 2008-2011 Budget

Aksel Hansen discussed the proposed budget. He noted that the number of Observers (those members that owe more than one year of dues payments) has decreased to seven. He described the changes that are being proposed in order to decrease the reserves over the next term (2008-2011). The plan will be to maintain a reserve of about 550k, equivalent to one year's expenses. Once the reserve has been reduced to that level, a balanced budget will be maintained. He noted that the budget proposed in the original Agenda book has been replaced by a new draft, appended to the Council Minutes. He highlighted the significant changes, then went through the budget line by line and answered questions as they were asked.

Uri Shamir then asked if Council was ready to vote on the Budget. David Collins (U.K.) once again served as Teller, assisted by Katina Rogers and Alik Ismail-Zadeh. The vote, weighted by category, was taken and the results were as follows.

For 136; Against 0; Abstain 12

The Council recessed until Wednesday July 11.

IUGG Budget 2008 -11 Approved, 06.07.07

Totals

All figures, except the value and number of units, are in thousands of US dollars

Year	2007	2008	2009	2010	2011	2008-11
Estimated unit value	\$1,630	\$1,660	\$1,695	\$1,730	\$1,765	\$1,712
Estimated number of units		260	260	260	260	1040
INCOME						
1. MEMBERSHIP DUES	486.6	431.5	440.6	449.7	459.0	1780.8
2. ASSEMBLY SURCHARGE					20.0	20.0
3. SALES OF PUBLICATIONS, ETC		0.2	0.2	0.2	0.2	0.8
4. MISCELLANEOUS (interest)		12.5	12.5	12.5	12.5	50.0
5. TOTAL INCOME		444.2	453.3	462.4	491.7	1851.6
6. BALANCE 1/1		####	686.4	648.8	661.6	
EXPENDITURES						
11. ADMINISTRATION		94.0	104.0	79.0	123.0	400.0
11.1 Personnel		20.0	20.0	20.0	20.0	80.0
11.2 Equipment		5.0	5.0	5.0	5.0	20.0
11.3 Supplies		5.0	5.0	5.0	5.0	20.0
11.4 Communication		8.0	8.0	8.0	8.0	32.0
11.5 Travel, organizational		50.0	60.0	35.0	70.0	215.0
11.6 Miscellaneous		1.0	1.0	1.0	5.0	8.0
11.7 Travel, representative		5.0	5.0	5.0	10.0	25.0
12. NEW INITIATIVES		50.0	50.0	25.0	25.0	150.0
12.1 GIA, carried forward from 2006-07						50.0
13. ASSEMBLIES		0.0	0.0	0.0	40.0	40.0
13.1 Organization		0.0	0.0	0.0	10.0	10.0
13.2 Travel Grants		0.0	0.0	0.0	30.0	30.0
14. SYMPOSIA		20.0	20.0	20.0	5.0	65.0
14.1 Symposia		20.0	20.0	20.0	5.0	65.0
15. ASSOCIATIONS		263.3	235.7	240.3	244.9	984.2
15.1 Allocations		243.3	215.7	220.3	224.9	904.2
15.1a Associations		238.6	211.0	215.6	220.2	885.4
15.1b WCRP, EMSEV		4.7	4.7	4.7	4.7	18.8
15.2 Intr. of IACS		20.0	20.0	20.0	20.0	80.0

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16. DUES		17.0	17.0	17.0	17.0		68.0
16.1 ICSU		17.0	17.0	17.0	17.0		68.0
17. UNION ACTIVITIES		57.0	53.0	57.0	53.0		220.0
17.1 GeoRisk, Liaison Officers, SEDI, CMG		28.0	24.0	28.0	24.0		104.0
17.2 Inter-Union Science (FAGS, ILP)		29.0	29.0	29.0	29.0		116.0
18. COUNTRIES IN NEED		0.0	0.0	0.0	60.0		60.0
18.1 Travel Grants		0.0	0.0	0.0	60.0		60.0
19. MISCELLANEOUS		5.0	5.0	5.0	5.0		20.0
19.1 Miscellaneous							
19.2 Professional Services		3.0	3.0	3.0	3.0		12.0
19.3 Fees		2.0	2.0	2.0	2.0		8.0
20. CONTINGENCIES		6.25	6.25	6.25	6.25		25.0
21. TOTAL EXPENDITURES		512.6	491.0	449.6	579.1		2032.2
22. BALANCE 12/31		686.4	648.8	661.6	574.2		

Comment

the red lines represent subtotals for each line of expenditures

17.1	GeoRisk	6	6	6	6		
	Liaison Off.	14	14	14	14		
	SEDI	4	4	4	4		
	CMG	4	0	4	0		
17.2	FAGS	12	12	12	12		
	ILP	17	17	17	17		

IUGG FINANCIAL STATUS

- | | |
|--|--|
| <input type="checkbox"/> 2000-2003, Final | <input type="checkbox"/> 2004-2007 (est.) |
| <input type="checkbox"/> Budget | <input type="checkbox"/> Budget |
| <input type="checkbox"/> Income 1,578k | <input type="checkbox"/> Income 1,531k |
| <input type="checkbox"/> Expenditures 1,576k | <input type="checkbox"/> Expenditures 1,624k |
| <input type="checkbox"/> Result +2k | <input type="checkbox"/> Result -92k |
| <input type="checkbox"/> Reality | <input type="checkbox"/> Reality |
| <input type="checkbox"/> Income 1,747k | <input type="checkbox"/> Income 1,734k |
| <input type="checkbox"/> Expenditures 1,575k | <input type="checkbox"/> Expenditures 1,590k |
| <input type="checkbox"/> Result +172k | <input type="checkbox"/> Result +143k |
| <input type="checkbox"/> Less spending + surcharge | <input type="checkbox"/> Less spending + surcharge |
| <input type="checkbox"/> Surplus in Birmingham | |

IUGG's FORMAL STATUS

Bank: Danske Bank, Gentofte

Accounts: 1*DKK (288k)
 1*USD (281k)
 High Interest Account (400k)
 2 Mastercards

Tax: No income tax, but we pay VAT

THIRD SESSION
WEDNESDAY JULY 11, 2007 (4 PM – 7 PM), ROOM 8 OF THE RECTORATE BUILDING

PARTICIPANTS

NATIONAL DELEGATES

Argentina	Corina Risso
Australia	Ian Jackson
Austria	Michael Kuhn
Belgium	Véronique Dehant
Brazil	Denizar Blitzkow
Canada	Zoltan Hajnal
Chile	Rodrigo Barriga Vargas
China	Guoxiong Wu
China – Taipei	Yih-Hsiung Yeh
<i>Croatia</i>	<i>Mirko Orlic</i>
Czech Republic	Vladimir Cermak
Denmark	Søren Gregersen
Egypt	Salah Mahmoud
Estonia	Rein Room
Finland	Penti Malkki
France	Michel Menvielle
Germany	Rainer Kind
Hungary	Jozsef Adam
Iceland	Arni Snorrason
India	V.P. Dimri
Israel	Zev Levin
Italy	Lucio Ubertini
Japan	Kuniyoshi Takeuchi
Korea	Wooil M. Moon
Luxembourg	Nicolas D'Oreye
New Zealand	David Rhoades
Nigeria	Francis Fajemirokun
Norway	Bente Lilja Bye
Poland	Lubomir W. Baran
Portugal	Luis Alberto Mendes-Victor
Romania	Constantin Sava
Russia	Alexei D. Gvishiani
Slovak Republic	Ladislav Brimich
South Africa	Charles Merry
	Isabelle Ansoorge (Alternate)
Spain	Alicia García García
Sweden	Goran Marklund
Switzerland	Charles Fierz
Turkey	Ali Kilicoglu
United Kingdom	David Collins
USA	Priscilla Grew

Italics for Countries in Observer Status Only

Members of the Bureau

President	Uri Shamir
Vice President	Tom Beer
Treasurer	Aksel Hansen
Secretary General	Jo Ann Joselyn
Member	Yun-tai Chen
Member	Harsh Gupta
Member	Ali Tealeb

Katina Rogers, Assistant Secretary General

Members of the Finance Committee

Chair	Michael Hamlin
Member	David Jackson
Member	Kiyoshi Suyehiro
Member	Juan Francisco Vilas

IUGG Past President and Presidents of the Associations

Past President	Masaru Kono
President IAGA	Charles Barton
President IAHS	Arthur Askew
President IAMAS	Michael MacCracken
President IAPSO	Shiro Imawaki
President IASPEI	E. Robert Engdahl

Guests of the President attending the third session of the Council

Secretaries General of the Associations

IAGA	Bengt Hultqvist
IAHS	Pierre Hubert
IAMAS	Roland List

Ray Cas (representing the Australia/New Zealand bid for the 2011 General Assembly)

Alik Ismail-Zadeh (candidate for IUGG Secretary General)

Georg Kaser (President of the Union Commission on Cryospheric Sciences)

David Kerridge (candidate for IUGG Vice President)

Lawrence Mysak (President-elect of IAPSO)

Johan Rohde (Secretary General-elect of IAPSO)

Michael Sideris (President-elect of IAG)

Ester Szein (USA National Academies Board of International Scientific Organizations)

The Council meeting resumed at 4 pm with a roll call of delegates. 37 delegates were present at the opening, 36 eligible to vote. The quorum (17) was reached. Other delegates arrived in the course of the meeting, bringing the total to 39 with 38 eligible to vote. Delegates from Estonia and Bosnia and Herzegovina had deposited their votes with the Secretary General for matters to be taken up at the third session; therefore 40 votes were cast.

Uri Shamir began by presenting preliminary statistics regarding attendance at the General Assembly, noting that final statistics would appear in the Comptes Rendus and also on the IUGG web page. He welcomed the new Association officers that were present, and invited everyone to the

Closing Ceremony from 4-5 pm on Friday July 13 in the Rectorate Main Hall.

20. Elections of IUGG Officers (Ref. AGENDA ITEM 5)

Søren Gregersen gave opening remarks regarding the elections, drawing attention to the fact that information, including CV's, has been available for some time on the IUGG website. He announced that the nomination of one additional candidate for the Finance Committee, David Collins, delegate from the U.K., had been received. The nomination had been seconded by Russia, the USA, Italy, and Switzerland, and fully met the requirements for election. The nominations committee had carefully examined the Statutes and By-laws adopted in Sapporo, which are the Statutes applicable to the Perugia General Assembly, and had determined that the two positions reserved for former or current Council delegates on the Finance Committee would be filled by the persons that received the highest and the second-highest number of votes among the 3 persons nominated, providing that those persons each received a majority of the votes cast (every delegate would be asked to vote for two of the three candidates).

Gregersen noted that only two positions open for election offered a real choice: Vice-President, and the Council Delegates on the Finance Committee. He reviewed information about the excellent qualifications of the candidates for these races: first, Harsh Gupta and David Kerridge; then, more briefly, Czango Baag, David Collins, and Jan Krynski.

There were no further questions about the slate; therefore, the Council proceeded to vote. For the contested office of Vice President, Harsh Gupta received the greater number of votes and was elected. For the contested positions of two Council delegates for the Finance Committee, the persons receiving the greatest number of votes were David Collins and Jan Krynski. The actual vote tallies are given below.

Candidate	For	Against	Abstain
Tom Beer for President	39	0	1
Harsh Gupta for Vice President	31	0	0
David Kerridge for Vice President	9	0	0
Aksel Hansen for Treasurer	40	0	0
Alik Ismail-Zadeh for Secretary General	38	0	2
Y.T. Chen for Bureau Member	38	0	2
David Jackson	37	0	3

for Bureau Member			
Ali Tealeb for Bureau Member	37	0	3
Kiyoshi Suyehiro for Finance Committee	39	0	1
Juan Francisco Vilas for Finance Committee	37	0	3
Czango Baag for Finance Committee	20	0	0
David Collins for Finance Committee	30	0	0
Jan Krynski for Finance Committee	25	0	0

21. Selection of the venue of the XXV IUGG General Assembly (2011) (Ref: AGENDA ITEM 11)

The Chair of the Site Selection committee, Bob Engdahl, presented the findings of the Committee. The other Committee members were K Whaler and CC Tscherning, all of whom have extensive experience in planning scientific assemblies. He briefly reviewed the proposed meeting facilities and exhibition space; they were deemed to be more than adequate. There were comprehensive choices for accommodations. The proposed dates in 2011 are between 17 June and 3 July, but other dates could be considered. A specific question had been raised by the Committee with regard to Government support to assure free circulation of scientists. The Local Organizing Committee had replied that they were not able to obtain assurance, but had been told that the problem was well understood and that every effort would be made to admit scientists participating in the General Assembly.

Budgetary planning for the Assembly is being based on 3000 delegates. Engdahl reiterated that IUGG expects that the host will take full responsibility for the financial affairs of the meeting, and applauded them for already raising 500,000 Aus \$ to assist young scientists and those from developing countries to attend.

Questions from the delegates concerned the expected registration fee and concern for the travel expense to come to Australia. Ray Cas answered that scientists from Australia, New Zealand, and surrounding regions are well aware of the airfares because they must pay them when attending meetings in the West, and that the LOC was working hard to get sponsorship in order to keep registration fee as low as possible. If more than 3000 people register (recent registrations for IUGG General Assemblies have been about 4000 people),

extra income can be used to augment travel grants and provide additional services. There should be no problem with the logistics of hundreds of people arriving in Melbourne in a short time. Another question concerned availability of the schedule of scientific sessions and the abstracts. Cas replied that these issues were already being organized.

There was discussion about reducing the length of the General Assembly from its present 2-week format. Shamir reminded the Council delegates that this issue has been debated repeatedly and that the Science Programme Committee has not yet found a way to fit the programmes submitted by the Associations into a time frame of less than 2 weeks, even though some Associations do fit their programmes into fewer days within that structure. Joselyn commented that in addition to the scientific sessions in Perugia, 99 working groups met before, after and during the General Assembly including the Council meeting; these important meetings must be accommodated.

On behalf of the Site Selection Committee, Bob Engdahl recommended that the Council accept the bid. Shamir then asked the Council to cast their ballots, and the results were as follows.

For 39; Against 0; Abstain 1

22. Presentation and Adoption of the Resolutions

Masaru Kono, IUGG Past President and Chair of the Resolutions Committee, began his report by introducing and thanking the members of the Resolutions Committee: Huw Davies, Pierre Hubert, and Zev Levin. Associations had been asked to submit their Resolutions, which must have been agreed at their respective plenary meetings of delegates, before the final deadline of Tuesday morning, July 10. The Resolutions Committee had considered each one carefully, and in many cases had consulted with the proposers to arrive at the wording submitted to the delegates.

[The final versions of the Resolutions that were adopted are presented in the Comptes Rendus as a separate section.]

Resolution 1: Precession, nomenclature, and definition of TDB (Temps Dynamique Barycentrique), submitted by IAG. It was explained that IAG strongly supported these IAU Resolutions and that additional IUGG support was considered critical to their eventual adoption by the global scientific community.

Uri Shamir asked for a show of cards in favor of the resolution. The resolution passed without dissent.

Resolution 2: Geocentric and International Terrestrial Reference Systems (GTRS and ITRS), submitted by IAG. Discussion included concern about the number of acronyms, and references to previous resolutions. It was explained that all previous resolutions are available on the IAG website.

Uri Shamir asked for a show of cards in favor of the resolution. The resolution passed with one abstention.

Resolution 3: Global Geodetic Observing System (GGOS) of the IAG, submitted by IAG.

Discussion included concern about the availability of the background information on GGOS, and a more general comment about distribution of the draft resolutions to the Council delegates before the Council meeting where they were to be adopted. Michael Sideris, President-elect of IAG, explained details of GGOS and the importance of IUGG recognition of the programme.

Uri Shamir asked for a show of cards in favor of the resolution. The resolution passed without dissent.

Resolution 4: Electronic Geophysical Year, 2007-2008 (eGY) and Data Rescue, submitted by IAGA.

There were inquiries about the term "Science Information Commons". Charles Barton, President of IAGA, replied, saying that "commons" refers to a "space" within which all interested parties can operate and cooperate, in this case relating to of data and information. The Declaration referenced in the resolution is on the eGY website.

Uri Shamir asked for a show of cards in favor of the resolution. The resolution passed without dissent.

Resolution 5: Ionosphere Satellites, submitted by IAGA. There was extensive discussion about the specific mention of the Italian Space Agency and the ESPERIA satellite. A motion was made by M. Menvielle to alter the wording of the resolution. The motion was seconded and passed with 6 No votes and 4 abstentions.

Uri Shamir asked for a show of cards in favor of the amended resolution. The resolution passed with five abstentions.

Resolution 6: The Urgency of Addressing Climate Change, submitted by IAMAS

Following brief discussion, Uri Shamir asked for a show of cards in favor of the resolution. The resolution passed with four abstentions.

Resolution 7: Intensified Study of Aerosol Pollution Effects on Precipitation, submitted by IAMAS. Kono reminded the Council of the resolution passed by at Sapporo General Assembly on biomass burning. Discussion concerned

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whether other agencies, in addition to WMO, should be invited to participate. Michael MacCracken, President of IAMAS, replied that WMO has established themselves in the field of how pollution affects precipitation.

Uri Shamir asked for a show of cards in favor of the resolution. The resolution passed with two abstentions.

Resolution 8: Reduction of Risk from Natural Hazards, submitted by the Union Commission on Geophysical Risk and Sustainability. Discussion concerned the wording regarding where risk from hazards occurred. Tom Beer, Past President of the GeoRisk Commission, responded indicating that the goal was to indicate the necessity of work being done at the local level to reduce risk. Kono added that disasters can occur on the global scale, but risk varies by local places, so the consequences of even a global scale event changes from place to place. A motion to alter the wording of the resolution was made and seconded. It passed with two “no” votes and 5 abstentions.

Uri Shamir asked for a show of cards in favor of the amended resolution. The resolution passed with five abstentions.

Resolution 9: Thanks

Masaru Kono read the resolution that had been drafted by the Resolutions Committee on behalf of the Council. The Council responded with applause and the resolution was considered to have passed. Lucio Ubertini, Chair of the Perugia General Assembly Local Organizing Committee, expressed his appreciation to the Council for the Resolution.

Closing remarks

Uri Shamir reminded the Council of the Closing Ceremony that will take place on Friday. At that time, retiring officers of the Bureau and Finance Committee would be recognized. However, Mike Hamlin cannot be present and so Council was asked to acknowledge his 16 years on the Finance Committee at this time. The Union offered him a modest gift: a Deruta plate inscribed with his name and years of service. Hamlin thanked the Council particularly, and the officers as well, saying he would treasure it.

There being no other business, Uri Shamir declared that the Council of Delegates to the XXIV General Assembly was adjourned.

OFFICERS ELECTED BY THE COUNCIL OFFICERS OF THE UNION FOR 2008-2011

Bureau of the Union

<i>President:</i>	Tom Beer	AUSTRALIA
<i>Vice-President:</i>	Harsh Gupta	INDIA
<i>Secretary General:</i>	Alik Ismail-Zadeh	GERMANY/RUSSIA
<i>Treasurer:</i>	Aksel W. Hansen	DENMARK
<i>Members:</i>	Yun-tai Chen	CHINA
	David Jackson	USA
	Ali A.A. Tealeb	EGYPT

Executive Committee of the Union

According to Article 10 of the Statutes of IUGG the Executive Committee consists of:

- the Bureau (see above),
- the Retiring President of the Union, U. Shamir (Israel)
- the Presidents of the International Associations:

<i>IACS:</i>	Georg Kaser	AUSTRIA
<i>IAG:</i>	Michael Sideris	CANADA
<i>IAGA:</i>	Eigil Friis-Christensen	DENMARK
<i>IAHS:</i>	Arthur Askew	SWITZERLAND/AUSTRALIA
<i>IAMAS:</i>	WU Guixiong	CHINA
<i>IAPSO:</i>	Lawrence Mysak	CANADA
<i>IASPEI:</i>	WU Zhongliang	CHINA
<i>IAVCEI:</i>	Setsuya Nakada	JAPAN

Secretaries General of the International Associations

<i>IACS:</i>	Manfred Lange	GERMANY
<i>IAG:</i>	Hermann Drewes	GERMANY
<i>IAGA:</i>	Bengt Hultqvist	SWEDEN
<i>IAHS:</i>	Pierre Hubert	FRANCE
<i>IAMAS:</i>	Hans Volkert	GERMANY
<i>IAPSO:</i>	Johan Rodhe	SWEDEN
<i>IASPEI:</i>	Peter Suhadolc	ITALY
<i>IAVCEI:</i>	Joan Marti	SPAIN

Finance Committee of the Union

<i>Chair:</i>	Juan Francisco Vilas	ARGENTINA
<i>Members:</i>	David Collins	UK
	Jan Krynski	POLAND
	Kiyoshi Suyehiro	JAPAN

**RESOLUTIONS ADOPTED AT THE XXIV GENERAL ASSEMBLY
BY THE UNION - 11 JULY 2007
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007**

Resolution 1: Precession, nomenclature, and definition of TDB (Temps Dynamique Barycentrique)

The International Union of Geodesy and Geophysics,

Considering,

That the IUGG adopted in 2003 the International Astronomical Union (IAU) 2000 resolutions related to reference systems; and
That the IAU adopted three resolutions in 2006 which are complimentary to the previous IAU2000/IUGG2003 resolutions;

Recognizing,

The importance of reference frame, Earth orientation, and time systems used by the geosciences community;

Endorses,

The 2006 IAU resolution, Resolution B1, which notes that the IAU2000 precession model was not dynamically consistent and recommends that it should be replaced by the P03 precession model;
The 2006 IAU resolution, Resolution B2, which, in the first part, deals with the nomenclature related to the intermediate reference systems, while the second part fixes the orientation of the axes of the celestial reference system Barycentric Celestial Reference System (BCRS) and Geocentric Celestial Reference System (GCRS); and
The 2006 IAU resolution, Resolution B3, which recommends the use of a fixed linear relation between Temps Dynamique Barycentrique (TDB) and Temps-Coordonnée Barycentrique (TCB), and solves the ambiguity between these time systems.

**Resolution 2: Geocentric and International Terrestrial Reference Systems
(GTRS and ITRS)**

The International Union of Geodesy and Geophysics,

Considering,

The increasing importance of geodetic reference systems in geosciences, and more generally in numerous scientific and technical activities, such as satellite navigation systems and geo-spatial information;

Noting,

The IUGG Resolution 2 and International Association of Geodesy (IAG) Resolution 1, both adopted in 1991 at the Vienna IUGG General Assembly, which defined the Conventional Terrestrial Reference System (CTRS);

Recognizing,

- The quality of the work done by several IAG services (IERS, IGS, ILRS, IVS, IDS) to realize these systems and provide access for numerous users within and beyond the geosciences community;

Endorses,

The definition of a **Geocentric Terrestrial Reference System (GTRS)** in agreement with the 2003 IAU resolution B1.3;
The definition of the **International Terrestrial Reference System (ITRS)** as the specific GTRS for which the orientation is operationally maintained in continuity with past international agreements (BIH orientation); and

Adopts,

The **ITRS** as the preferred GTRS for scientific and technical applications; and

Urges,

Other communities, such as the geo-spatial information and navigation communities, to do the same.

Resolution 3: Global Geodetic Observing System (GGOS) of the International Association of Geodesy (IAG)

The International Union of Geodesy and Geophysics,

Recognizing,

The great progress made during the last decades in the use of space and ground-based techniques for monitoring the Earth System, and the efforts made towards the integration of geodetic observation techniques, data processing, and evaluation and process modeling;

The significant progress of IAG's project Integrated Global Geodetic Observing System (IGGOS) since 2003, which was renamed Global Geodetic Observing System (GGOS) in 2005;

That the IAG is represented on the Group on Earth Observation (GEO) by GGOS;

The urgent need to further develop and strengthen the scientific and organizational collaboration of geodesy within geosciences; and

The necessity of generation and accessibility of consistent products for users in Earth observation, Earth sciences, neighboring disciplines and society in general;

Considering,

That, due to the progress of GGOS, the IAG decided to elevate its status from a project to a full component of IAG in order to further realize the IUGG Resolution No. 1 adopted at the 22nd General Assembly in Birmingham and the IUGG Resolution No. 3 at the 23rd General Assembly in Sapporo;

Noting,

The new structure of IAG reflected by the designation of GGOS as a permanent component;

Urges,

Sponsoring organizations and institutions to continue their support of the elements of GGOS, which is crucial for sustaining long-term monitoring and understanding of the Earth System; and

Encourages,

The Associations to support further development of GGOS through participation and cooperation by sharing/providing data, models, products, and expertise useful for GGOS, and to establish close links with GGOS through the relevant components in their structure, and to assist in symposia, meetings, and joint activities.

Resolution 4: Electronic Geophysical Year, 2007-2008 (eGY) and Data Rescue

The International Union of Geodesy and Geophysics,

Noting,

The ability of modern information and communications technologies to revolutionize the science and management of data and information;

The growing recognition of the need for, and the benefits of a science information commons;

The urgent need to rescue and store data at risk of being lost; and

That 2007-2008 is the 50-year anniversary of the International Geophysical Year, which pioneered the concept of international cooperation and sharing of data and information about the Earth for the common good;

Urges,

The funding agencies to support the effort to rescue valuable historical data; and

Encourages,

Scientists and their scientific bodies worldwide to use the occasion of the Electronic Geophysical Year, 2007-2008 to undertake activities to improve data access, data preservation, data discovery, data release, education and outreach, to reduce the digital divide, and to sign the *eGY Declaration for an Earth and Space Science Information Commons**.

*<http://www.egy.org/declaration.html>

Resolution 5: Ionosphere Satellites

The International Union of Geodesy and Geophysics,

Noting,

The ability of low Earth orbiting satellites to provide spatial and temporal monitoring of the topside ionosphere and to define the near-Earth environment;

Recognizing,

That an extended time series of satellite observations of magnetic/electric fields and of plasmas in the Earth's ionosphere are crucial for a wide spectrum of geoscience and space science studies;

The unique equatorial orbiting Italian Space Agency satellite ESPERIA; and

Understanding,

That the DEMETER mission will end in 2008;

Welcomes,

The plans by several nations to launch ionospheric monitoring satellite missions.

Resolution 6: The Urgency of Addressing Climate Change

The International Union of Geodesy and Geophysics,

Considering,

The advances in scientific understanding of the Earth system generated by collaborative international, regional, and national observations and research programs; and
The comprehensive and widely accepted and endorsed scientific assessments carried out by the Intergovernmental Panel on Climate Change and regional and national bodies, which have firmly established, on the basis of scientific evidence, that human activities are the primary cause of recent climate change;

Realizing,

Continuing reliance on combustion of fossil fuels as the world's primary source of energy will lead to much higher atmospheric concentrations of greenhouse gases, which will, in turn, cause significant increases in surface temperature, sea level, ocean acidification, and their related consequences to the environment and society;
Stabilization of climate to avoid "dangerous anthropogenic interference with the climate system", as called for in the UN Framework Convention on Climate Change, will require significant cutbacks in greenhouse gas emissions during the 21st century; and
Mitigation of and adaptation to climate change can be made more effective by reducing uncertainties regarding feedbacks and the associated mechanisms;

Urges,

Nations collectively to begin to reduce sharply global atmospheric emissions of greenhouse gases and absorbing aerosols, with the goal of urgently halting their accumulation in the atmosphere and holding atmospheric levels at their lowest practicable value;
National and international agencies to adequately support comprehensive observation and research programs that can clarify the urgency and extent of needed mitigation and promote adaptation to the consequences of climate change;
Resource managers, planners, and leaders of public and private organizations to incorporate information on ongoing and projected changes in climate and its ramifications into their decision-making, with goals of limiting emissions, reducing the negative consequences of climate change, and enhancing adaptation, public well-being, safety, and economic vitality; and
Organizations around the world to join with IUGG and its member Associations to encourage scientists to communicate freely and widely with public and private decision-makers about the consequences and risks of on-going climate change and actions that can be taken to limit climate change and promote adaptation; and

Resolves,

To act with its member Associations to develop and implement an integrated communication and outreach plan to increase public understanding of the nature and implications of human-induced impacts on the Earth system, with the aim of reducing detrimental consequences.

Resolution 7: Intensified Study of Aerosol Pollution Effects on Precipitation

The International Union of Geodesy and Geophysics,

Welcoming,

The comprehensive and peer reviewed report “Aerosol Pollution Impact on Precipitation, A scientific Review” that provides an in-depth study of the relationship between aerosol pollution and precipitation, called for by the IUGG XXII General Assembly in Sapporo and the WMO Congress CgXIV in Geneva, and prepared by the International Aerosol-Precipitation Scientific Assessment Group (IAPSAG);

Considering,

That aerosol pollution resulting from biomass burning, fossil-fuel burning, and wild fires can significantly alter precipitation and its distribution;
That the changes in precipitation that can occur depend on the characteristics of aerosol pollution and the geographic and meteorological situations; and
That changes and re-distribution in precipitation have significant societal and economic impacts; and

Noting,

That the recommendations of the review mentioned above call for actions by international bodies, individual governments, and the scientific community at large;

Invites,

WMO to join with IUGG and form an Aerosol-Precipitation Project Group charged with converting the recommendations of the Review into an international action plan;
WMO to join with IUGG in approaching the Food and Agricultural Organization (FAO) and other international organizations to join the IUGG/WMO efforts and participate in the planning;

Encourages,

IAMAS, IAHS, and other IUGG Associations, in collaboration with WMO, to continue their efforts to improve understanding of aerosol pollution with the goal of moderating adverse effects; and
The scientific community to study the direct impacts of aerosol pollution on precipitation and global and regional precipitation climate.

Resolution 8: Reduction of Risk from Natural Hazards

The International Union of Geodesy and Geophysics,

Considering,

Global, regional, and local increases of vulnerability and all changes of environmental conditions including climate; and
The continuous increase of fatalities, the number of people affected, and property damage caused by natural events;

Realizing,

That climate changes will continue into the future even with decreasing greenhouse gas emissions;
That disaster reduction, management, and preparedness as well as warning systems need long term planning; and
That reducing the impact of disasters should be carried out mainly at the local level;

Urges,

The international science community to quantify natural hazards and extreme events at all scales;
To adopt integrative and comprehensive interdisciplinary approaches towards developing adaptation in order to decrease vulnerability; and
To produce planning tools for disaster risk reduction at all scales.

Resolution 9: Thanks

The International Union of Geodesy and Geophysics,

Gratefully records its appreciation for the organization, arrangements, and hospitality at the XXIV General Assembly. On behalf of all participants, the Council expresses its warm thanks to the Italian National Committee for IUGG, the University of Perugia, the Local Organizing Committee, the Program Committee, and all others for their efforts to make the XXIV General Assembly a scientific success in the beautiful city of Perugia.

**RESOLUTIONS DE L'UNION ADOPTEES A LA XXIV ASSEMBLEE GENERALE
DE L'UNION – 11 JUILLET 2007
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007**

Résolution 1 : Précession, nomenclature, et définition du TDB (Temps Dynamique Barycentrique)

L'Union Géodésique et Géophysique Internationale,
Considérant,

que l'UGGI a adopté en 2003 les résolutions de l'UAI de 2000 relatives aux systèmes de référence ; et
que l'UAI a adopté en 2006 trois résolutions qui complètent les résolutions précédentes de UAI2000/UGGI2003 ;

Reconnaissant,

l'importance du cadre de référence, de l'orientation de la Terre, et des systèmes de temps utilisés pour la communauté des géosciences,

Approuve,

la première résolution B1 de l'UAI, qui note que le modèle de précession de l'UAI2000 ne n'est pas dynamiquement cohérent et recommande qu'il doit être remplacé par le modèle de précession P03 ;
la deuxième résolution B2 de l'UAI, qui, en première partie, traite de la nomenclature relative aux systèmes de références intermédiaires, cependant que la deuxième partie fixe l'orientation des axes du système de référence céleste « Système de référence céleste barycentrique » (BCRS) et du Système de référence céleste géocentrique (GCRS) ;
la troisième résolution B3 de l'UAI, qui recommande l'usage d'une relation linéaire fixe entre le Temps Dynamique Barycentrique (TDB) et le Temps-Coordonnée Barycentrique (TCB), et résout l'ambiguïté entre ces temps.

Résolution 2 : Les Systèmes de référence géocentriques et internationaux (GTRS et ITRS)

L'Union Géodésique et Géophysique Internationale,
Considérant,

l'importance croissante des systèmes de référence géodésiques dans les géosciences, et plus généralement dans de nombreuses activités scientifiques et techniques, telles que les systèmes de navigation satellitaires et les informations géoréférencées ;

Notant,

la Résolution 2 de l'UGGI et la Résolution 1 de l'AIG, toutes deux adoptées en 1991 à l'Assemblée Générale de l'UGGI à Vienne, qui ont défini le Système de Référence Terrestre Conventionnel (CTRS) ;

Reconnaissant,

la qualité du travail effectué par plusieurs services de l'AIG (IERS, IGS, ILRS, IVS, IDS) pour réaliser ces systèmes et pour fournir l'accès à de nombreux utilisateurs au sein de la communauté des géosciences et ailleurs ;

Approuve,

la définition d'un Système de Référence Terrestre Géocentrique (GTRS) en accord avec la résolution B1.3 de l'UAI de 2003 ; et
la définition du Système de Référence Terrestre International (ITRS) comme le GTRS spécifique dont l'orientation est entretenue de manière opérationnelle en continuité avec les accords internationaux passés (orientation BIH) ;

Adopte,

l'ITRS comme le GTRS à utiliser pour les applications scientifiques et techniques ; et

Recommande,

que d'autres communautés, comme celles de l'information géoréférencée et de la navigation, fassent pareillement.

Résolution 3 : Le Système d'observation géodésique globale (GGOS) de l'AIG

L'Union Géodésique et Géophysique Internationale,

Reconnaissant,

les grands progrès faits au cours des dernières décennies dans l'usage des techniques de surveillance du Système terrestre à partir de l'espace ou du sol, et les efforts effectués en vue de l'intégration des techniques d'observation géodésiques, du traitement des données, ainsi que de l'évaluation et de la modélisation des processus ;
le progrès significatif du projet de l'AIG Système d'observation globale géodésique intégré (IGGOS) depuis 2003, renommé Système d'observation géodésique globale (GGOS) en 2005,
que l'AIG est représentée dans le Groupe de l'observation de la Terre (GEO) par GGOS ;
le besoin urgent de continuer à développer et à renforcer la collaboration scientifique et organisationnelle de la géodésie au sein des géosciences ; et
la nécessité de réaliser et de rendre accessibles des produits cohérents pour les utilisateurs de l'observation de la Terre, des sciences de la Terre, des disciplines connexes et de la société en général ;

Considérant,

que, en raison du progrès du GGOS, l'AIG a décidé de l'élever du rang de projet à celui de composante de l'AIG afin de réaliser plus complètement la Résolution no. 1 de l'UGGI adoptée à la XXII Assemblée Générale à Birmingham et la Résolution no. 3 de l'UGGI adoptée à la XXIII Assemblée Générale à Sapporo,

Note,

la nouvelle structure de l'AIG caractérisée par la désignation du GGOS au rang de composante permanente,

Recommande,

que les organisations parraines et les institutions continuent à soutenir les éléments de GGOS, ce qui est essentiel pour poursuivre sur le long terme la surveillance et la compréhension du Système terrestre, et

Encourage,

les Associations à soutenir le développement continu de GGOS à travers une participation et une coopération au partage et à la fourniture de données, de modèles, de produits, et d'expertise utiles à GGOS, et pour établir des liens étroits avec GGOS à travers les composantes appropriées de leur organisation, et pour apporter leur aide à travers des colloques, des réunions, et des activités communes.

Résolution 4 : L'année géophysique électronique, 2007-2008 (eGY) et le sauvetage des données

L'Union Géodésique et Géophysique Internationale,

Notant,

la capacité des technologies modernes de l'information et de la communication à révolutionner la science et la gestion des données et de l'information ;
la reconnaissance croissante du besoin et des bénéfices d'un espace commun de l'information scientifique,
le besoin urgent de sauver et de conserver des données qui risquent être perdues ; et
que 2007-2008 marque le 50^{ème} anniversaire de l'Année géophysique internationale, qui a frayé le chemin au concept de coopération et de partage internationaux des données et information sur la Terre pour le bien commun ;

Recommande,

que les bailleurs de fonds soutiennent les efforts de sauvetage des données historiques de grande valeur ; et

Encourage,

les scientifiques et leurs organisations à travers le Monde à utiliser l'occasion de l'Année géophysique électronique 2007-2008 pour entreprendre des activités visant à améliorer l'accès aux données, la préservation des données, la recherche de données, la mise à disposition des données, l'éducation et la vulgarisation pour réduire la fracture digitale, et à signer le document de l'eGY *Déclaration pour espace commun des sciences de la Terre et de l'espace**.

*<http://www.egy.org/declaration.html>

Résolution 5 : Satellites de l'ionosphère

L'Union Géodésique et Géophysique Internationale,

Notant,

la capacité des satellites de la Terre en orbite basse à réaliser une surveillance spatiale et temporelle de l'ionosphère sus-jacente et à reconnaître l'environnement proche de la Terre ;

Reconnaissant,

qu'une longue série d'observations satellitaires des champs magnétiques/électriques et des plasmas dans l'ionosphère de la Terre est essentielle pour une large gamme d'études en géoscience et en sciences de l'espace ;

l'unique satellite d'orbite équatoriale de l'Agence Italienne de l'Espace ESPERIA ; et

Comprenant,

que la mission DEMETER aboutira en 2008 ;

Accueille favorablement,

les projets de plusieurs nations de lancer des missions de satellites de surveillance ionosphérique.

Résolution 6 : L'urgence d'aborder le changement climatique

L'Union Géodésique et Géophysique Internationale,

Considérant,

les progrès de la compréhension scientifique du système terrestre produits par des observations et des programmes de recherches en coopération internationales, régionales, et nationales ; et les évaluations scientifiques complètes et largement acceptées émanant du Groupe intergouvernemental d'étude des changements de climat et par des organismes régionaux et nationaux, qui ont fermement établi, sur une base scientifique solide, que les activités humaines sont la cause principale du changement climatique récent ;

Réalisant,

que l'usage continu des combustibles fossiles comme source d'énergie principale au niveau mondial mènera à des concentrations beaucoup plus élevées des gaz à effet de serre dans l'atmosphère, qui à leur tour provoqueront des augmentations significatives de la température superficielle, du niveau de la mer, de l'acidité des océans, avec leurs conséquences respectives sur l'environnement et la société ;
que la stabilisation du climat afin d'éviter « une interférence anthropogénique dangereuse avec le système du climat, » ainsi que l'exige la Convention Cadre sur le Changement climatique des Nations Unies, nécessitera des réductions significatives des émissions de gaz à effet de serre au cours du XXI^e siècle ; et
que l'atténuation des effets et l'adaptation au changement climatique peuvent être plus efficaces en réduisant les incertitudes concernant les rétroactions et les mécanismes associés ;

Recommande,

que les nations commencent de manière collective à réduire les émissions atmosphériques de gaz à effet de serre et d'aérosols absorbants, dans le but d'arrêter d'urgence leur accumulation dans l'atmosphère et de conserver leur concentration dans l'atmosphère à un niveau aussi bas que possible ;
que les agences nationales et internationales soutiennent l'observation et les programmes de recherche complets pouvant préciser l'urgence et l'importance des mesures d'atténuation nécessaires qu'elles promeuvent l'adaptation aux conséquences du changement climatique ;
que les gestionnaires de ressources, les planificateurs, et les dirigeants des organisations publiques et privées intègrent les informations sur les changements climatiques actuels et prévus dans leurs prises de décisions, afin de limiter les émissions, de réduire les conséquences négatives du changement climatique, et d'améliorer l'adaptation, le bien-être public, la sûreté, et la vitalité économique ; et
que les organisations du monde entier se joignent à l'UGGI et à ses Associations membres afin d'encourager les scientifiques à communiquer librement et largement avec les décideurs sur les conséquences et les risques du changement de climat en cours et les actions qui peuvent être effectuées pour limiter le changement du climat et promouvoir l'adaptation ;

Décide,

d'agir avec ses Associations membres pour développer et installer un programme de communication et de vulgarisation intégré pour augmenter la compréhension générale de la nature et des implications des impacts causés par les êtres humains sur le système terrestre, dans le but de réduire leurs conséquences négatives.

Résolution 7 : Etude renforcée des effets de la pollution par les aérosols sur les précipitations

L'Union Géodésique et Géophysique Internationale,
Accueillant favorablement,

le rapport complet et évalué par des pairs «Revue scientifique de l'impact de la pollution par les aérosols sur les précipitations, une revue scientifique » qui fournit une étude approfondie de la relation entre la pollution par les aérosols et les précipitations, demandé par la XXIII^e Assemblée Générale de l'UGGI à Sapporo et par le XIV^e Congrès de l'OMM à Genève et préparé par le Groupe d'évaluation scientifique Aérosols-Précipitations (IAPSAG) ;

Considérant,

que la pollution par les aérosols résultant de la combustion de la biomasse, de la combustion des combustibles fossiles, et des incendies de forêts peut altérer de manière significative les précipitations et leur répartition ;
que les changements de précipitations pouvant se produire dépendent des caractéristiques de la pollution par les aérosols et de caractéristiques situations géographiques et météorologiques ; et
que les changements et la redistribution des précipitations ont des impacts sociaux et économiques significatifs ; et

Notant,

que les recommandations de la revue mentionnée ci-dessus comprennent des appels à l'action adressés à des entités internationales, des gouvernements particuliers, et à toute la communauté scientifique,

Invite,

l'OMM à se joindre à l'UGGI et à créer un Groupe de Projet Aérosols-Précipitations chargé de traduire les recommandations de la Revue en un projet d'action international ;
l'OMM à se joindre à l'UGGI pour inviter à l'Organisation des Nations Unies pour l'alimentation et l'agriculture (FAO) et d'autres organisations internationales à se joindre aux efforts UGGI/OMM et pour participer à la planification ;

Encourage,

AIMSA, AISH, et d'autres Associations de l'UGGI, en collaboration avec l'OMM, à continuer leurs efforts d'amélioration de la compréhension de la pollution par les aérosols en vue de limiter ses effets négatifs ; et
la communauté scientifique à étudier les conséquences directes de la pollution par les aérosols sur les précipitations et sur le régime mondial et régional des précipitations.

Résolution 8 : Réduction des risques dus aux catastrophes naturelles

L'Union Géodésique et Géophysique Internationale,
Considérant,

l'augmentation mondiale, régionale, et locale de la vulnérabilité et tous les changements environnementaux y compris le climat ; et
l'augmentation continue du nombre de victimes, du nombre de personnes affectées, et des dégâts aux biens provoquée par les événements naturels ;

Réalisant que,

les changements du climat continueront à l'avenir même avec une réduction des émissions de gaz à effet de serre ;
la réduction et la gestion des catastrophes, la préparation aux catastrophes, et que la mise en place de systèmes d'alerte, nécessitent une planification à long terme ; et
la réduction de l'impact des catastrophes devrait s'effectuer de priorité au niveau local ;

Recommande à la communauté scientifique internationale,

de quantifier les risques naturels et les événements extrêmes à toute échelle ;
d'adopter des approches interdisciplinaires intégrées et complètes pour développer l'adaptation en vue d'une réduction de la vulnérabilité ; et
à produire des outils de planification pour la réduction des risques de catastrophes à toutes les échelles.

Résolution 8 : Remerciements

L'Union Géodésique et Géophysique Internationale

exprime avec gratitude sa reconnaissance pour l'organisation, les dispositions prises, et l'hospitalité de la XXIV Assemblée Générale. De la part de tous les participants, le Conseil remercie chaleureusement le Comité National Italien pour l'UGGI, l'Université de Perugia, le Comité d'Organisation Local, le Comité du Programme, et tous les autres de leurs efforts pour faire de la XXIV Assemblée Générale un succès scientifique dans la belle ville de Perugia.

**RESOLUTIONS ADOPTED AT THE XXIV GENERAL ASSEMBLY
BY THE IUGG ASSOCIATIONS
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007**

IAG RESOLUTION 1:

Gratitude to the Host Institution of the Central Bureau

The International Association of Geodesy,

acknowledging

the hosting of its Central Bureau at the Niels Bohr Institute (NBI) of the University of Copenhagen from 1996 to 2007,

thanks

- (i) the NBI for the excellent support it provided, as well as
- (ii) the Assistant Secretary General, Ole Andersen, and
- (iii) the secretaries Mrs. Henriette Hansen, Mrs. C.S. Petersen, Mrs. Anni Pallesen and Mr. E. Enemærke for their outstanding work over the years.

IAG RESOLUTION 2:

Placing Laser Retro-reflectors on Satellites of the Global Navigation Satellite System

The International Association of Geodesy,

noting

- (i) the extensive and accelerating use over the past 15 years of the Global Navigation Satellite System, GNSS, (i.e., United States' Global Positioning System (GPS) and the Russian GLONASS) and the anticipated future use of new GNSS (i.e., European Galileo and China's COMPASS);
- (ii) the societal benefits increasingly derived from the integration of the space-geodetic observations within the Global Geodetic Observing System (GGOS), including GNSS, Satellite Laser Ranging (SLR), Very Long Baseline Interferometry (VLBI), Doppler Orbitography Radiopositioning Integration by Satellite (DORIS); and
- (iii) the essential contribution of the integration of the techniques to the multidisciplinary scientific advances, including the establishment and maintenance of an accurate and stable terrestrial reference frame,

recognizes

- (i) the improved inter-technique calibrations and validation needed for the demanding geodetic accuracy to achieve a high-accuracy reference frame to support positioning, navigation, and timing; and
- (ii) the resulting improvement in our understanding of the Earth system dynamics, including geo-hazards, ice and ocean mass transport, atmospheric processes, and sea-level variations; and

recommends

- (i) that all future GNSS satellites carry precision laser retro-reflector arrays; and
- (ii) that a careful pre-launch ground calibration/measurement of the center of mass offset of the array be provided.

**IASPEI RESOLUTION 1:
Use of model ak135 for earthquake location**

RECOGNIZING that the workshops on ‘Modernizing ISC location procedures’ have demonstrated that the ak135 traveltimes tables provide a better fit than the Jeffreys-Bullen (JB) tables to observed seismic phases,

IASPEI
RECOMMENDS that the International Seismological Centre replace the JB model by ak135 for the routine location of seismic events.

**IASPEI RESOLUTION 2:
Consistent determination & reporting of earthquake source parameters**

RECOGNIZING the long-term need for a broader set of standardized seismological phase and parameter data in seismological research and practice, especially amplitude, period, magnitude, moment and energy,

IASPEI
RECOMMENDS that steps be taken to develop common standards for the reporting of earthquake source parameters for use by national, regional and global data centers.

**IASPEI RESOLUTION 3:
Timely reporting to ISC**

RECOGNIZING that the ISC provides an on-line compilation of parametric data contributed by observatories and data centres, available to all soon after they are contributed,

IASPEI
URGES all ISC contributors to report epicentres, magnitudes, phases and focal mechanisms to the ISC as quickly as possible.

**IASPEI RESOLUTION 4:
Naming the unit of Seismic Moment after Prof. Kei-iti Aki**

RECOGNIZING that seismic moment is widely used as a fundamental measure of the size of an earthquake, and

RECOGNIZING that Prof. Kei-iti Aki was a pioneer in defining seismic moment and describing practical ways to measure it,

IASPEI
RECOMMENDS that 1 Aki (Ak) be defined as 10^{18} Nm, and further

RECOMMENDS that the Aki be recognized as a standard unit of earthquake size.

**IASPEI RESOLUTION 5:
Appreciation**

RECOGNIZING the enormous effort required to organise the General Assembly,

IASPEI
THANKS the IUGG Local Organizing Committee and its Chair Professor Lucio UBERTINI for a memorable meeting in Perugia.

XXIV IUGG GENERAL ASSEMBLY CLOSING CEREMONY

IN REMEMBRANCE

IUGG:

Baron Paul Melchior (Belgium)

IAG:

William Baarda (Netherlands)
Karel Hamal (Czech Republic)
Torben Krarup (Denmark)
Ludmila Kubackova (Czech Republic)
Buford K. Meade (USA) Milos Pick (Czech Republic)
Muzafer Serbetci (Turkey)
Urho A. K. Uotila (Finland/USA)
Pavel Vyskocil (Czech Republic)

IAGA:

Luiz Muniz Baretto (Brazil)
Jim Carrigan (UK)
Thomas M. Donahue (USA)
Jim Dooley (Australia)
Elizabeth Essex (Australia)
Roger Gendrin
Tor Hagfors (Norway)
Anton Hales (Australia)
Jan Hospers
Rosemary Hutton (Scotland)
Jack Jacobs (Wales/Alberta)
Harmut Joedicke (Germany)
Toyo Kamei (Japan)
Harry C. Koons (USA)
Takeo Kosugi (Japan)
Pierre Lantos (France)
Virginia Lincoln (USA)
Yuri Pavlovich Maltsev (Russia)
Chung Park (USA)
Harry E. Petschek (USA/Czech Republic)
Oldrich Praus (Czech Republic) (IASPEI/IAGA)
Mikhail Pudovkin (Russia)
D.R.K. Rao (India)
Tsuneji Rikitake (Japan)
Paul Serson (Canada)
Alan Shapley (USA)
William R. "Bob" Sheldon (USA)
Kendall Svendsen (USA)
William W.L. Taylor (USA)
Lester Tomlinson (New Zealand)
James A. VanAllen (USA)
Phil Williams (UK)
Lanny Wilson (USA)

IAHS:

Mike Hall (UK)
Kiyoshi Hoshi (Japan)
Shohei Inokuti (Japan)
Joseph Jacquet (France)

Hélène Lubès-Niel (France)
Joseph Merka (Zimbabwe)
Zivko Skoklevski (Macedonia)
Viorel Alexandru Stanescu (Romania)
Joop Steenvoorden (The Netherlands)
Jean Turquet de Beauregard (France)
Robert G. Wetzel (USA)

IAMAS:

Sir Nicholas Shackleton (UK)
Mark Berlyand (Russia)
Byron Boville (USA)
Gordon Cartwright (USA)
Andrew Crook (USA)
Peter V. Hobbs (UK/USA)
Vladimir Ivanovici (Romania)
Yoram Kaufman (USA)
Kirill Kondratyev (Russia)
Joseph Smagorinsky (USA)
Albert A. Chernikov (Russia)
Brian Ryan (Australia)
Guy Rochard (France)
Archie Kahan, (USA)

IAPSO:

Christian Le Provost (France)

IASPEI:

Keiiti Aki (Japan, USA, France)
Syuniti Akimoto (Japan)
Toshi Asada (Japan)
Serguei Balassanian (Armenia)
Bruce A. Bolt (USA)
Tony Dahlen (USA)
Jessie Daligdig (Philippines)
Jack Darbyshire (UK)
Father Lawrence Arthur Drake sj (Australia, Bolivia)
Frank Evison (New Zealand)
Sergey V. Goldin (Russia)
Cecil H Green (USA)
Joergen Hjelme (Denmark)
Henri A B Kampunzu (Botswana)
Masayuki Kikuchi (Japan)
Nadezhda Kondorskaya (Russia)
Heikki Korhonen (Finland)
Pavel Kottnauer (Czech republic)
Vasile Marza (Romania, Brazil)
Raymundo S Punongbayan (Philippines)
Xinling Qin (China)
Tsuneji Rikitake (Japan)
Ryosuke Sato (Japan)
John S Steinhart (USA)
George H Sutton (USA)

XXIV General Assembly of the International Union of Geodesy and Geophysics
Closing Ceremony

Shigeji Suyehiro (Japan)
Robert J Swain (USA)
Norman Tungol (Philippines)
Yuri Tyupkin (Russia)
Tokuji Utsu (Japan)
Jean Vogt (France)

IAVCEI:
Kei Aki (Japan, USA, France)
Roy A. Bailey (USA)
Lorenzo Casertano (Italy)
Jean-Louis Cheminée (France)
Robert Decker (USA)
Jim Luhr (USA)
Donald W. Peterson (USA)
George Walker (UK)

REPORT OF THE IUGG SECRETARY GENERAL
DR. J.A.JOSELYN
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007

65 countries adhere to IUGG, and we are always encouraging new members. Any country in which “independent activity in geodesy and geophysics has been developed” is eligible for IUGG membership. We believe that IUGG membership contributes to the scientific well-being of our member countries, and may lead to economic benefits through enhanced exchange of scientific and technical expertise. The Secretary General is always interesting in talking to people about country membership.

At this meeting, delegates from 42 Adhering Bodies attended one or more sessions.

Since the Sapporo General Assembly we have added 3 Countries: Bolivia, Congo, and Ghana. With the permission of the Council, Argentina Bulgaria changed their membership.

Perhaps the most exciting thing the Council approved was the new Association – the first one in 85 years. We will have a special event to honor this remarkable achievement just at the close of this Ceremony.

As is usual, a number of changes to the Statutes and by-Laws were suggested and approved. These included:

- changes to accommodate the new Association,
- approval of a Guidelines document that will be posted on the Web so that IUGG administrative practices are more transparent,

- increasing the number of categories of membership,
- clarification of procedures regarding the Finance Committee and Union Commissions,
- clarification of the languages of IUGG,
- the edition of Robert’s Rules of order under which we operate,
- and miscellaneous other editorial improvements.

Aksel Hansen, IUGG Treasurer, will present the budget in a few minutes

IUGG appoints official liaisons to some scientific bodies where it is advantageous to both organizations. Here is the list of persons appointed.

Finally, elections were held (to be reported shortly), Melbourne was selected as the venue for the 25th IUGG GA in 2011, and 9 Resolutions were passed. Those will be read to you soon, in their entirety.

Details about these decisions will be available via the E-Journal and on our website as soon as we can manage it.

In closing, I would simply like to thank everyone who has served with me for the past 8 years for their support and inspiration. It has truly been a privilege to be among you.

**SUMMARY OF DECISIONS TAKEN BY COUNCIL AT THE
XXIV IUGG GENERAL ASSEMBLY**

Delegates from 42 Adhering Bodies attended the Council meetings, held in three sessions.

- All matters of membership were approved (admission of Bolivia, D.R. Congo, Ghana, change of Category of membership for Argentina, and transfer of Bulgaria to Associate status)
- The new International Association for Cryospheric Sciences was approved and officers were appointed
- All proposed changes to the Statutes and By-Laws were approved
- The budget for 2008-2011 was approved
- Official IUGG Representatives to various scientific bodies were appointed
- New IUGG Officers were elected
- Melbourne, Australia was selected as the venue for the XXV General Assembly in 2011
- 9 Resolutions were passed

ICSU Commissions and Committees

Federation of Astronomical and Geophysical Data Analysis Services (FAGS)
ICSU (International Council for Science)
on Antarctic Research (SCAR)
on Oceanic Research (SCOR)
on the Problems of the Environment (SCOPE)
on Solar-Terrestrial Research (SCOSTEP)
on Space Research (COSPAR)
on World Climate Research Program (WCRP)
Inter-governmental and other organizations
Cartographic Office of the United Nations
International Civil Aviation Organization (ICAO)
Panamerican Institute of Geography and History (PAIGH)
UNESCO International Hydrological Programme (IHP)
UNESCO International Oceanographic Commission (IOC)
World Meteorological Organization (WMO)

Organization	Liaison for 2007-2011
CODATA	Charles Barton (Australia)
COSPAR	Eigil Friis-Christensen (Denmark)
FAGS	Ruth Neilan (USA)
ICSU Regional Office for Africa	R. Wonnacott (S. Africa)
ICSU Regional Office for Asia and the Pacific	S. Widiyantoro (Indonesia)
ICSU Regional Office for Latin America and the Caribbean	Luiz Fortes (Brazil)
SCAR	V. Papatashvili (USA)
SCOR	M. MacCracken (USA), L. Mysak (Canada)
SCOPE	N. Jake Peters (USA)
SCOSTEP	Robert Vincent (Australia)
WCRP	Guoxiong WU (China)
Cartographic Office of the UN	Luiz Fortes (Brazil)
ICAO	William Rose (M. Gufanti, Alternate) (USA)
PAIGH	Hermann Drewes (Germany)
IHP	Pierre Hubert (France)
IOC	Eugene Morozov (Russia)
WMO	Arthur Askew (CH); John Turner (UK)

REPORT OF THE IUGG TREASURER
DR. A.W. HANSEN
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007

Overview of IUGG's financial status

	1996-99	2000-03	2004-07	2008-2011
Value of 1 unit (+2%/yr)	1320	1455	1630	1765
Units paid/yr	290	267	263 estimate	260 budget
Incoming balance	244,3	438,9	610,6	754,8
Income	1.603,5	1.720,6	1.734,2	1.851,6
Expenditures	1.408,7	1.549,0	1.590,3	2.032,3
administrative	277,4	260,5	332,5	440,0
dues to ICSU	47,8	53,5	54,0	68,0
associations	712,6	777,1	805,3	984,2
grants/union activities	266,7	430,9	398,5	495,1
miscellaneous				45,0
Outgoing balance	439,1	610,6	754,5	574,1

Conclusion

we have now a sound economy, and we can allow a temporary increase in the activities for the next quadrennium, but only this time

- IUGG is a scientific union with 8 (+1 in Perugia) associations (with their own economy). I shall only deal with the union.
- IUGG has 65 members, 58 are paying members
 - 14 paying categories (13 and 14 introduced here in Perugia) + an Associate category
 - The Union's economy is based on dues paid by the members
 - o Member dues follow the category, now a total of 274 units
 - o The price of 1 unit is now US\$ 1,630.
- Council approves a budget for the 4yr period following the General Assembly. The new budget allows additional initiatives.

Budget for 2008-2011

July 6, 2007, Perugia

CONCLUSION

IUGG is in a good financial position

It allows additional initiatives for the next period

But the cut in the reserves is only for this period

**READING OF THE RESOLUTIONS OF THE UNION
ADOPTED AT THE XXIV GENERAL ASSEMBLY
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007**

The Resolutions adopted by the IUGG Council constitute the most serious and enduring business of the General Assembly. These Resolutions present the findings of the Union to our Adhering Bodies and to the scientific community as a whole, and recommend actions. The Resolutions of the Union and also of the

Associations that adopted resolutions are printed in these *Comptes Rendus*. At the Closing Ceremony, each resolution was read in English by either Jo Ann Joselyn or Uri Shamir, and they were shown on overhead projection in both English and French.

**FINAL REMARKS BY URI SHAMIR, OUTGOING IUGG PRESIDENT
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007**

IUGG Colleagues, Friends, Ladies and Gentlemen,
The 24th General Assembly has reached its closing moments. For the last two weeks we enjoyed the camaraderie of over 4,000 geo-scientists, assembled in Perugia to present, to listen to and study research findings, and consider the ways in which we can and should continue to carry our science ahead, expanding and improving understanding and expanding knowledge through individual and collaborative work, and making the outcome relevant to society.

It has been an exciting scientific program, spanning well over 200 sessions, emphasizing disciplinary and inter-disciplinary studies. We note with satisfaction the presence of many younger scientists, and expect them to continue to be active in the Union

The Assembly also included many organizational meetings. The Bureau and Executive Committee deliberated matters of policy and planning, and made recommendation to Council. The Council took decisions, which are being reported in this session.

The Council elected the new officers of the Bureau and Finance Committee, and the Associations elected their officers. Please allow me to present the members of the 2007-2011 Bureau, Finance Committee, and Presidents and Secretaries General of the Associations.

IUGG Bureau members for 2007-2011

President: Dr. Tom Beer (Australia)
Vice President: Dr. Harsh Gupta (India)
Secretary General: Dr. Alik Ismail-Zadeh (Germany/Russia)
Treasurer: Dr. Aksel Hansen (Denmark)
Bureau Members:
Dr. CHEN Yun-Yai (China),
Dr. David Jackson (USA),
Dr. Ali A. Tealeb (Egypt)

IUGG Finance Committee members for 2007-2011

The new Finance Committee Members are Dr. David Collins (U.K.), Dr. Jan Krynski (Poland), Dr. Kiyoshi Suyehiro (Japan), and Dr. Juan Vilas (Argentina). The Committee selected Dr. Vilas as their Chair.

Association Presidents and Secretaries General for 2007-2011

A major decision of the 2007 Council was the addition of a new Association, the International Association of Cryospheric Sciences.

International Association for Cryospheric Sciences
President: Dr. Georg Kaser (Austria)
President-elect: Dr. Ian Allison (Australia)
Secretary General: Dr. Manfred Lange (Germany)

International Association of Geodesy
President: Dr. Michael Sideris (Canada)
Secretary General: Dr. Hermann Drewes (Germany)

International Association of Geomagnetism and Aeronomy
President: Eigil Friis-Christensen (Denmark)
Secretary General: Dr. Bengt Hultqvist (Sweden)

International Association of Hydrological Sciences
President: Dr. Arthur Askew (Switzerland/Aus);
President-Elect: Dr. Gordon Young (Canada)
Secretary General: Dr. Pierre Hubert (France)

International Association of Meteorology and Atmospheric Sciences
President: Dr. WU Guixiong (China)
Secretary General: Dr. Hans Volkert (Germany)

International Association for the Physical Sciences of the Oceans
President: Dr. Lawrence Mysak (Canada)
Secretary General: Dr. Johan Rodhe (Sweden)

International Association of Seismology and Physics of the Earth's Interior
President: Dr. WU Zhongliang (China)
Secretary General: Dr. Peter Suhadolc (Italy)

International Association of Volcanology and Chemistry of the Earth's Interior
President: Dr. Setsuya Nakada (Japan)
Secretary General: Dr. Joan Marti (Spain)

Union Commission Officers for 2007-2011

Union Commission on Geophysical Risk and Sustainability (GeoRisk)
President: Kuniyoshi Takeuchi (Japan)
Secretary General: Gerd Tetzlaff (Germany)

Union Commission on Mathematical Geophysics (CMG)
President: Dan Rothman (USA)
Secretary General: Claudia Pasquero (USA)

Union Commission on Studies of Earth's Deep Interior

XXIV General Assembly of the International Union of Geodesy and Geophysics
Closing Ceremony

(SEDI)

President: Gauthier Hulot (France)

Secretary General: Michael Bergman (USA)

Location of the 2011 IUGG General Assembly

The Council selected Melbourne, Australia, as the site of the 2011 IUGG General Assembly. The dates of the 25th IUGG General Assembly will be announced as soon as possible, but the first half of July is most likely.

As I stated in my remarks at the impressive opening session, I have held various offices in the Union since

the 1970s, four years as President of IAHS, then eight years Vice President of IUGG and in the last four years as President. It has been an exciting and eventful time, and I am grateful for the opportunity to serve our scientific community, jointly with the Bureau: Vice President Tom Beer, Secretary General JoAnn Joselyn, Treasurer Aksel Hansen, Bureau members Yun-Tai Chen, Harsh Gupta and Ali Tealeb. A strong, dedicated and cooperative Executive Committee of Association Presidents, ably aided by their Secretaries General, greatly facilitated carrying out the task of leading the Union. To all these colleagues and friends I extend my gratitude for their support.

CLOSING REMARKS BY TOM BEER
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007

Thank you, President Shamir, for your leadership of the Union for the past four years.

This XXIV IUGG General Assembly held in Perugia provided an opportunity for scientists from around the entire world, from the developed and less developed countries, to meet and to discuss the latest scientific findings and conclusions. These findings are then incorporated into resolutions that are adopted during the final meeting of the IUGG Council. The resolutions that were adopted deal with important issues of international standardisation, and with the important problems associated with the interaction of geophysics, geodesy and society including the problems of climate change and the possible effects of aerosols on clouds and precipitation. Because one of our major concerns is with the less developed countries, where most of the loss of human life and huge damages occur due to natural and man-made disasters, it is in these countries that we must make the greatest effort to support local science and its role in support of decision making, so as to improve the quality of life for the neediest. However, developed countries also suffer from inadequate investment in the geo-sciences that can help alleviate the suffering and loss resulting from damaging events.

The possible increase of geophysical and geodetic natural hazards as a result of possible human induced climate change is a concern that requires scientific investigation that can use all of the capabilities of the IUGG. The geodesists within IAG, are able accurately to determine earth movements and landslides. The hydrologists within IAHS, are working on improvements to their flood forecasting capability. The meteorologists in IAMAS are concerned with droughts and severe storms. The oceanographers in IAPSO and the seismologists in IASPEI study and investigate tsunamis and play a vital role in the development of tsunami warning systems. The volcanologists in IAVCEI deal with the dangers of volcanic explosions. The geomagneticians and aeronomers in IAGA examine space weather and the effects that it has on human beings, and the cryospheric scientists in our newest association, IACS (the International Association for Cryospheric Sciences) deal with the possible consequences of large-scale melting of glaciers and ice-caps.

The IUGG General Assembly is organized every four years. During the Opening Ceremony held in Perugia's beautiful Piazza IV Novembre it was described as the "Olympics of Geosciences". It brings together scientists from all the geo-sciences, for joint symposia and workshops, to create the inter-disciplinary synergies that ensure a comprehensive perspective on the geo-sciences and their relevance to society. Each of the IUGG Associations has its own meetings, but emphasis is also placed on inter-Association and Union level events.

An IUGG General Assembly also offers the opportunity for companies and organisations that offer scientific tools to exhibit their products. The Perugia assembly included an exhibition area in which book publishers and equipment suppliers could display their wares, as well as areas for cognate organisations to make scientists aware of their scientific products. One of these booths was there to provide information on Melbourne, Australia, which is to be the host city for the XXV IUGG General Assembly.

The Australian Academy of Science, and the Royal Society of New Zealand combined to invite IUGG to hold the next General Assembly in Melbourne during June or July of 2011. There are many reasons why the 2011 General Assembly will be exciting. For one, it will be the first General Assembly in which our newest Association, IACS, will be a full participant.

To continue, the sporting analogy; let me describe the one-two-three-go of this event:

This is the first time since 1922 that the IUGG has created a new international association;

2011 will be the second time that the IUGG General Assembly will have been held in the Southern Hemisphere.

2011 will be the third time that the IUGG General Assembly will have been held outside of Europe or North America.

So, go to Melbourne in 2011. I look forward to welcoming all of you there.

QUADRENNIAL REPORT OF THE PRESIDENT
PROF. U. SHAMIR
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007

Following from the 2003 Sapporo General Assembly

In the years leading up to the Sapporo GA, IUGG was engaged in a process of self-examination, defining its goals and modus operandi, as reported by Past President Prof. Masaru Kono in his President's report to the Sapporo Council. The process was prompted by the sense that IUGG needs to change, in view of evolving conditions.

The process engaged the Associations and National Members, and was conducted and coordinated by members of the Bureau and the Executive Board. Some of the reasons that motivated the search for a change, which were covered by the report that Past President Kono presented to the Sapporo Council four years ago were:

- The emergence of regional geophysical societies, and how IUGG should maintain its role as the international geophysical organization.
- The increasing importance of the social context of our scientific work.
- The continuing revolution in Information Technology, and the effect that it has on scientific work.

An extensive survey of views was conducted among the Associations and National Members, using a structured questionnaire. The findings were debated at length in the Executive Committee and then summarized. The resulting document "IUGG Structure, Goals and Objectives" was adopted by the Sapporo Council. A draft of a "Long Range Vision Statement for the IUGG" was also presented. After some further refinement, the Executive Committee adopted the Mission Statement, which is posted on the IUGG web site. These documents have been and remain a valuable road-map for the Union.

Strategic Directions for IUGG during the last Quadrennium and into the Next

Commission for Cryospheric Sciences (CCS) – to become an Association (IACS)

Snow and Ice have been an integral part of IUGG's remit for many decades, and were located within IAHS. For a very long time, the cryo-scientists argued that the role of snow and ice in the hydrological cycle is but one aspect of the cryosphere, and the discipline deserves to be an IUGG Association. Lengthy discussions, over several years, finally culminated in a recommendation by the Executive Committee in 2004 to grant this status, while in the interim a Union level Commission on Cryospheric Sciences (CCS) was

created by the Executive Committee. IAHS maintains its interest in snow and ice as a component of the hydrological cycle, and consequently will keep its International Commission on Snow and Ice (ICSI), which maintains strong links with the CCS.

In preparation for this Council meeting, the Statutes and By-Laws for the introduction of IACS have been prepared, as well as the budgetary aspects of adding an eighth Association. This Council will consider the recommendation to approve the conversion of the CCS into the International Association for Cryospheric Sciences (IACS). Our expectation is that the decision will be positive, and IUGG will henceforth have eight Associations.

Cooperation with our Sister GeoUnions

Beginning in early 2004, the GeoUnions got together to coordinate and cooperate. This was received with considerable enthusiasm by ICSU, and viewed as model for other Unions to follow. We now constitute a "cluster" of Unions within the ICSU family, of the following seven Unions: IAU (Astronomy, not fully engaged in the GeoUnions activities), IGU (Geography), INQUA (Quaternary Research), ISPRS (Photogrammetry and Remote Sensing), IUGS (Geology), IUGG (Geodesy and Geophysics), IUSS (Soil Sciences). We have met four times since 2004, and continue to cooperate closely.

A joint Science Program was agreed, with five topics, each led by one of the Unions: Cities and Megacities (IGU); Desertification (IUSS); Groundwater (IUGG); Hazards (IUGG); Health (IUGS). Teams were set up, with members from each of the Unions, to prepare a scientific program of action, and then develop research proposals which can be submitted to funding sources. Some of the teams progressed more than others, but none has so far reached the point where it is able to submit proposals. The idea has much merit, but implementation is not easy, and depends very much on the individuals involved, in particular the lead persons.

At its meeting in Sapporo, the Executive Committee decided to become a Founding Member of the International Year of Planet Earth (IYPE), whose title is "Earth Sciences for Society - an International Year of Planet Earth". IYPE (also dubbed Earth Science for Society) is a joint IUGS-UNESCO initiative, which is, in fact, a three year plan (2007-2009). It is one of several *YEARS* which are designed to celebrate the 50th anniversary of the 1957 IGY, and will be discussed below.

There is considerable overlap between the science topics of IYPE and those of the GeoUnions science programs. It is hoped that the GeoUnions joint program will lead to significant science projects, to greater recognition by society, and will help to create an attraction for young scholars to adopt a career in the geosciences.

For the ICSU General Assembly in China, in October 2005, the GeoUnions decided jointly to support me in the election for the ICSU Executive Board, which includes four members from the Unions, one from each "cluster", and four from among the National Members. Since there was only one candidate from our cluster, I was elected, and will serve on the ICSU-EB for a three year period, 2005-2008. It is important to note that members of the ICSU-EB are not representatives of their union, or even their cluster and its specific interests, but rather act jointly to guide ICSU as a whole.

Geosciences in Africa (GIA)

Upon taking office in Sapporo I launched an initiative for IUGG to become active in Africa. This was based on the observations that: (a) our colleagues in Africa suffer, more than others in the rest of the world, from shortage of resources, from lack of an adequate cadre of trained scientists, and from lack government recognition and support, and (b) geo-sciences cannot be complete without engaging scientists around the world, since the scientific basis is common and many of the processes are global.

The first move was to convince the Nigerian delegates to the Sapporo GA to hold a regional geosciences conference, and promised to attend it. They managed to do this, and in August 2004 I attended a workshop of the Nigeria Union of Radio and Planetary Sciences (NURPS, the IUGG Adhering Body) in Lagos. New officers of NURPS were elected, and although it has taken some time to complete the move, Nigeria has paid its dues and is again a full member of IUGG.

The GeoUnions joined the GIA initiative, so it is now part of our joint GeoUnions science program.

At its meeting in 2005, the Executive Committee approved my request to set aside \$50,000 to promote the GIA initiative. It was stipulated that these funds will be used to leverage much larger funds, from other funding sources, to enable large inter-disciplinary projects. To date, none of this money has been spent, since no proposals that satisfy this condition have been generated.

In 2004, ICSU decided to establish its Regional Offices, the first one for Africa, in Pretoria. Prof. Sospeter Muhongo (Tanzania) was appointed Director, and since the establishment of this ICSU Regional Office for Africa (ICSU-ROA) I have worked with and through this office to promote the GIA initiative. I attended two meetings – The African Geology Conference in Maputo (July 2006), and the Second Consultative Forum of the ICSU-ROA in Johannesburg and Pretoria (September 2006). At this latter meeting four science programs were initiated, and I tried to connect them to the ongoing activities of the GeoUnions and their science program. This process is still ongoing. A separate document will be available to this Council, titled "Geo-Sciences in Africa (GIA): An Initiative and Action Plan of the Geo-Unions", which is made available to participants of conferences, workshops and meeting in Africa.

Young Scientists – "Geosciences: The Future (GTF)" and beyond

During the previous quadrennium (1999-2003) a group of seven young (~30) scientists, one from each of the Associations, conducted a study, titled "Geosciences: The Future", considering where the Union should be going and what its future science program should be. I acted as initiator and mentor for the GTF group, and IUGG allocated \$12,000 for its work. This study culminated in a report and a Union Symposium in Sapporo. A summary paper appeared in EOS.

The underlying idea was to engage young geoscientists in setting the science agenda and of the Union, thereby promoting the next generation of leaders, while inviting them to present a fresh perspective on the future of our science. This experience was considered a success, and proposals were made by members of the Bureau and Executive Committee to find an appropriate mechanism to carry the idea forward. No plan was adopted as yet, and it remains for the next Bureau and Executive Committee to decide what to do.

ICSU will be holding a conference titled "Global Scientific Challenges: Perspectives from Young Scientists", in Lindau, Germany, in April 2007. IUGG is sending three young scientists to attend, and we hope to hear from them at the Perugia GA.

The IGY+50 *YEARS*

2007 marks the 50th anniversary of the International Geophysical Year (IGY), which was great success. IUGG decided to celebrate this anniversary at the Perugia GA. Several other *YEARS* have also been launched, around 2007, some have a duration longer than a single year.

IGY+50

An IGY+50 Committee was set up after the Sapporo GA. It is preparing a special celebration on Saturday, July 7, 2007.

eGY – The Electronic Geophysical Yeart

eGY is an initiative of IAGA, which has gained very wide acceptance and visibility. It aims to utilize the capabilities afforded by modern IT, and use them to manage geophysical data and information for the benefit of all. The barriers of policies and inadequate access to communication are to be overcome by a concerted international effort.

IPY – the International Polar Year

IPY constitutes a broad multi-disciplinary and trans-disciplinary program of inter-related projects which emphasize the polar regions. It has been approved by ICSU as a component of its program.

IHY – the International Heliophysical Year

IHY aims to advance the understanding of the fundamental Heliophysical processes that govern the Sun, Earth and Heliosphere. It also has a substantial outreach program.

IYPE – the International Year of Planet Earth

IYPE was created by the International Union of Geological Sciences (IUGS) in cooperation with UNESCO. IYPE is going via the political route, and has managed to get the UN to make a specific Proclamation, making 2008 the United Nations International Year of Planet Earth, whose activities will span the three years 2007-2009. IYPE has developed ten scientific topics, and continues to seek funding for implementation. In parallel, considerable effort is spent on outreach, to bring the message of the geosciences and their importance to man and society to the public and to decision makers.

IUGG and GeoUnions Relations with ICSU

ICSU has over 100 National Members and 29 Unions, seven of them in the Geo-Union cluster, and several Interdisciplinary Bodies. The Executive Board of ICSU has, in addition to the ICSU Officers, four members elected by the National Members and four elected by the Unions, one from each of the four "clusters" of Unions. At the ICSU General Assembly in Souzhou in October 2005, the Geo-Unions cluster decided to place my name as the sole candidate from our cluster, and I was elected to the ICSU-EB for the period 2005-2008. The next Geo-Unions meeting will take place in Rome on April 21-22, just prior to the next ICSU Unions meeting on April 23-24.

ICSU turns to its membership when it considers new programs, and, in particular, when it seeks nomination

for special committees and task groups. Several IUGG officers and members have been and still are members of such groups. Still, IUGG has had some concerns about the manner in which the interaction between ICSU and its Unions is conducted. In consultation with the other Geo-Unions, who felt the same, a letter of concern was addressed to ICSU (IGU did not join) in September 2006, titled "ICSU and its Unions: A Call for Closer Cooperation". The letter was also circulated to all other ICSU Unions, and several consenting answers were received. The ICSU-EB discussed the letter, and ICSU Executive Director, Prof. Thomas Rosswall, responded in a letter in November 2006. Copies of these two documents can be made available to members of this Council upon request. It is to be expected that these discussions have helped to improve the coordination between ICSU and its Unions.

ICSU decided to create a number of Regional Offices. The Regional Office for Africa (ICSU-ROA) was established in Pretoria in 2004. The Regional Office for Asia and the Pacific (ICSU-ROAP) was established in 2006, and an office for Latin America (ICSU-ROLA) is being established. Attempts to find a location for an ICSU office in the Arab world have not yet borne results. The Regional Offices have the task of dealing with issue that have regional relevance and of engaging local scientists, in collaboration with the international scientific community. They are led by Regional Committees.

IUGG Web Page (<http://www.iugg.org/>)

The IUGG web page has been improved substantially since Sapporo. It serves to provide all the essential documents of the Union, as well as current information regarding meetings, events and scientific programs.

IUGG E-Journal

The E-Journal is prepared monthly by the Secretary General, and, after receiving suggestions on its draft from the Bureau and Executive Committee, it is finalized, distributed and posted on the IUGG Web Site. Because some of our National Committees and colleagues around the world may not be able to download attachments, the E-Journal is also distributed by E-Mail.

Preparations for the Perugia General Assembly

Perugia, Italy, was selected by the Sapporo Council, after competition with Melbourne, Australia (which is bidding again for the 2011 General Assembly). Much work has gone into the planning the scientific program and making the organizational and logistical arrangements. Prof. Lucio Ubertini, Chair of the Local Organizing Committee, is aided by a large staff,

headed by Dr. Salvatore Grimaldi. I had occasion to meet with these leaders and their support staff more than once, and admire their dedication. The web site for the General Assembly enables on-line registration and submission of abstracts, and hopefully all will be in good order by the time we arrive for the General Assembly.

The Science Program Committee

The Science Program Committee for this General Assembly is made of the Secretaries General of the Associations. We have included the SG of the Commission on Cryospheric Sciences (CCS), anticipating the approval by this Council of them becoming an Association. The SPC is chaired by Prof. Paola Rizzoli (MIT).

Union Lectures

I have invited the following four Union Lecturers (in the order of their lectures, indicating the connection with the corresponding Union Symposia and the responsible Association):

- Prof. Robert Corell - Global Change Program at the H. John Heinz III Center for Science, Economics and the Environment, and Senior Policy Fellow of the American Meteorological Society: "Our Changing Climate: A Policy Issue" (Monday, July 2, Symposium U1, IAMAS)
- Prof. Maria Zuber – Department of Earth, Atmospheric and Planetary Sciences, MIT: "Inside the Terrestrial Planets" (Thursday, July 5, Symposium U5, IAGA)
- Prof. Claudio Faccenna – Geological Sciences, University Roma III: "Subduction and Mantle Convection in the Mediterranean" (Tuesday, July 10, Symposium U9, IAPSO)
- Prof. Kenji Satake - Active Fault Research Center, Tsukuba, Japan: "Lessons from the 2004 Sumatra-Andaman Earthquake and the Asian Tsunami" (Friday, July 13, Symposium U12, IASPEI)

Special Committees for the General Assembly

I appointed four special Committees for the GA, after due consultation with members of the Bureau and the Executive Committee, drawing largely on past office holders and their relevant experience and seeking a geographical balance.

Nominating Committee

Soren Gregersen – Chair	Denmark
Attia Ashour	Egypt
Robert Duce	USA
Seiya Uyeda	Japan

The Nominations Committee solicited nominations from all those eligible to nominate to the open Bureau and Finance Committee positions, and is seeking to

strike a balance of experience, disciplines and geographical distribution in preparing its slate of candidates for each position. Further nominations are still possible, as provided by the Statutes and By-Laws of the Union.

Statutes and By-Laws Committee

David Kerridge - Chair	UK
Jean-Pierre Barriot	France
Priscilla Grew	USA
Ronald Stewart	Canada

The Statutes and By-Laws Committee has been examining various issues that have arisen over the quadrennium with respect to existing Statutes and By-Laws, especially matters that relate to the compatibility between Associations' Statutes and By-Laws and those of the Union. A special task has been to examine the proposed Statutes and By-Laws of the International Association for Cryospheric Sciences, the new Association which is to be brought to this Council for approval.

Resolutions Committee

Masaru Kono – Chair	Japan
Huw Davies	Switzerland
Pierre Hubert	France
Zev Levin	Israel

The Resolutions Committee will solicit proposals during the General Assembly, examine and evaluate them, and then prepare the suggested resolutions for consideration by this Council.

Site Evaluation Committee

Bob Engdahl – Chair (IASPEI)	USA
Christian Tscherning (IAG)	Denmark
Kathy Whaler (IAGA)	UK

The Site Evaluation Committee was established to respond to the Sapporo Council's request that the invitations to host IUGG General Assemblies should be evaluated and the results presented to Council, to facilitate its decision process. The members selected for this Committee have rich experience in the organization of large IUGG meetings, including past General Assemblies.

Funds for Support of Young Scientists and Scientists in Need

IUGG continues to place great importance on being able to support young scientists and those who have financial difficulties. Funds are made available by the Union, taken as part of the regular registration fee, and through solicitation by the LOC of support from external sources. The Italian invitation to host this GA included a commitment to raise funds to match the level which was available in Sapporo. I have made myself available to the LOC in its efforts to raise funds.

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We have had several meetings with potential donors, and the LOC has attempted to mobilize Italian Municipalities to "adopt a scientist". At the time of this writing, my efforts to prompt the LOC to meet its original pledge have not borne the results we are still hoping for. It remains to be seen whether this will change by the time of the GA.

Meetings with the Associations and Unions Activities

While the Association leaders meet at the Executive Committee meetings, it is most important that the link between the Union and the Associations be as strong as possible. Presence of IUGG officers at Associations' Scientific Assemblies and at scientific symposia and workshops of disciplinary groups help to strengthen these links. I have attended the following meetings:

2004	05/02-07/02	GeoUnions and ILP Paris
	09/02-10/02	ICSU Unions Meeting Paris
	12/02-13/02	Preparatory meeting for the Perugia GA, Perugia
	24/05-27/05 *	ICSU Committee on Membership, Paris
	07/07-09/07	SEDI Workshop Garmish-Patenkischcen
	15/08-19/08	NURPS Conference Lagos
	20/08-25/08	Int. Geological Congress Florence
	26/08-28/08	GeoRisk Committee Stockholm
	29/08-02/09	IUGG Bureau and EC, and Earth Unions, Boulder
2005	30/03-09/04	IAHS Scientific Assembly Foz de Iguassu
	18/07-20/07	IAGA Scientific Assembly Toulouse
	06/09-07/09	GeoUnions meeting Rome
	08/09-11/08	IUGG Bureau, EC and SPC Perugia
	15/10-16/10	GeoUnions Meeting Shanghai
	17/10-22/10	ICSU General Assembly Souzhou
2006	20/04-23/04 *	ICSU Executive Board Paris
	10/05-12/05 *	UNESCO Review of Science Sectors, Paris
	04/06 *	CMG Zemach, Israel
	03/07-06/07	Geology in Africa Maputo

24/09-30/09	Forum - ICSU Regional Office in Africa, Johannesburg/Pretoria
16/10-18/10	IUGG Bureau Melbourne
25/10-26/10 *	ICSU Executive Board Paris
05/12 *	Perugia GA-LOC and funding sources Perugia

* = Travel paid by ICSU or UNESCO, or no cost

Acknowledgements and Thanks

The end of the Perugia General Assembly will mark the end of a 12 year period during which I served on the Union Bureau as Vice President (1995-1999 and 1999-2003) and President (2003-2007). Preceding that, I was active in various capacities in IAHS and its President (1991-1995), during which I was member of the Executive Committee. It has been a challenge and a privilege, but it certainly does not bring to an end my deep involvement with the Union.

I am grateful to many individuals who have made my task easier and pleasurable. First among them is our most able Secretary General, JoAnn Joselyn, who will be stepping down after eight years of dedicated and most capable service to the Union. She has been my constant and wise council, while carrying the burden of the daily operation. Vice President Tom Beer shouldered his part of the responsibility and was available to provide advice and take action. Treasurer Aksel Hansen, who worked closely with the Finance Committee and its Chair Mike Hamlin, kept our finances in excellent shape. Members of the Bureau Yun-Tay Chen, Harsh Gupta and Ali Tealeb provided their perspective and advice. I am most grateful to the Presidents and Secretaries General of the Associations; their lively participation in setting and carrying out the programs of their Associations and of the Union were invaluable to the well-being of the Union. The Associations' Secretaries General, who were invited to attend the Executive Committee's meeting, also constitute the Science Program Committee for this Assembly, chaired by Paola Rizzoli. The SPC set the program and ascertained that it can be carried out successfully in this great venue of Perugia.

Special recognition is due to the Local Organizing Committee for this General Assembly, chaired by Lucio Ubertini and led by Salvatore Grimaldi. They have had a gigantic task, and we all hope that the Assembly will proceed to the full satisfaction of one and all.

Last, I wish to acknowledge the substantial financial support provided to me for my travels (except those paid by ICSU and UNESCO, as marked in the list) by the Israeli Academy of Sciences and Humanities and

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by my home institution, the Technion – Israel Institute of Technology, which also gave me permission to use my own travel funds for this purpose. Without this I could not visit as many of the Associations and

Commissions activities, nor attended meetings to promote the GeoSciences in Africa (GIA) initiative.

February 15, 2007

Uri Shamir, President

QUADRENNIAL REPORT OF THE VICE PRESIDENT

DR. T. BEER

24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007

When I took office as Vice-President I noted that there was no formal role for the Vice-President in the statutes or by-laws. During 2004 I reviewed the statutes and by-laws in relation to Union and Inter-Association Commissions and established guidelines for such commissions. During this review a specific duty was established for Vice-President. The relevant item reads:

The Union Commissions will formulate their program of work and should report to the Vice-President of the Union at least on an annual basis. An annual financial statement based on the calendar year shall be provided to the IUGG Treasurer.

I have maintained electronic liaison with CMG, SEDI, GeoRisk, CCS, SCL/ILP and SEDI.

In addition to attending Executive and Bureau meetings in Boulder 2004 and Perugia 2005, I hosted the Bureau meeting in Melbourne in October 2006. I also engaged in various other activities to represent IUGG to ICSU.

I represented IUGG at the first planning meeting for the ICSU Regional Office for Asia and the Pacific in April 2005, and then at the meeting to inaugurate the regional office in Kuala Lumpur in September 2006.

I was nominated by IUGG to be a member of the Scoping Group for the new ICSU research program on

Natural and Environmental Hazards and Disasters. The Scoping Group report was accepted by the ICSU General Assembly and I was then nominated by IUGG to be on the Planning Group for the program. The Science Plan developed by the Planning Group will be outlined by the Chair (Gordon McBean) during his presentation in session U12 at the IUGG General Assembly. Other members of the IUGG family on the Planning Group are Harsh Gupta and Steve Sparks.

I was also asked to represent IUGG as Chair of the Hazards Theme of the GeoUnions Science Initiative. As I also chair the Hazards Theme of the International Year of Planet Earth I deal with them as a combined committee. We are in the process of arranging a major conference in 2008 (The UN designated Year of Planet Earth) hopefully to be held in association with ICSU and UN-ISDR.

In addition to these, I was asked to represent IUGG at the UN World Conference on Disaster Reduction held in Kobe, January 2005. This conference became a high-profile event because of the Asian Tsunami of 26 December 2006 and I resolved to present the IUGG resolution on the tsunami to the conference. This proved surprisingly difficult to do when one is at a UN conference but is not a member of a national delegation, and I must confess to a sense of personal accomplishment at having succeeded at the task.

Tom Beer

QUADRENNIAL REPORT OF THE SECRETARY GENERAL

DR. J.A. JOSELYN

24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007

OVERVIEW

The International Union of Geodesy and Geophysics (IUGG) is a not-for-profit scientific organization dedicated to promoting and co-ordinating world-wide studies of the Earth and its environment in space. It is a union of seven geophysical Associations, each dedicated to a specific scientific discipline, but with overlapping interests and complementary strengths. At present, there are four Unions Commissions that are dedicated to particular interdisciplinary topics. The Union is financially supported by Member Adhering Bodies that benefit from the knowledge, data, services, and scientific talent that are concentrated within each Association and inter-Association body.

The Activities of the Union during the past quadrennium are summarized below, but there are several activities worthy of special note.

A magnitude 9 great earthquake that occurred on 26 December 2004 off the west coast of northern Sumatra, South Asia, triggered tsunamis that inundated the coastal zones around the Indian Ocean resulting in tragic and historic loss of life and property. The IUGG Union Commission on Geophysical Risk and Sustainability (GeoRisk), in cooperation with the IAPSO/IASPEI/IAVCEI Tsunami Commission, wrote a statement including a list of recommendations for further analysis which can be found on the web-page of the GeoRisk Commission <http://www.mitp.ru/georisk>. An IUGG Resolution based on this document, published in a special issue (11 January 2005) of the IUGG E-Journal, was sent to the UN Inter-Agency Secretariat of the International Strategy for Disaster Reduction (ISDR) and was presented at the World Conference on Disaster Reduction in Kobe Japan (18-22 January 2005) by Tom Beer, IUGG Vice President and Past Chair of the GeoRisk Commission. Since then, the general topic of geohazards has been a priority both within IUGG, its Commissions and Associations, and the entire scientific community.

In a continuing effort to sharpen the focus of the Union, the officers of the Union agreed on a Mission Statement at the 2005 meeting of the Union Executive Committee. That statement, posted on the IUGG webpage (<http://www.IUGG.org>) follows.

The International Union of Geodesy and Geophysics (IUGG) is the international organization dedicated to advancing, promoting, and communicating knowledge of the Earth system, its space environment, and the dynamical processes causing change.

Through its constituent Associations, Commissions, and services, IUGG convenes international assemblies and workshops, undertakes research, assembles observations, gains insights, coordinates activities, liaises with other scientific bodies, plays an advocacy role, contributes to education, and works to expand capabilities and participation worldwide.

Data, information, and knowledge gained are made openly available for the benefit of society – to provide the information necessary for the discovery and responsible use of natural resources, sustainable management of the environment, reducing the impact of natural hazards, and to satisfy our curiosity about the Earth's natural environment and the consequences of human activities.

A new Union Commission on Cryospheric Sciences was established at the 2004 meeting of the IUGG Executive Committee. This Union Commission was formed from an international commission of the International Association of Hydrological Sciences but includes appropriate scientific topics from other Associations (e.g. sea ice, from the International Association for the Physical Science of the Oceans (IAPSO). The IUGG Executive Committee recognized the unique scientific niche of the cryosphere and at its meeting in 2005, voted to recommend to the IUGG Council that this Union Commission should become the 8th Association of IUGG.

As a response to a call to plan a scientific activity that would build on the legacy of the 1957-1958 International Geophysical Year (celebrating its 50th anniversary, in 2007-2008), the International Association of Geomagnetism and Aeronomy (IAGA) initiated a major project to provide an internationally coordinated framework and focus for a 21st-Century approach to geoscience data stewardship (including data preservation, data maintenance, data discovery, data release, ready access to data), and the development of virtual observatories, capacity building, and education and public outreach. This initiative, known as the Electronic Geophysical Year (eGY), was adopted as an IUGG initiative by the Executive Committee in 2005 and has been endorsed by a number of international bodies and programs.

In the past four years, a total of \$65,000 in grants to support meetings was allocated to the organizers of 32 symposia, workshops, schools or meetings in 25 different countries, most of them in developing countries. In addition, a total of \$50,000 in grants was allocated in the years 2004 and 2005 to support 8 inter-Association initiatives that benefited developing

countries. These activities included support for the IAGA/IUGG initiative on the electronic Geophysical Year (eGY), distribution of a monograph *The State of the Planet* (resulting from the Union Symposia of the same name at the 2003 IUGG General Assembly), support for an assessment of Biomass Burning on Precipitation (resulting from an IUGG resolution passed at the Sapporo General Assembly), support for several activities of the WMO/GEWEX (Global Energy and Water Cycle Experiment) programme, and 4 other projects specifically aimed at geohazards (earthquakes, volcanoes, tsunamis). By action of the 2005 Executive Committee, the grants were suspended for 2006-2007 in order to build a reserve of \$50,000 that could be used to seed a potential major project in Africa.

IUGG has been an active participant in the International Council for Science (ICSU), including the nomination of persons for numerous panels and working groups. Those panels for which IUGG was successful included the Panel of Area Assessment on Environment and its Relation to Sustainable Development (Dr. Uri Shamir), an ad hoc Expert Panel on Priority Area Assessment on Capacity Building in Science (Dr. Harsh Gupta), an ad hoc Committee on Membership Issues (Dr. Uri Shamir), and both the scoping and planning group on Natural and Human-Induced Environmental Hazards (Dr. Tom Beer). IUGG wrote a letter endorsing the ICSU "Agenda for Action" with regard to Science in the Information Society, and wrote a statement and sent an observer to the December 8-9, 2003 conference in Geneva, Switzerland, on the Role of Science in the Information Society. During the quadrennium, IUGG officers attended an ICSU Unions meeting in Paris (2004) and an upcoming Unions meeting in Rome (April 2007), and the ICSU General Assembly in Suzhou, China (2005). Prof. Charles Merry, Chairman of the South African National Committee for IUGG, represented IUGG at the First ICSU Regional Meeting for Africa in Harare, Zimbabwe in 2004. The meeting discussed how the ICSU Regional Office for Africa, to be located in Pretoria, South Africa, will contribute to the strengthening of African science. Drs. Tom Beer and Harsh Gupta represented IUGG at the meeting establishing the ICSU Regional Office for Asia and the Pacific held in Kuala Lumpur in 2005, and Dr. Luiz Paulo Fortes, Chairman of the Brazilian National Committee for IUGG, represented IUGG at the meeting establishing the ICSU Regional Office for South America, held in Panama City in 2006. Dr. Uri Shamir was elected to the ICSU Executive Board at the Suzhou General Assembly, and Harsh Gupta was selected as a member of the ICSU Committee on Scientific Planning and Review.

IUGG has appreciated the opportunity to propose initiatives for ICSU grants. In 2003, the International Association for Geomagnetism and Aeronomy (IAGA) received an award of \$35,000 for their proposal "Rescue of old analogue magnetograms by converting to digital images." The project's outcome was that 177 station-years of 64,650 old and historic magnetograms from 9 Russian, two Indian, and one German magnetic observatory were converted to digital images. The hardware purchased with the project support is now available for the staff at the World Data Centres in India, Russia, and Japan for the follow-on conversion of analogue magnetograms into digital images in their routine work, as well as for specific rescue projects. IUGG did not submit a proposal for funding in 2004, but supported several grant proposals including four that were selected. In 2005, IUGG submitted two ICSU project proposals, and supported 3 others. Two of the supported proposals were successful. ICSU suspended the Grants Programme for 2007 and beyond pending a review of the programme and efforts to find funding for it.

During the quadrennium, IUGG collaborated with sister Unions on an initiative led by the International Union of Biological Sciences on the general topic of Science for Health and Well-being. We also participated in a new consortium of "geo" Unions, now 7 in number. The GeoUnions have met 4 times and identified 5 topics of interdisciplinary interests for future collaboration as opportunities arise. Several of the GeoUnions perceived a deficiency in communication and transparency between the Executive office of the International Council of Science and its Unions and issued a statement of concern that will be discussed at an April meeting of the ICSU Unions. IUGG and the International Union of Geological Sciences (IUGS) now jointly administer a former ICSU Interdisciplinary Body, the International Lithosphere Programme, and IUGG is collaborating with the International Astronomical Union and (IAU) the Union of Radio Scientists International (URSI) as ICSU restructures its data and information portfolio, including the Federation of Astronomical and Geophysical Data Analysis Services and the Panel on World Data Centres.

IUGG became a founding Partner in 2003 of the International Year of Planet Earth, an initiative of the International Union of Geological Sciences and UNESCO. The initiative seeks to raise the awareness of the contribution to, and role of the Earth sciences in society in the minds of politicians, decision-makers, the media and the general public. In 2005, the General Assembly of the United Nations proclaimed The International Year of Planet Earth for 2008. Governments will be urged to pay greater attention to the Earth sciences as affecting many aspects of the

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everyday lives of their citizens, with particular reference to applications in educational systems, governmental legislation and civil regulations, so as to take full advantage of this extensive source of expertise and experience. The Year is one of several initiatives (e.g., the International Polar Year and the International Heliophysical Year) included under the general heading of IGY+50 programmes. These programmes are all invited to participate in the July 2007 IUGG General Assembly in Perugia, and special scientific sessions and public events are being planned.

The sections below summarize matters of Union membership, actions of the Bureau and Executive Committees, and the Secretariat itself. The work of the Associations, the inter-Associations Commissions, and other matters of scientific interest are included in other sections of the Council Agenda.

MEMBERSHIP IN THE UNION

As of January 2007, IUGG has 65 Member Countries with distribution throughout the world as follows:

Europe 31 North and Central America 3 Asia 16
 Africa 6 South America 7 Oceania 2

This is two more than at the closing of the 23rd General Assembly (Sapporo, Japan, 2003) and does not

include Serbia and Montenegro, a country that evolved from the Federal Republic of Yugoslavia in 2003. In 2006, Serbia and Montenegro divided and all attempts to sort out which, if either, of the countries has a national committee for IUGG have been unsuccessful. Therefore it does not seem reasonable to count either as a member of IUGG, although both would be welcome pending routine application procedures. One country, Algeria, has withdrawn from membership according to IUGG Statutes owing to non-payment of dues. Three new members, all in Associate status, have been provisionally added: Bolivia, the Democratic Republic of the Congo, and Ghana. Five countries, Albania, Armenia, Bosnia and Herzegovina, Pakistan, and Nigeria, that were in Associate Status in 2003 have begun or resumed payment of dues and are once again regular members of IUGG. Unfortunately, several countries are in observer status according to Statute 14 owing to serious arrears of payment. Bulgaria petitioned for Associate status to maintain IUGG membership. These matters are also discussed in the Report of the Treasurer, and will be reviewed by the Council under Agenda item 6.

The current membership history is summarized in the table below.

MEMBERS	Dates of ADMISSION & TERMINATION	CATEGORY	UNITS
ALBANIA	1997-2002, 2003	1	1
ALGERIA	1971-2006		
ARGENTINA	1927	4	5
ARMENIA	2000	1	1
AUSTRALIA	1919	5	7
AUSTRIA	1948	3	3
BELGIUM	1919	4	5
BOLIVIA	1960-2000, 2006	A	0
BOSNIA & HERZEGOVINA	2003	1	1
BRAZIL	1922	3	3
BULGARIA	1930	A	0
BURUNDI	1987-1995		
CANADA	1919	6	10
CHILE	1924	2	2
CHINA	1977	6	10
CHINA – Acad. Of Sciences in Taipei	1995	4	5
COLOMBIA	1938-1971, 2000	1	1
CONGO D.R. (**)	2004	A	0
CROATIA	1992	1	1
CUBA	1960-1996		
CZECH REPUBLIC	1993	2	2
DENMARK	1923	4	5
DOMINICAN REP.	1957-1971		
EGYPT	1924	2	2
ESTONIA	1991	1	1
ETHIOPIA	1952-2000		
FINLAND	1927	3	3
FRANCE	1919	7	15

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GERMANY	1951	8	20
GHANA	1957-1987, 2006	A	0
GREECE	1922-2003		
GUATEMALA	1957-2000		
GUINEA	1987-1995		
HAITI	1956-1971		
HUNGARY	1930	2	2
ICELAND	1967	1	1
INDIA	1947	5	7
INDONESIA	1951	1	1
IRAN	1957	1	1
IRAQ	1983-1996		
IRELAND	1946	2	2
ISRAEL	1951	1	1
ITALY	1919	6	10
IVORY COAST	1975-1996		
JAPAN	1919	8	20
JORDAN	1979	1	1
KENYA	1975-1997		
KOREA	1960	2	2
KOREA /DEM.REP	1967-2000		
LEBANON	1967-2003		
LIBYA	1979-1996		
LUXEMBOURG	1971	1	1
EX-YUGOSLAVIAN REPUBLIC OF MACEDONIA	1995-2001		
MADAGASCAR	1967-1995		
MALAYSIA	1967-2002		
MAURITIUS	2003	A	0
MEXICO	1922	2	2
MONACO	1967	1	1
MONGOLIA	1995-2001		
MOROCCO	1924	A	0
MOZAMBIQUE	1983	1	1
MYANMAR (BURMA)	1957-2003		
NEPAL	1975-1987		
NETHERLANDS	1925	4	5
NEW ZEALAND	1927	1	1
NIGERIA	1971	2	2
NORWAY	1923	4	5
PAKISTAN	1952	2	2
PERU	1925-1979, 2000	A	0
PHILIPPINES	1951	3	3
POLAND	1924	2	2
PORTUGAL	1919	2	2
ROMANIA	1930	1	1
RUSSIA***	1992	6	10
SAUDI ARABIA	1971-2001		
SENEGAL	1960-1995		
SERBIA & MONTENEGRO (*)	1996-2006		
SIERRA LEONE	1967-1983		
SLOVAK REPUBLIC	1993	1	1
SLOVENIA	1994	1	1
SOUTH AFRICA	1924	3	3
SPAIN	1922	5	7
SUDAN	1955-2000		
SWEDEN	1923	4	5
SWITZERLAND	1923	5	7
SYRIA	1948-1995		

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TANZANIA	1975-2000		
THAILAND	1923	2	2
TUNISIA	1927-2001		
TURKEY	1949	2	2
U.K.	1919	8	20
URUGUAY	1924-2000		
U.S.A.	1919	11	35
VENEZUELA	1975	1	1
VIETNAM	1931	1	1
ZIMBABWE	1967-2000		

(*) Adhesion in 1996 under the name of the Federal Republic of Yugoslavia which was changed in 2003 to Serbia & Montenegro. In 2006, Serbia & Montenegro divided, and attempts to confirm membership of either country have been unsuccessful.

(**) Adhesion in 1991 under the name Zaire, membership terminated in 1997.

(***) Adhesion in 1954 under the name of the U.S.S.R.

ADMINISTRATION

The Bureau

The Bureau of the Union consists of the President U. Shamir (Israel), Vice-President T. Beer (Australia), Secretary-General J.A. Joselyn (U.S.A.), Treasurer A. Hansen (Denmark), and 3 Members: Y-T. Chen (China), H. Gupta (India) and A.A. Tealeb (Egypt).

The Bureau met three times during the term :
 -in Boulder, Colorado U.S.A. (30 – 31 August 2004)
 - in Perugia, Italy (8 – 9 September 2005)
 - in Melbourne Australia (16 – 18 October 2006)
 The Bureau will meet again in Perugia in July.

The Boulder and Perugia meetings were followed by formal Executive Committee meetings.

Discussions at the Bureau meetings included the following:

- IUGG Membership. The number of Adhering Bodies and the extent of the arrears in dues has been a topic of concern at each meeting. Possible new members, especially developing countries, and efforts to encourage dues payments were discussed and actions were taken with varying degrees of success.
- IUGG Financial Health. The state of the budget was considered at each meeting, and was found satisfactory. A draft budget for the 2008-2011 term was discussed.
- IUGG Associations, in particular the formation and funding of the proposed new International Association for Cryospheric Sciences
- IUGG's relationship with ICSU, including the ICSU Regional Offices, the suspended Grants Programme, and the strategic initiative on data and information (including FAGS)
- IUGG relationship with sister geoscience Unions, in particular a joint Statement of Concern to ICSU

asking for great involvement in scientific affairs and more transparency in decision-making

- Adoption of the Terms of Reference for a reconstituted International Lithosphere Programme, to be jointly administered with the International Union of Geological Sciences (IUGS)
- IUGG support of the International Year of Planet Earth
- IUGG support of young scientists, in particular nominations of persons to attend the ICSU Young Scientist Conference in April 2007
- The 2007 General Assembly, including the chairs and members of the Nominations Committee, Statutes and By-Laws Committee, the Resolutions Committee, a new site selection committee, and arrangements for special events (IGY+50, GeoSciences in Africa, the opening and closing ceremonies, etc.).

The Executive Committee

The Executive Committee (EC) formally consists of the Bureau, the immediate past President of IUGG (M. Kono, Japan) and the Presidents of the Associations. Association Secretaries-General are always invited to attend as well, with voice but without vote. The Executive Committee met twice

- in Boulder, Colorado, USA, 31 August – 2 September 2004
 - in Perugia, Italy, 9 – 11 September 2005
- The Executive Committee will meet again in Perugia in July.

Decisions at the Executive Committee meetings included the following :

- Endorsed the IAGA initiative for an Electronic Geophysical Year (eGY) and adopted it as a Union initiative

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- Adopted IUGG Guidelines for Union Commissions
- Established the Union Commission on Cryospheric Sciences; allocated \$5K/year, beginning in 2005, to support their work; formally endorsed a proposal that this Union Commission should become an Association at the 2005 Executive Committee meeting.
- Agreed to ask the Finance Committee to approve moving expenditures for CMG and SEDI from Budget line 15.1 to line 17.1
- Approved replacement of CMG (Committee on Mathematical Geophysics) Vice-Chair George Mochan (Russia) with Einat Aharonov (Israel).
- Approved nominations for changes to the GeoRisk Commission: Alik Ismail-Zadeh as President, Ramesh Singh as Vice-President, and Gerd Tetzlaff as Secretary.
- Voiced substantial objection to the suggestion of a unified format for Association web pages.
- Decided not to change the present 4-year schedule for General Assemblies, nor promote an interim Council meeting.
- Selected “Earth: Our Changing Planet” as the theme of the Perugia 2007 General Assembly.
- Approved a new mission statement
- Reaffirmed support of the concept of an IUGG project on GeoSciences in Africa and decided to suspend the call for interdisciplinary initiatives in developing countries (IUGG Budget line 18.1) for 2006-2007 in order to accumulate a fund of \$50K to be used to attract additional funding for a major project in Africa.

Secretariat

The Statutes and By-laws provide that the daily affairs of the Union are managed by an elected Secretary General who attends to correspondence, circulates information, preserves the records, prepares reports of the Union’s activities, and arranges meetings of the General Assembly, the Council, the Executive Committee and the Bureau, including preparing and distributing the agendas and the minutes of all their meetings. Additional activities included the following.

- Maintained, redesigned and expanded the IUGG Web page
- Produced the monthly IUGG E-Journal, the annual Yearbook, and the annual Report
- Conducted ballots by correspondence concerning the admission of Bolivia, the Republic of Congo, and Ghana as Associate members, and corresponded with a number of countries (Azerbaijan, Cuba, Eritrea, Ethiopia, Georgia, Greece, Kenya, Libya, Lithuania, Macedonia, Malaysia, Mongolia, North Korea, Saudi Arabia, Singapore, Sri Lanka, Sultanate of Oman, Tunisia,

- Uzbekistan, Zimbabwe) regarding potential membership.
- Issued the calls for support of meetings and interdisciplinary initiatives, and facilitated the awards
- Announced the death of Honorary Secretary General Paul Melchior (September 2005)
- Facilitated the work of the IUGG Nominations and Statutes and By-laws committee, reviewed the draft Statutes and By-laws for the proposed new Association; reviewed proposed changes to the Statutes and By-laws for other Associations
- Drafted the Guidelines on IUGG Administration
- Attended meetings of the Federation of Astronomical and Geophysical Data Analysis Services (FAGS) in 2005 and 2006, ICSU Unions meetings in 2004 and 2007, and the ICSU General Assembly in 2005
- Supported the Scientific Programme Committee and the Local Organizing Committee in preparations for the 2007 General Assembly

It has been an honor and a privilege to serve IUGG in this office since 1999. I have benefited enormously from the guidance and assistance of the members of the IUGG Bureau during the past eight years, especially Presidents Uri Shamir and Masaru Kono, Treasurer Aksel Hansen, Vice-President and Bureau member Tom Beer, and Bureau members J-T Chen and Y-T Chen, Harsh Gupta, Ali A.A. Tealeb, and L V. Shannon.

The office of the Secretary General has been hosted by the University of Colorado within CIRES – the Cooperative Institute for Research in Environmental Sciences, and was financially supported by a grant from the US National Research Foundation in cooperation with the Board on International Scientific Organizations within the National Research Council of the National Academies. The grant permitted the hire of part-time assistants who helped to manage the database, correspond with the Member Adhering Bodies and IUGG officers, and prepare reports and mailings. During the past 4 years, it has been my special pleasure to have worked with Katina Rogers, whose support of the duties of the Secretariat cannot be underestimated. I have appreciated her language skills, talent, dedication, humor and friendship.

My best wishes go to my successor, who will undoubtedly also benefit from the extraordinary experience of working with excellent scientists, worldwide, to promote the goals of IUGG.

Jo Ann Joselyn
February 16, 2007

QUADRENNIAL REPORT OF THE TREASURER, DR. A. HANSEN
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007

Introduction

This report will be presented to the Council at the upcoming XXIV IUGG General Assembly in Perugia, Italy. It contains a financial part and some statistical information about the members of IUGG. Accounting and budget spreadsheets are enclosed as 3 attachments:

- 1) The final accounting of 2000 – 2003 quadrennial (each year + accumulated) compared to the budget (enclosure 1).
- 2) A preliminary accounting for the present quadrennial 2004 – 2007 (each year + accumulated) (enclosure 2).
- 3) The 2004-2007 budget from Sapporo 2003 with adjustments made in Boulder 2004.

This procedure for reporting on the finances is a continuation of what was done at the General Assembly in Sapporo in 2003. With the General Assemblies normally taking place in the last year of a budget period it is not possible to give a full report on the finances of the quadrennial. Instead it is accepted to present it at the next GA together with a preliminary accounting for the present quadrennial. Therefore in Perugia the final accounting for the quadrennial 2000 – 2003 will be shown. (1 page enclosed)

At the time of writing the preliminary report for 2004-2007 includes the year 2007 budget as a substitute for the accounting for the same year. In Perugia in July it will be possible to present a better estimate of the accounting for 2007.

The budget for the period 2004 to 2007 is presented in attachment no 3. At the Bureau meeting in Boulder, 2004, the Sapporo budget was adjusted slightly to accommodate decisions made prior to the meeting.

The final accounting for 2000 - 2003

The year 2003 turned out to be much better than anticipated at the General Assembly in Sapporo in July 2003. The balance ended up being more than USD 100,000. higher than presented as the estimate then. This was mainly due to improved payment of dues to the Union. The improved balance was incorporated in the budget in Boulder 2004 where also a few other adjustments were added.

The preliminary accounting for the years 2004 to 2007

Income:

The first 3 years of the budget period 2004 – 2007 show higher income than given in the budget:

- 1: the members have paid more dues
- 2: IUGG received a significant surcharge in Sapporo

3: although IUGG didn't get interest in 2004 the overall interest is higher because of year 2006

4: a higher price of 1 unit: it increased from US\$ 1,485 in 2004 to US\$ 1,630, app. 10%

The number of members withdrawing from IUGG is only 3 in the present quadrennial as compared to 15 in the previous period. IUGG has got 3 new members, one in category 1 + 2 as associate members. This also contributes to a better economy.

In fact during the quadrennials 1992-1995, 1996-1999 and 2000-2003 the actual number of units paid to IUGG went down from 1170 over the first mentioned 4 year period to 1066 in the last. We hope that this decline in contributing member countries now will level off and maybe even reverse to an increase.

A small change in the way the price of 1 unit is calculated had to be introduced in 2004/2005 because the European Union stopped issuing the OECD inflator tables. Instead an US Labor Department inflator index has been used since then. The new index was calibrated against the old index for the last few years of overlapping.

Based on the above analysis one can conclude that it is very likely that IUGG will come out the quadrennial with a higher income than in the budget. However, the buying power of the income is of course lower following the inflation. In addition the US dollar is weak here in 2006/2007 which can affect the level of the union's activity, at least indirectly. Much of the IUGG expenditure is in US dollars so the exchange rate of US dollar is not felt explicitly.

Expenditure:

Generally speaking none of the expense lines show higher expenditure compared to the budget except line 13.1 (because of the payment in 2004 of the 2003 video production in Sapporo). For several lines the accounting and budget numbers follow each other closely: e.g. travel expenses, allocations to the associations/symposia and dues to ICSU and inter-union activities. One must however notice that we can already now see that allocation to the associations will be high in 2007 as a result of the high income from dues in 2006.

For a few of the lines the expenditure is lower than the budget: 1) the cost of personnel is lower than the amount allocated to this expenditure line. For the whole period only half the allocation is actually spent on personnel. 2) the cost of publishing the IUGG Yearbook does not appear in the IUGG accounting as it has been paid with money from other sources.

And finally a major difference between accounting and budget is seen in line 18, the so called initiative line introduced in Birmingham in 1999. There has been no allocation in 2006 and 2007 from this line.

As an union member of ICSU IUGG is paying dues to ICSU. In contrast to IUGG ICSU is strongly dependent on the value of EUR, but not on USD. ICSU is now requesting that payment of dues is paid in EUR. For IUGG this means EUR 13,472 instead of USD 13,472, an increase of app. 30% in one step. The dues for 2007 is not yet paid.

Balance:

As explained above the year 2003 turned out to be much better than estimated in July 2003. The improvement was of the order US\$ 130,000. However, an expenditure of 30.000 not included in the 2003 budget was committed to the support of the IYPE programme. In Boulder 2004 during the Bureau meeting there the two numbers above were taken in to account in the budget as adjustments added to the budget from Boulder. This adjustment was cleared with the Finance Committee represented at the meeting.

At the time of writing the financial report the estimated balance for the whole period 2004-2007 is close to zero as opposed to the decrease of US\$ 92,000 in the budget including the adjustments. This is mainly due to the higher income in 2006. Compared to the budget without adjustments the outgoing balance in 2007 is expected to be significantly higher. The reason being the higher income plus the improved incoming balance in 2004.

In general, one can say that the economical situation of IUGG is sound and that the net balance allows IUGG some flexibility. However it is very important that IUGG will be able to keep its present members in the union and at the same time attract new members. The problem of keeping the members in the union is serious and needs the full attention of the union and the member countries. It is essential that we reverse the trend with increasing smaller number of paid units. For a long time the loss of member dues has been compensated by the increased price of 1 unit. Meaning the buying power of the more or less constant income is slowly decreasing.

As Treasurer of IUGG I want to thank every body I have been in contact with concerning IUGG business. In particular, I will send many thanks to Secretary General JoAnn Joselyn and her assistant Katina Rogers, with whom I have almost daily correspondence. Also thanks to the President and the entire Bureau and the Presidents and Secretary Generals of the Associations. I have had a close cooperation and many stimulating discussions with the IUGG Finance Committee, especially its chairman Michael Hamlin. Anders Svensson has been a very good assistant treasurer and he has made important contributions to the smooth running of the treasurer's office. Likewise Lise Gregersen until late 2005 and since summer 2006 Helle Eriksen have been very reliable assistants in running the general administration of my office.

Best regards

Aksel Walløe Hansen
Treasurer, IUGG

Appendix with statistical data on IUGG

In the following a summary of the relevant information about IUGG is given.

First of all as of January 1st, 2007, IUGG has 66 member countries (3 up as compared to 2003). IUGG has lost 3 members since 2003, but we have welcomed 6 new members.

The 66 members represent a total of 274 units. In early 2007 we have received payment from 242 units for 2006. The remaining 32 units are distributed over 13 members in observer status. On January 1st 2 more members were in observer status, but they have since paid their dues (20 units).

**Membership tables
2006/2007**

1) Payments for 2006 (the member distribution for 2007 is shown in red)

Category	Units in	Number	Number	Paid 2006
Category	countries	of units	numbers	units
A	0	7/8	0	
1	1	22/20	22/20	13
2	2	13	26	11
3	3	5	15	3
4	5	7	35	6
5	7	4	28	4
6	10	4	40	3
7	15	1	15	1
8	20	3	60	3
9	25			
10	30			
11	35	1	35	1
12	40			
Total	67/66	275/274	45	242 (number of units from paid-up members only)
USD (2006 values)		440.000	/446.620	384.000

Special consideration:

D.R. Congo did not pay for 2004 - 2006, they will get a new invoice for 2007, although they are considered A-member in 2007 until payment is received.

In 2007 Algeria is taken out of the table, therefore only 66 members on January 1st.

2) Countries in Observer Status (countries in arrears for 2006 and/or earlier) **January 1:** (later changes shown in blue)

Cat.	Units	Countries
1	7*1	Colombia, Venezuela, Mozambique, Croatia, Iran, Slovak Rep., Vietnam
2	2*2	Pakistan, Mexico
3	2*3	Philippines, South Africa
4	2*5	Argentina, Academia Sinica-Taipei
6	1*10	Russia
7	1*15	France
Total	52 units	15 countries

At the time of the writing of this report France and Academia Sinica, Taipei, have paid their dues for 2006.

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In the next table we can see that the members in observer status are owing a total of \$89,424. as compared to \$108,937. one year earlier to IUGG. All the debt is for 2003 through 2006.

For the whole period 2000-06 the amount "lost" by members converting to Associate status or withdrawing from the union is a substantial amount of money that will not be recovered. As an example Algeria withdrew in 2007 from IUGG leaving behind a debt of app. US\$ 6,000. that is now lost.

3) **Dues in arrears**

	2003	2004	2005	2006	Total	
Colombia		1.455	1.485	1.525	1600	6.065
Mozambique			1.525	1600	3.125	
Venezuela		1.455	1.485	1.525	1600	6.065
Philippines		947	4.575	4800	10.322	
Old observers	2.910	3.917	9.150	9.600	25.577	
				2006	Total	
Croatia				1.600	1.600	
Iran				1.600	1.600	
Slovak Rep.				1.600	1.600	
Vietnam				1.600	1.600	
Pakistan				3.200	3.200	
Mexico				3.200	3.200	
South Africa				4.800	4.800	
Argentina					8.000	8.000
Academica Sinica-Taipei				8.000	8.000	(February 12: paid)
Russia				10.230	10.230	
France				20.017	20.017	(February 12: paid)
New observers in 2007				63.847	63.847	
Total				73.447	89.424	

IUGG Members, January 1, 2007

Member Country	Category	
8 adhering bodies in	A	
Bolivia		
Ghana		
Morocco		
Peru		
Serbia and Montenegro	separated ?	
Bulgaria		
Mauritius		
D. R. Congo		
1 adhering body in	11	35 units
USA		
3 adhering bodies in	8	60 units
Germany		
Great Britain		
Japan		
1 adhering body in	7	15 units
France		
4 adhering bodies in	6	40 units
Canada		
China		

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Italy			
Russia		observer	
4 adhering bodies in	5		28 units
Australia			
India			
Spain			
Switzerland			
7 adhering bodies in	4		35 units
Academy Sinica, Taipei			
Argentina		observer	
Belgium			
Denmark			
Netherlands			
Norway			
Sweden			
5 adhering bodies in	3		15 units
Austria			
Brazil			
Finland			
Philippines		observer	
South Africa		observer	
13 adhering bodies in	2		26 units
Chile			
Czech Republic			
Egypt			
Hungary			
Ireland			
Korea, South			
Mexico		observer	
Nigeria			
Pakistan		observer	
Poland			
Portugal			
Thailand			
Turkey			
Member Country	Category		
20 adhering bodies in	1		21 units
Albania			
Armenia			
Bosnia & Herzegovina			
Colombia		observer	
Croatia		observer	
Estonia			
Iceland			
Indonesia			
Iran		observer	
Israel			
Jordan			
Luxembourg			
Monaco			
Mozambique		observer	
New Zealand			
Romania			
Slovak Republic		observer	
Slovenia			
Venezuela		observer	
Vietnam		observer	

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Countries withdrawn 2000-2004	Category
In 2003	
Malaysia	1
Greece	3
In 2004	
Myanmar	1
Lebanon	1
In 2007	
Algeria	1
New members	
In 2003	
Bosnia-Herzegovina	A
Albania	A
Mauritius	A
In 2004	
D. R. Congo	1
Until the end of 2007 considered A-member	
In 2006	
Ghana	A
Bolivia	A

**QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION OF GEODESY
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007**

(1) Central Bureau activities.

Since the adoption of the new statutes and by-laws at the Sapporo General Assembly, IAG has both, National Members and individual (personal) members. A main function of the Central Bureau is now related to the contact with these personal members. The Central Bureau maintains and updates a database of addresses of individual members and it keeps track of their membership fees. It maintains the accounts related to the IUGG allocation.

The function of the Central Bureau has changed due to the establishment of a Communication and Outreach Branch (see section (5)), which since November 2003 publishes a monthly Newsletter, maintains the IAG home-page (<http://www.iag-aig.org>) and promotes IAG and geodesy as such.

The Geodesists Handbook, 2004, edited by Dr. O.B. Andersen was published. (Journal of Geodesy, Vol. 77, no. 10-11, April 2004).

The Central Bureau has prepared the EC meetings and it participated in the IUGG EC meeting.

(2) The Executive Committee (EC).

At a meeting of the IAG Council in September 2001 new statutes and by-laws were adopted by the IAG Council. Since 2003 it was a major task of the EC to implement the new structure. This structure is based on the research-oriented Commissions, on the monitoring-oriented IAG Services, and on a new structural element, the Communication and Outreach branch (COB). Furthermore so-called inter-commission committees (ICC's) and one IAG project (see section (7)) have been established.

The EC held several meetings, where the main topic was the implementation of the new IAG structure. The first of these meetings took place on April 11, 2003 in Nice, France, where in addition the IUGG/IAG General Assembly in Sapporo was prepared. The EC prepared the establishment of three ICC's, namely on Standards, on Planetary geodesy and on Theory, and it initiated the IAG Project called "Integrated Global Geodetic Observing System" (IGGOS), later on renamed as GGOS (for more information see section (7)).

The EC met 2004 in Nice, in 2005 in Cairns, Australia, in connection with the IAG Scientific Assembly, and 2006 in Vienna, Austria, in connection with the EGU General Assembly.

(3) IUGG/IAG General Assembly, July 2003, Sapporo, Japan.

The IAG General Assembly 2003 in Sapporo was considered to be too long, which is why IAG reduced its own program to only 4+4 weekdays. This program covered presentations of reports and scientific papers for the five IAG Sections in the seven first days; the last day was devoted to a symposium on IGGOS. The section symposia were reviewed and have been published in the IAG Symposium Series by the Springer Verlag. All the national reports had been published before the General Assembly in the "Travaux de l'Association Internationale de Géodésie", on a CD-ROM.

The national reports were distributed at the IAG general assembly. Many of them were available in electronic form. They are now available through links on the IAG homepage.

During the IAG General Assembly the Council had 2 meetings. The auditors reported on the IAG accounts, and the new budget was approved. The council also adopted a number of resolutions, which subsequently were adopted as general IUGG resolutions. The council also approved the establishment of the above mentioned ICCT's and strongly endorsed the IGGOS project. The council did not conduct any elections, because the elections had been performed prior to the general assembly by e-mail ballot.

The outcome of the elections and of the essential decisions of the administrative meetings have been published in the Geodesists Handbook 2004,

(4) Individual membership.

With the new statutes and by-laws individual membership has been introduced. The individual members receive a newsletter and they have various other benefits. The membership fee is USD 50, with a discount of 1 year, if the membership fee is paid for 3 (4) years. Institutions may pay the institutional membership fee for a number of coworkers. Students and retired colleagues do not have to pay the membership fee, provided that they were able to receive the IAG newsletter by e-mail. By the end of the year 2006 260 scientists had signed up as IAG members, of which about 150 paid the regular membership fee.

(5) Communication and Outreach.

Based on two responses to a call for participation the EC decided to establish the new COB under the leadership of Prof. Joseph Adam at the Budapest University of Technology and Economics. The COB has established a modern web-page: <http://www.iag-aig.org> and prepares material for the promotion of IAG activities. Part of the information is password-protected and only available to the individual members.

The following outreach workshops and schools were organized:

IAG-IASPEI Joint Capacity Building Workshop, 17-23 January 2005, Miramare-Trieste, Italy.

The “School on the determination and use of the geoid”, was conducted first in Budapest, Hungary in February 2005 and then in June 2006 in Copenhagen, Denmark.

A Geoid School for our colleagues of French tongue took place 27 June – July 1 in France.

A “Summer School on Microgravimetric methods: static and dynamic aspects” took place 23-28 October 2005 in Lanzarote, Canary Islands, Spain.

(6) Coordination with organizations in the field of surveying, cartography and remote sensing.

The JB-GIS (Joint Board of the Geospatial Information Societies) meets annually on the occasion of the general assembly of one of the participating organizations (IAG, FIG, ISPRS, ICA, IHO, IMTA). The IAG president participated in these annual meetings in the time period 2003-2006 (2003 in Durban, South Africa; 2004 in Istanbul, Turkey; 2005 in Cairo, Egypt, and 2006 in Vienna, Austria).

(7) GGOS Activities

GGOS stands for Global Geodetic Observing System. According to the IAG Statutes and ByLaws, this IAG Project is viewed as IAG’s flagship, focusing the work of all IAG entities (Commissions, ICCs, Services) to generate IAG’s contribution to the field of Earth Sciences. The GGOS activities were a (if not the) central element of all IAG activities in the 2003-2007 period. The GGOS activities are based on the IUGG Resolution No. 3 taken at the IUGG General Assembly 2003 in Sapporo.

Prof. Christoph Reigber (GFZ, Germany), as Chair, and Prof. Hermann Drewes (DGFI, Germany), as secretary, led the so-called definition phase of the GGOS project from 2003 to 2005 (between the IUGG General Assembly in Sapporo and the IAG Scientific Assembly in Cairns). The result of their work was presented at the IAG

Scientific Assembly in Cairns, Australia, in the form of the report “GGOS Implementation Plan”. The document and the associated plan were endorsed by the IAG Executive Committee at its meeting in Cairns. Moreover the IAG EC, appointed Prof. Markus Rothacher (GFZ, Potsdam) as Chair, Prof. Hans-Peter Plag (University of Reno) and Ms. Ruth Neilan (Director, IGS (=International GNSS Service) Central Bureau) as Co-Chairs of GGOS project for the next four years, a time period which is now called the GGOS implementation phase. The IAG Services, the IAG Commissions, and the ICC on Theory are now developing the strategy document “the Global Geodetic Observing System: Meeting the requirements of a global society on a changing planet in 2020”. This document contains the GGOS specifications, in particular the underlying concepts, the conventions, the required infrastructure, and the key products; it lists the participating IAG services and the required new entities (services or bureaus). The document shall be presented to the IAG EC at its first meeting at the IAG/IUGG General Assembly in Perugia and provide the basis for the future development of GGOS.

(8) Participation of IAG in the Group on Earth Observation, GEO.

GEO was established by a declaration of 33 nations plus the European Commission during the Earth Observation Summit held in Washington, DC, on July 31, 2003. Since May 2004 IAG is a so-called participating organization in GEO. The IAG EC decided that GGOS should act on behalf of IAG in the GEO. Since 2004 IAG has been very active in GEO, in particular with respect to the development of the GEOSS (System of Systems) and the 10-Year Implementation plan. The GGOS Chair is coordinating IAG’s work in GEO.

(9). IAG organized or sponsored Meetings:

10 Years IGS Workshop and Symposium, March 1-5, 2004, Berne, Switzerland.

Second International GOCE User Workshop, “GOCE, The Geoid and Oceanography”, ESA-ESRIN, Frascati (Rome), Italy, 8-9-10 March 2004. (IAG Sponsored).

14th (2004) EUREF Symposium of the IAG Sub-commission for Europe, 2-5 June 2004, Bratislava, Slovakia and the 15th EUREF Symposium, 1-4 June 2005 in Vienna, Austria. The EUREF 16 Symposium, June 14-17, 2006. Riga, Latvia.

1st FIG International Symposium on Engineering Surveys for Construction Works and Structural Engineering, Nottingham 28 June – 1 July, 2004. (IAG Sponsored).

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15th International Symposium on Earth Tides, 2-6 August 2004, Ottawa, Canada.

Gravity, Geoid and Space Missions – GGSM2004, 30 August –3 September 2004, Porto, Portugal

XII General Assembly of the WEGENER project, 21-23 September 2004, Tangier, Morocco and XIII Assembly, 4-7 September, 2006, Nice, France.

Int. Workshop on “Deformation and Gravity Change: Indicators of isostasy, tectonics, volcanism and climate change”, Lanzarote, Canary Islands, Spain. 2004.

International Symposium on Geodetic Deformation Monitoring. From geophysical to engineering roles, 17-19 March 2005 in Jaen, Spain.

IAG/IAPSO Scientific Assembly “Dynamic Planet 2005”, 22-26 August 2005 in Cairns, Australia.

7th Conference on optical 3-D measurements took place 3-5 October 2005 in Vienna, Austria.

3rd IAG Symposium for geodetical and Structural Engineering and 12th FIG Symposium on Deformation Measurements, May 22-14, 2006, Baden, Austria.

VI Hotine-Marussi Symposium of Theoretical and Computational geodesy: Challenge

and role of modern geodesy. 29 May – 2 June 2006, Wuhan, PR China.

Int. Workshop “Height systems, geoid and gravity of the Asia-Pacific”, June 6-8, 2006, Ulaanbaatar, Mongolia.

Understanding Sea-level rise and variability WCRP Workshop, 6-9 June 2006, Paris, France (IAG Sponsored).

AFREF Technical Workshop, 9-13 July 2006, Cape Town, South Africa.

International Workshop on quality improvement and coastal-land applications of satellite altimetry, July 21-22, 2006, Beijing, PR China.

“Gravity Field of the Earth” – 1st Int. Symposium of the IGFS, 28 Aug.-1 Sep. 2006, Istanbul, Turkey.

Symposium “Geodetic reference Frames”, GRF2006, 9-13 October 2006, Munich, Germany.

(10). Services.

The International Gravity Field Service (IGFS) has included a new center, the International Center of Global Earth Models (ICGEM). The establishment of a Satellite Radar Altimetry service is in progress in cooperation with IAPSO.

Christian Tcherning

Secretary General, IAG

QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION OF GEOMAGNETISM AND AERONOMY

24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007

Outstanding frontiers of research in geomagnetism and aeronomy in the period 2003-2006 have included understanding of solar processes, solar-terrestrial interactions (including those that influence climate); space weather and its implications for space-based infrastructure and exploration; coupling processes that link aeronomic and geomagnetic phenomena from the fringe of geospace through many steps to the Earth's core; the success of the "Decade of Geopotential Research" in securing continuous satellite mapping of the Earth's magnetic field, culminating in the SWARM mission; geomagnetic precursors and signals associated with earthquakes and volcanoes; progress in understanding the origin and behaviour of the main field through numerical dynamo simulations; greatly improved observation, modelling, and mapping of the field at and near the Earth's surface – used for geophysical exploration and direction-finding; palaeomagnetic contributions to solving geological and tectonic problems; use of mineral magnetic properties to monitor environmental effects; and major advances in instrumentation, data acquisition, and sharing of information and services, often in real-time or near-real time. These research fields cover much, though not all, of the science of the Association. Important applications will hopefully result in the future in terms of improved risk assessments and predictions of catastrophic events.

Assemblies: In 2003 the XXIIIrd IUGG General Assembly in Sapporo took place with a major IAGA involvement (53 IAGA-led symposia, 1601 papers) and in 2005 the Xth IAGA Scientific Assembly was held in Toulouse (61 symposia, 1390 papers). Most of the preparations for the XXIVth IUGG General Assembly to be held in Perugia in July 2007 (57 IAGA-led symposia) have also been made in this period.

Strategic directions for IAGA: a process of determining future priorities for IAGA, involving both young and more experienced scientists, was undertaken during the 2003-2006 period. The changes listed below are examples of the results of this exercise. To make IAGA more attractive to younger scientists, the EC is recommending that the Past-President and second Vice-President positions on the EC be replaced by new, younger members. This change will require acceptance by the IAGA Conference of Delegates at the Perugia General Assembly.

Important decisions by the Conference of Delegates in Toulouse: (1) The duration of future IAGA Assemblies, General as well as Scientific, will be 6 full working days for the scientific programme (generally Monday to Saturday) and one preceding day (Sunday) for administrative meetings. (2) The next IAGA Scientific Assembly will take place in Sopron, Hungary, in late August 2009.

Topical meetings: In the four-year period 2003-2006, IAGA sponsored 22 topical meetings covering large parts of the IAGA science. The IAGA financial contributions amounted to a total of USD 27 000, directed mainly at helping needy scientists attend.

IGY+50 and eGY: The 50-year anniversary of IGY will be celebrated by IUGG and IAGA in Perugia. IAGA is one of the main sponsors of eGY (the Electronic Geophysical Year) and a strong supporter of IHY (International Heliophysical Year). Much effort has gone into preparations for these projects. eGY will be officially launched in Perugia on 7th July 2007. IAGA played a lead role in establishing cooperation and articulating mutual support among the four internal science year initiatives: the International Polar Year (IPY), IUGS's International Year of Planet Earth, IHY, and eGY.

Global Science Information Commons: The UN (three World Summits for the Information Society), GEO/GEOSS, ICSU, CODATA, IUGS, AGU, and many other bodies have a shared vision of a global (geo)science commons that will serve our information and service needs for the future. IAGA, largely through eGY, has lent strong support to these efforts and a link between IUGG, CODATA, and GEOSS.

IAGA medals and awards: IAGA Medals for Outstanding Long Service have been awarded by the IAGA Executive Committee to Raghav Chandra Deka (India) and to Toyohisa Kamei (Japan).

At the IAGA Assembly in Toulouse in 2005, an IAGA Young Scientist Presentation Award was established. The three first awards of this kind were agreed during the fall of 2006: to Anna Khanukhina (Russia), Annika Seppälä (Finland), and Tracy Moffat-Griffin (United Kingdom). The award consists of support to participate in the next IAGA/IUGG Assembly.

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To add balance to the small list of IAGA awards, the Executive Committee decided in 2006 to prepare the case for establishing a new medal for outstanding scientific services to IAGA by a scientist who is prominent, and who would not, therefore, qualify for the Long Service Medal.

For the Executive Committee of IAGA
Bengt Hultqvist
Secretary General

QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION OF HYDROLOGICAL SCIENCES

24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007

The main activities involving IAHS as a whole have been the IAHS General Assembly (**Sapporo, Japan, 2003**), the IAHS Scientific Assembly (**Foz do Iguaçu, Brazil, 2005**) and the preparation of the **Perugia** IAHS General Assembly.

In **Sapporo**, in the framework of the **IUGG General Assembly**, IAHS has been the lead Organization for 9 Symposia and 8 Workshops and co-convened 15 events together with other IUGG Associations. IAHS also contributed to the Union Symposia "**State of the Planet**". The IAHS Bureau met two times and the nine IAHS Commissions held their Assembly. More than twenty countries participated to the election of the new IAHS Officers. **Arthur Askew** from Australia is the New President-elect and **Pierre Hubert** (France) has been elected as Secretary General. **Louise Heathwaite** (UK), **Xia Jun** (China) and **Chris Leibundgut** (Germany) are the new Vice-Presidents. 45 Officers of the Commissions, including 7 women have also been elected.

The **VIIth Scientific Assembly** has been held in **Foz do Iguaçu (Brazil)** from 3 to 9 April 2005, first IAHS Assembly in South America. This Assembly attracted 459 participants from 56 countries. The venue offered by our Brazilian colleagues was perfect from all points of view. On the scientific side 7 Symposia and 7 workshops have been held under the overall theme of "**Freshwater : Sustainability within Uncertainty**". At the beginning of the Assembly occurred the transfer of Presidency from **Kuni Takeuchi** to **Arthur Askew**, elected two years before in Sapporo.

During the past four years, the IAHS Bureau met in **Sapporo**, Japan (2003), **Paris**, France (2004), **Foz do Iguaçu**, Brazil (2005) and again **Paris**, France (2006). It has been decided to hold the IAHS VIIth Scientific Assembly in **Hyderabad** (Andhra Pradesh, India) in September 2007. It will be an event jointly organized with the IAH (International Association of Hydrogeologists). First Inputs for the Scientific Program of this Assembly have been requested from Indian Scientific Bodies and from IAHS Commissions.

An important decision for IAHS has been the approval of the movement to transform the IAHS International Commission for Snow and Ice (ICSI), first into a Union Commission on Cryospheric Sciences (decided in **Boulder**, September 2004), then into a full International Association for Cryospheric Sciences within IUGG, planned to be

launched in **Perugia** in July 2007. This transformation gives a happy end to a long standing problem within IAHS. A new IAHS International Commission, the International Commission for Snow and Ice Hydrology (ICSIH), created in **Foz do Iguaçu** in 2005, deals with purely Hydrological Snow and Ice matters, in full cooperation with the new Cryospheric IUGG Body.

The **Hydrology 2020** Working Group, launched in **Maastricht** (2001), and led by **Taikan Oki**, has presented the present advancement of his Work in **Sapporo** (2003) and in **Foz do Iguaçu** (2005). The Synthesis of the Hydrology 2020 Working Group has been gathered in a Red Book (IAHS Publ. 300) published early 2006 which has been officially presented during a devoted Symposium held in **Delft**, The Netherlands (June 2006) and during a special session organized during the UNESCO-IHP Council in **Paris** (July 2006).

The **PUB** (Prediction in Ungauged Basins) Working Group has been officially launched during a Meeting held in **Brasilia**, Brazil in November 2002 after a preparatory Meeting held in **Kofu** (Japan) in March of the same year. The development of the initiative has been approved during the **Sapporo** Assembly and his "**Science and Implementation Plan**" has been finalized and published in the 2003 December issue of **Hydrological Sciences Journal**. A first regional meeting has been held in **Paris** (November 2003) and an Australian-Japanese meeting is supposed has been held in **Perth** (Australia) in February 2004, followed by many others like **Predicting Ungauged Streamflow in the Mackenzie River Basin, Today's Techniques & Tomorrow's Solutions (Yellow Knife**, Canada, March 2004), **Modelling Hydrological Responses in Ungauged Catchments (Osnabrück**, Germany, June 2004), **International IAHS-PUB Workshop on Uncertainty Analysis in Environmental Modeling (Menaggio**, Italy, July 2004), **PUB Session on Methodology of Trans-regional Application of Hydrological Models (Colombo**, Sri Lanka, November 2004). First led by **Murugesu Sivapalan**, the PUB Working Group is led by **Jeff Mc Donnell** since the **Foz do Iguaçu** Assembly and until the **Perugia** Assembly. A Permanent Secretariat has been created, managed by **Saman Weerakoon** and **Vladimir Smatkhin**, hosted by the International Water Management Institute in Colombo (Sri Lanka). This secretariat manages a devoted Web Site and publishes a regular Newsletter.

The International Prize of Hydrology, awarded annually on an individual basis in recognition of an outstanding contribution to the science (A joint IAHS, UNESCO and WMO initiative) has been awarded to **Dr Alan Gustard** (UK) in 2003, **Dr John Rodda** (UK) in 2004, **Pr Gert A. Schultz** (Germany) in 2005 and **Pr W.J. Shuttleworth** (USA) in 2006

The IAHS Tison Award was established in 1982 and aims to promote excellence in research by young hydrologists. The Award is granted for an outstanding paper published by IAHS. In 2003 it has been awarded to **Drs Y. Agata, S. Kanae, T. Oki, T. Saruhashi and D. Yang** (Japan), in 2004 to **Dr F. Chiew** (Australia), in 2005 to **Dr F. Sheng Yue** (China) and in 2006 to **Dr Özgür Kişi** (Turkey / *Turquie*)

Publication is an important sector of activity for IAHS. This activity is undertaken in the framework of IAHS Press, located in Wallingford (UK) with the generous support of the Centre for Ecology and Hydrology and managed by *Cate Gardner*. IAHS Press publishes *Hydrological Sciences Journal* with 4 issues a Year and now about 12 papers per issue. The Journal is directed by **Z.W. Kundzewicz** (IAHS Editor) assisted since 2006 by **D. Koutsoyannis**. We can notice with satisfaction the continuous increasing of the Impact Factor of our Journal, reaching 1.6 at the level of the best Water related Journals. In the 2003-2006 period IAHS Press also published 32 Red Books which give a general and synthetic view of the IAHS Scientific Activity:

Calibration and Reliability in Groundwater

Modelling: A Few Steps Closer to Reality, Edited by *K. Kovar & Z. Hrkal*, IAHS Publication 277.

Hydrology in Mediterranean and Semiarid

Regions, Edited by *Eric Servat, Wajdi Najem, Christian Leduc & Ahmed Shakeel*, IAHS Publication 278.

Erosion Prediction in Ungauged Basins (PUBs):

Integrating Methods and Techniques, Edited by *Dirk H. de Boer, Wojciech Froehlich, Takahisa Mizuyama & Alain Pietroniro*, IAHS Publication 279.

Water Resources Systems Global Change, Risk Assessment and Water Management, Edited by *Stewart Franks, Günter Blöschl, Michio Kumagai, Katumi Musiaka & Dan Rosbjerg*, IAHS Publications 280 & 281.

Weather Radar Information and Distributed Hydrological Modelling, Edited by *Yasuto Tachikawa, Baxter E. Vieux, Konstantine P. Georgakakos & Eiichi Nakakita*, IAHS Publ. 282.

Erosion and Sediment Transport Measurement in Rivers: Technological and Methodological Advances, Edited by *J. Bogen, T. Fergus & D. E. Walling*, IAHS Publication 283.

World Catalogue of Maximum Observed Floods / Répertoire mondial des crues maximales observées, Compiled by *Reg Herschy*, IAHS Publication 284.

Wastewater Re-use and Groundwater Quality, Edited by *Joop Steenvoorden & Theodore Endreny*, IAHS Publication 285

The Basis of Civilization – Water Science? Edited by *John C. Rodda & Lucio Ubertini*, IAHS Publ. 286

Scales in Hydrology and Water Management / Echelles en hydrologie et gestion de l'eau, Edited by *Ioulia Tchiguirinskaia, Mike Bonell & Pierre Hubert*, IAHS Publ. 287

Sediment Transfer Through The Fluvial System, Edited by *Valentin Golosov, Vladimir Belyaev & Des E. Walling*, IAHS Publ. 288.

GIS and Remote Sensing in Hydrology, Water Resources and Environment, Edited by *Yangbo Chen, Kaoru Takara, Ian D. Cluckie, & F. Hilaire De Smedt*, IAHS Publ. 289

Northern Research Basins Water Balance, Edited by *Douglas L. Kane & Daqing Yang*, IAHS Publ. 290

Sediment Budgets 1, Edited by *Des E. Walling & Arthur J. Horowitz*, IAHS Publ. 291.

Sediment Budgets 2, Edited by *Arthur J. Horowitz & Des E. Walling*, IAHS Publ. 292.

Sustainable Water Management Solutions for Large Cities, Edited by *Dragan A. Savic, Miguel A. Mariño, Hubert H. G. Savenije & Juan Carlos Bertoni*, IAHS Publ. 293.

Dynamics and Biogeochemistry of River Corridors and Wetlands, Edited by *Louise Heathwaite, Bruce Webb, Don Rosenberry, David Weaver & Masaki Hayashi*, IAHS Publ. 294.

Regional Hydrological Impacts of Climatic Change : Impact Assessment and Decision Making, Edited by *Thorsten Wagener, Stewart Franks, Hoshin V. Gupta, Eva Bøgh, Luis Bastidas, Carlos Nobre & Carlos de Oliveira Galvão*, IAHS Publ. 295.

Regional Hydrological Impacts of Climatic Change : Hydroclimatic Variability, Edited by *Stewart Franks, Thorsten Wagener, Eva Bøgh, Hoshin V. Gupta, Luis Bastidas, Carlos Nobre & Carlos de Oliveira Galvão*, IAHS Publ. 296.

Bringing Groundwater Quality Research to the Watershed Scale, Edited by *Neil R. Thomson*, IAHS Publ. 297.

Permeable Reactive Barriers, Edited by *Genevieve A. Boshoff & Brian D. Bone*, IAHS Publ. 298.

- Geomorphological Processes and Human Impacts in River Basins**, Edited by Ramon J. Batalla & Celso Garcia, IAHS Publ. 299.
- Hydrology 2020 : An Integrating Science to Meet World Water Challenges**, Edited by Taikan Oki, Caterina Valeo & Kate Heal, IAHS Publ. 300.
- Predictions in Ungauged Basins: International Perspectives on the State of the Art and Pathways Forward**, Edited by Stewart Franks, Murugesu Sivapalan, Kuniyoshi Takeuchi & Yasuto Tachikawa, IAHS Publ. 301.
- Sustainability of Groundwater Resources and its Indicators**, Edited by Bruce W. Webb, Ricardo Hirata, Eduardo Kruse & Jaroslav Vrba, IAHS Publ. 302.
- Predictions in Ungauged Basins: Promises and Progress**, Edited by Murugesu Sivapalan, Thorsten Wagener, Stefan Uhlenbrook, Erwin Zehe, Venkat Lakshmi, Xu Liang, Yasuto Tachikawa & Praveen Kumar, IAHS Publication 303
- Calibration and Reliability in Groundwater Modelling : From Uncertainty to Decision Making**, Edited by M. F.P. Bierkens, J.C. Gehrels & K. Kovar, IAHS Publication 304.
- Frontiers in Flood Research / Le point de la recherche sur les crues**, A joint IAHS / IHP-UNESCO publication, Edited by Ioulia Tchiguirinskaia, Khin Ni Ni Thein & Pierre Hubert, IAHS Publ. 305.
- Sediment Dynamics and the Hydromorphology of Fluvial Systems**, Edited by John S. Rowan, Robert W. Duck & Alan Werritty, IAHS Publ. 306.
- Large Sample Basin Experiments for Hydrological Model Parameterization: Results of the Model Parameter Experiment – MOPEX**, Edited by Vazken Andréassian, Alan Hall, Nanée Chahinian & John Schaake, IAHS Publ. 307.
- Climate Variability and Change : Hydrological Impacts**, Edited by Siegfried Demuth, Alan Gustard, Eduardo Planos, Fred Scatena & Eric Servat, IAHS Publ. 308

In addition, IAHS Press regularly publishes the *IAHS Newsletter* (4 issues per year) and also published **Hydrology: A Question of Balance**, by J.V. Sutcliffe, (IAHS Special Publication no. 7) in the “*Blue Books*” Series. A New Series “*Benchmark Papers in Hydrology*”, directed by Jeff Mc Donnell has been launched by IAHS Press, the first title of this series published in 2006 being “*Streamflow Generation Processes*” edited by K.J. Beven. An important effort has been undertaken to make freely available on line all “Old” (More than 5 years old) IAHS Publications. This effort has been first concentrated on the Red

Books and 94 Red Books are presently available on line, representing more than 35000 pages of hydrologic literature. The effort has been extended in 2006 to the *Hydrological Sciences Journal*. At the present time 20 volumes (1956-1975) are available on line.

The *IAHS TFDC* (Task Force for Developing Countries) continued its action and distributed free of charge all IAHS publications (Hydrological Science Journal and the Red Books) to more than 60 selected Universities and Research Institutions of Africa, Asia, South-America and Eastern Europe.

Our close and traditional cooperation with different Agencies of the UN System has been continued during the last 4 years. We participate to the Work of the *UNESCO-WMO* Standing Group on the International Glossary of Hydrology and to the steering Committee of the *UNESCO-WMO World Climate Program - Water*. We have been involved in the definition and implementation of the new *International Flood Initiative* led by *UNESCO and WMO* and have been invited to contribute to the 2005-2015 UN International Decade “*Water for Life*”. *UNESCO, WMO and IAEA* generously supported the attendance of participants from developing countries to the IAHS General Assembly of *Sapporo* and to the IAHS Scientific Assembly of *Foz do Iguaçu*.

An IAHS representative or delegation has been invited and attended the different meetings of the *UNESCO International Hydrological Program* : IHP Bureau (*Paris*, 2003), IHP Council (*Paris*, September 2004), IHP Bureau (*Paris*, 2005), IHP Bureau (*Delft*, 2006), IHP Council (*Paris*, July 2006). *IAHS* and *UNESCO* also jointly organized two sessions of the traditional Kovacs Colloquium : -7th Kovacs Colloquium (*Paris*, September 2004) “*Scales in Hydrology and Water Management, Echelles en hydrologie et gestion de l’eau*” (Red Book 287) -6th Kovacs Colloquium (*Paris*, 30 June – 1st July 2006) « *Frontiers in Flood Research / Le point de la recherche sur les crues* » (Red Book 305)

An IAHS representative or delegation has also been invited and attended major *WMO* events like the WMO XIVth Congress (*Geneva*, 2003), the Commission of Hydrology meeting (*Geneva*, November 2004), the CHy Advisory Working Group meeting and the WMO Executive Council (*Geneva* 2005), the CHy Advisory Working Group meeting (*Melbourne*, 2006) meeting and WMO Executive Council (*Geneva*, 2006). IAHS also contributed to the new edition of the WMO “Guide to Hydrological Practices”. A joint IAHS-WMO

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conference on “Advances in Hydrometry” is planned to be held in *Manaus* (Brazil) early 2008.

We would like also to notice our membership to the World Water Council Board of Governors and our contributions to the 2003 *Kyoto* World Water Forum and to the 2006 *Mexico* World Water Forum.

P. Hubert, IAHS Secretary General

All information about IAHS activities is available on the WEB at <http://iahs.info>

**QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION OF METEOROLOGY AND
ATMOSPHERIC SCIENCES
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007**

The International Association of Meteorology and Atmospheric Sciences exists to promote the study of the science of the atmosphere and to support international cooperation, presentation of results, and education and public awareness. With significant governmental and public interest in meteorology and atmospheric sciences arising because of issues such as climate change, air pollution, extreme weather events, recovery of the stratospheric ozone layer, intensification of tropical cyclones, and more, this has been a particularly exciting time for research in meteorology and atmospheric sciences.

During the period 2003-2006, among a number of other activities, IAMAS participated in the quadrennial IUGG/IAMAS Assemblies in Sapporo, Japan in July 2003 and organized an IAMAS Scientific Assembly in Beijing, China in August 2005. Both of these events were very successful. Detailed information and minutes of IAMAS activities are available on the IAMAS website, <http://www.iamas.org>.

The IUGG/IAMAS Scientific Assemblies in Sapporo were held 30 June - 11 July 2003. Approximately 1700 abstracts were received for 43 IAMAS-led symposia, and IAMAS scientists led two of six Union Symposia. Of the IAMAS-led symposia, eighteen were Joint Symposia with other Associations, one was a Joint Workshop, nine were Inter-Commission Symposia within IAMAS, and fifteen were led by one of the 10 IAMAS Commissions; IAMAS also co-sponsored 19 Joint Symposia led by other Associations. Regarding registrations, 823 of 4151 IUGG participants were from IAMAS. The threat of SARS did complicate provision of financial support for scientists from some needy countries. In the end the Local Organizing Committee and IUGG awarded \$82,685.53, of which IAMAS provided \$42,000.

In addition to the scientific symposia, two special events organized by the IAMAS SG deserve mention: (1) a series of daily "Sushi-Lunch" lectures given by leading scientists in the field; and (2) a special Saturday morning "Celebration of Profs. Nakaya and Magono," which recognized significant contributions of these former professors at Hokkaido University. Also notable was that several IAMAS scientists participated in the outreach program organized by IUGG to student groups in the Sapporo region, and were greatly

impressed with the interest and knowledge that the students showed.

IAMAS also held its General Assembly during the Sapporo meeting, convening two Bureau and three Executive Committee meetings along with two meetings of the IAMAS Assembly. The IAMAS President and SG also attended three meetings of the IUGG Executive Committee and two sessions of the IUGG General Assembly. A resolution proposed to WMO Congress by IUGG Representative, IAMAS SG R. List, initiated a similar resolution in IUGG on an assessment of the effects of aerosol pollution and biomass burning on precipitation, with recommendations for joint WMO/IUGG action on this issue of importance for the world and the developing nations in particular,

IAMAS elections held in Sapporo, led to the election of: Dr. M. MacCracken, USA, as President, Dr. R. Vincent, Australia, as Vice President (second term), Prof. Wu Guoxiong, China, as Vice President, Prof. R. List, Canada, for a last term as SG, and Dr. J. Turner, UK, as Deputy Secretary General. Prof. H. Davies, Switzerland, became Past President. Dr. Len Barrie, UN-WMO, Prof. I. I. Mokhov, Russia, and Prof. A. Sumi, Japan, were re-elected as Members-at-large, and Dr. P. Bougeault, France and Dr. V. Ivanovici, Romania were elected as new Members-at-large. Appreciation was expressed to the retiring EC members: Past President R. Duce, Vice President R. Carbone, and Member-at-large Dr. J.-L. Fellous.

The major association-wide activity following the Sapporo Assembly involved making preparations for the IAMAS Scientific Assembly that was held in Beijing from 2-11 August 2005. The theme for the Assembly was "The Fascinating Atmosphere; Changeable and Changing". It was organized by the Chinese Academy of Sciences and the China Meteorological Organization, with strong support from the political authorities and the leading scientific organizations. The Local Organizing Committee, led by IAMAS vice-president Dr. Guoxiong Wu, did a perfect job in ensuring a very nice venue and productive scientific setting. The Assembly was attended by 841 scientists from 54 countries who submitted 1377 abstracts and presented papers in 45 symposia (3 with the Union Commission on Cryospheric Sciences, UCCS). In addition, there was a special series of noontime lectures by leading scientists. Two special events were held: (1) honoring the 90th birthday of Senior

Academician Prof Ye Duzheng, and (2) a special evening symposium covering scientific preparations for the IPCC's Fourth Assessment Report. Drawing from the IUGG allocations to IAMAS and from a head tax imposed on registrants for the Scientific Assembly (plus a \$5000 contribution from WMO), IAMAS was able to distribute grants totaling \$63,400 to participants from needy countries and young scientists.

In joint planning with the leadership of IGBP's PAGES project, the IAMAS Assembly was held in coordination with PAGES' 2nd Open Science Meeting, which met from 10-12 August and attracted over 200 participants. Coordination of these two international meetings broadened the participation in both meetings and helped to improve IAMAS coordination with scientists involved in paleoclimatic research.

The IAMAS Executive Committee held two business meetings during the Beijing Assembly. Of greatest import, the EC accepted the invitation of Canada to hold a joint IAMAS/IAPSO Assembly in Montreal from 19-29 July 2009 (we also will be joined by the UCCS, now IACS, in organizing the Assembly). IAMAS EC appointed a committee to consider possible revisions and updates to the IAMAS statutes. In addition, a number of IAMAS scientists participated in outreach efforts to young scientists in Beijing, finding them very enthusiastic and interested in atmospheric and climate sciences.

Since the Beijing Assembly, the death of IAMAS Member-at-large Dr. V. Ivanovici, Romania has taken place, and the IAMAS EC has accepted the nomination of Prof. Dr. Sabina Stefan as an "ad interim" Member-at-large.

During the Beijing Assembly, the IAMAS SG also convened a program-planning meeting in preparation for the IUGG/IAMAS 2007 Assemblies in Perugia. Following this initial planning session, additional proposals for symposia were invited and this collection of proposed sessions was brought to the meeting of the IUGG Program Committee in Perugia, Italy in September 2005. The following components comprise the events for which IAMAS will be responsible for in Perugia: (i) two Union Symposia, (ii) two special IUGG events (one on the newest IPCC Report and one on the Joint IUGG/WMO Assessment Report on the Effects of Pollution on Precipitation), (iii) 30 Joint Symposia [5 of which are organized by the UCCS] and (iv) 21 IAMAS Symposia.

Additional Activities

During the period 2003-2006, five of the IAMAS commissions held major meetings. These included: (a) Quadrennial Ozone Symposium (1-8 June 2004

in Kos, Greece); (b) the 14th International Conference on Clouds and Precipitation (18-23 July 2004 in Bologna, Italy); (c) the Quadrennial Radiation Commission Meeting (23-28 August 2004 in Busan, Korea); (d) the International Commission on the Middle Atmosphere's series of workshops and co-sponsorship of several symposia at the tenth IAGA Scientific Assembly (18-29 July 2005 in Toulouse, France); and (e) the Quadrennial Symposium of ICACGP (International Commission on Atmospheric Chemistry and Global Pollution), jointly sponsored by IGAC (International Global Atmospheric Chemistry) and the WMO (18-23 September 2006 in Cape Town, South Africa). All of the meetings were well attended and very successful.

The assessment of the effects of aerosol emissions on precipitation was started and coordinated by IAMAS SG and the WMO representative L. Barrie (a Member-at-large of IAMAS EC) by forming an IUGG/WMO International Aerosol-Precipitation Science Assessment Group, IAPSAG. Prof. Peter Hobbs, University of Washington, USA, agreed to serve as the chair, and the members were drawn from leaders of a number of relevant subject areas. Although an application to ICSU for funding was highly rated, funding was not secured; as a result, IAMAS and WMO together accepted responsibility for funding. The panel made good progress during 2004 and 2005, including holding a symposium and roundtable on the subject at the Beijing Assembly. IAPSAG's progress was then slowed somewhat by the death of its Chair, who had sacrificed so much of his remaining precious time for this scientific cause. Without significant delay, the VP of IAPSAG, Prof. Zev Levin, Israel, took over as chair, and Prof. William R. Cotton, USA, as the new VP. During 2006, drafts of all of the report's chapters were close to finalized and discussed at a meeting near Toulouse, France, followed by an independent review by a group under the leadership of Dr. George Isaac of Canada. IAPSAG's Report, now finalized, is an impressive epic "Review" of 482 pages, mostly on the background science and related technology. The leaders, and all contributors and reviewers deserve our gratitude and admiration for this Herculean task. A special evening event will be convened at the Perugia Assembly to report on the results of the assessment.

During the quadrennium, IAMAS also continued its active liaisons with related international programs and organizations. These included:

- The IAMAS President served as one of the two IUGG liaisons to the Scientific Committee for Oceanic Research (SCOR). The status of this activity is reported separately.

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- The IAMAS President served as a member of the planning committee for the ICSU workshop on the Significance to Society of Potential Impacts by Comets and Asteroids. Its report was published in 2007 by Springer (Bobrowsky and Rickman, editors).
- The IAMAS President served as the liaison to the Joint Scientific Committee (JSC) of the World Climate Research Programme (WCRP), also participating on behalf of both SCOR and IAMAS; see the separate report on this activity.
- The IAMAS SG served as the IUGG liaison to the World Meteorological Organization (see separate report), including participating in Congress and EC meetings, and serving as the IAMAS member of the WMO meeting of the WG on the Physics and Chemistry of Clouds and Weather Modification.
- The IAMAS SG helped the Union Commission on Cryospheric Sciences in its preparations to become an IUGG Association (the International Association on Cryospheric Sciences).
- The IAMAS SG attended the first organizational meeting of the Canadian Committee responsible for the organization of the joint IAMAS/IAPSO/IACS Assembly to be held in July 2009 and the IAMAS leadership met with representatives of the organizing committee at the IUGG Assembly in Perugia.
- Dr. Michael Kuhn, former IAMAS SG, was chair of the IUGG planning committee on the International Polar Year.
- Dr. Gerd Tetzlaff of Germany served as the IAMAS liaison to the IUGG Commission on Geophysical Risk—GeoRisk.
- Dr. Richard Peltier of Canada served as the IAMAS liaison to the IUGG Commission on Mathematical Geophysics.
- Dr. Karen Labitzke of Germany served as the IAMAS liaison to SPARC, which is WCRP's project on Stratospheric Processes And their Role in Climate.
- Dr. Toshitaka Tsuda of Japan served as the IAMAS liaison to SCOSTEP, which is ICSU's Scientific Committee on Solar-Terrestrial Physics.

- Dr. Deon Terreblanche represented IAMAS at the quadrennial meeting of the WMO Commission of Atmospheric Research.
- IAMAS nominated a number of technical reviewers to participate in the review of Working Group I draft of the Fourth Assessment Report of the Intergovernmental Panel on Climate Change.

Over the last two years, Deputy SG John Turner upgraded the IAMAS Web site (<http://www.iamas.org>) and, with Dr. Gareth Marshall of the British Antarctic Survey, initiated a semiannual newsletter that has been reporting on both IAMAS and commission activities.

With respect to IAMAS finances, IAMAS income comes mainly from the IUGG allocations, which totaled \$120 000 for the quadrennium, and from a head tax on registrants at IAMAS assemblies [\$56 000]. Grants to participants amounted to \$105 000 (2/3 to scientists from needy countries. 1/3 to young scientists independent of origin) [WMO provided a grant of \$5 000]. IAMAS Commissions received \$37 000 from the income of IAMAS. Office expenses were \$1300. Travel support needed for the participation of the IAMAS officers was mostly provided by their home countries. Other IAMAS expenditures were: in 2006 \$7700 in support of the joint IUGG/WMO IAPSAG (compensated largely by a \$7000 grant from IUGG), and a \$3000 contribution to the Union Commission on Cryospheric Sciences, UCCS, for start-up expenses. In this quadrennial period, the assets of IAMAS increased by \$77 000 to \$272 800.

The IAMAS leadership expresses particular thanks to Dr. JoAnn Joselyn, IUGG SG, who was always available to provide guidance.

Submitted 18 February 2006 by: Michael MacCracken, president; Roland List, Secretary General; and John Turner, Deputy Secretary General.

**QUADRENNIAL REPORT OF THE INTERNATIONAL ASSOCIATION FOR THE PHYSICAL
SCIENCES OF THE OCEANS
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007**

The International Association for the Physical Sciences of the Oceans (IAPSO) promotes the study of the physical sciences of the oceans and the interactions taking place at the sea floor, coastal, and atmospheric boundaries. IAPSO provides basic services such as the Permanent Service for Mean Sea Level, in cooperation with IAG, and the IAPSO Standard Seawater Service (operated by Ocean Science International, Limited). IAPSO sponsors Inter-Association Commissions of IUGG, including Tsunami Commission (with IASPEI and IAVCEI) and GeoRisk Commission (with IAMAS, IAHS, IASPEI and IAVCEI). IAPSO collaborates closely with the Intergovernmental Oceanographic Commission (IOC) of UNESCO and the Scientific Committee on Oceanic Research (SCOR) of International Council for Science (ICSU). See the IAPSO website, <http://www.iugg.org/iapso>, for detailed information about all the meetings, workshops and other activities.

IAPSO's principal activity during the past four years was participation in the 2003 IUGG General Assembly, and participation in the Joint IAG/IAPSO/IABO Assembly in Cairns, Australia in 2005; IABO stands for the International Association for Biological Oceanography of ICSU.

At the IUGG General Assembly in Sapporo, Japan on 30 June–11 July 2003, IAPSO convened 6 Association symposia and 11 joint symposia. The Prince Albert I Medal was presented to Dr. Klaus Wyrtki (USA). Dr. Walter Munk (USA), the first recipient of the Medal in 2001, delivered the memorial lecture. The Prince Albert I Medal is awarded biannually to a scientist who has made outstanding contributions to the enhancement and advancement of the physical and chemical sciences of the oceans. The Medal is named for the late Prince Albert I of Monaco, who organized the Oceanography Section of IUGG in 1919; the Medal was established in partnership with Prince Rainier of Monaco. The Eugene LaFond Medal for the best paper from a developing country was presented to Margarita V. Chikina (Russia).

IAPSO participated in the Joint IAG/IAPSO/IABO Assembly in Cairns, Australia on 22–26 August 2005. IAPSO participated in 17 symposia including 7 Association symposia, 7 Joint IAPSO/IABO symposia, and 3 Joint IAG/IAPSO symposia. The Joint Assembly drew a total of 724 delegates from 62 countries. The Prince Albert I Medal was presented to Dr. Friedrich Schott

(Germany), who delivered the memorial lecture. The Eugene LaFond Medal was presented to Maria del Carmen Grados (Peru).

IAPSO sponsored a workshop entitled "International Workshop on Forecasting and Data Assimilation in the Benguela and Comparable Systems" held in Cape Town, South Africa on 8–11 November 2004. There were over 100 invited participants in the workshop including 35 from overseas and 25 from neighboring African countries. An important objective of the workshop was the development of a strong base for an effective and affordable forecasting capability for the Southeast Atlantic within the global network. A product of the workshop was a peer-reviewed book entitled "The Benguela: Predicting a Large Marine Ecosystem" published in 2005 by Elsevier.

IAPSO's Commission on Mean Sea Level and Tides, and the Permanent Service for Mean Sea Level, co-sponsored a workshop entitled "Understanding Sea-Level Rise and Variability" held in Paris, France in June 2006. The workshop was organized by the World Climate Research Program (WCRP) and hosted by IOC. 163 scientists from 29 countries attended the workshop bringing together all relevant scientific expertise with a view towards identifying the uncertainties associated with past and future sea level rise and variability. The WCRP issued a summary report of the workshop.

IAPSO continued its joint activities with SCOR, mostly establishing working groups. The Joint Working Group on Ocean Mixing held a meeting entitled "Conference on Ocean Mixing" in Victoria, Canada on 11–14 October 2004. There were more than 120 attendees representing 14 countries. A Proceedings volume was published as a special issue entitled "Ocean Mixing" of Deep-Sea Research Part 2. The Working Group on Mechanisms of Sediment Retention in Estuaries was organized in 2003, the Working Group on Thermodynamics and Equation of State of Seawater was organized in 2005, and the Working Group on Deep Ocean Exchange with the Shelf was organized in 2006. Activities of these working groups continue into 2007.

In other activities, IAPSO co-sponsored the AGU Ocean Sciences meeting in January 2004, and the symposium at the Committee on Space Research (COSPAR) meeting held in 2004. In other ICSU

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related actions, IAPSO participated with the Scientific Committee on Problems of the Environment (SCOPE) on a proposal to ICSU for PACKMEDS which was funded successfully.

Several of IAPSO's activities underpin the climate projections of the Intergovernmental Panel on Climate Change (IPCC), the fourth report of which was issued in 2007. IAPSO's support of work on sea level is an obvious contribution. Without the activities of the Standard Seawater Service, IPCC would be unable to infer changes in precipitation over the oceans. The outcomes of Working Groups on Ocean Mixing and on the Equation of State of Seawater are likely to influence the climate models used in IPCC's 5th assessment due in 2014.

General business meetings of representatives of the Adhering Bodies were held during the 2003 IUGG General Assembly and the Joint Assembly in Cairns in 2005. Revisions of the Statutes and By-Laws were intensively discussed. One of the main items is the separation of the duties of the Secretary General by the creation of an IAPSO Treasurer. The position of Deputy Secretary General is eliminated, with the Executive Committee remaining the same size. The primary reason for this was to resolve a problem with the selection of Secretaries General; i.e., many potential candidates are in locations where it might be difficult to handle receipt and disbursement of funds. This

change in the Executive Committee would take effect with the 2007 elections. The representatives of the Adhering Bodies requested more interaction with a formal meeting at all IAPSO Assemblies. Various other changes define the intent of Statutes and By-Laws more properly. The revisions were transmitted to the IAPSO representatives of the Adhering Bodies for final approval by e-mails, and formal adoption will be an agenda item at IAPSO's 2007 business meeting.

The next IAPSO Assembly will be held as the Joint Assembly with IAMAS and the Union Commission on Cryosphere Sciences, which is planned to become the International Association for Cryospheric Sciences (IACS), in Montreal, Canada on 19–29 July 2009.

IAPSO officers during the past quadrennium are Dr. Shiro Imawaki (Japan), President; Dr. Fred E. Camfield (U.S.A.), Secretary General; Dr. Paola Rizzoli (U.S.A.), Past President; Drs. S. Krishnaswami (India) and Lawrence A. Mysak (Canada), Vice Presidents; and Dr. Maria Cintia Piccolo (Argentina), Deputy Secretary General. Members of the Executive Committee are Drs. Kentang Le (China), Eugene G. Morozov (Russia), Denise Smythe-Wright (U.K.), W. John Gould (U.K.), Claude Roy (France) and John F. Middleton (Australia).

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PHYSICS OF THE EARTH'S INTERIOR
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IASPEI promotes the study of problems relating to earthquakes, the propagation of seismic waves, and the internal structure, properties, and processes of the Earth. Comprehensive minutes of the past Quadrennium and other information are on the IASPEI website, <http://www.iaspei.org/>.

IASPEI organized its 33rd General Assembly in Santiago, Chile, from October 2 to 8, 2005. It was held in a most suitable venue, the centrally located Diego Portales Conference Centre in Santiago de Chile. The Local Organizing Committee under the leadership of Diana Comte, consisted of members of the University of Chile and Instituto Geografico Militar (IGM). There were 15 scientific symposia covering all parts of the scientific fields of IASPEI, with 220 talks given and about 200 posters shown. In addition, a large number of planning and 'business' meetings were held. 360 persons from 42 countries attended.

A IASPEI Training School has been organized during the week following the General Assembly by the Commission on Education and Outreach. The School was held at the Departamento de Geofisica of the University of Chile, which proved to be an excellent venue. About 20 participants from all over Latin America attended the School. The next IASPEI General Assembly, after the IUGG one in Perugia, Italy, will be held in Capetown, South Africa, in January 2009.

The Asian Seismological Commission (ASC) had two meetings in the past Quadrennium. At the Fifth General Assembly in Yerevan, Armenia, in 2004, representatives from most Asian countries and from Africa, Europe, America, and Australia offered the results of their scientific achievements in the field of seismology, earthquake hazard assessment, and topics related to the Earth's interior. A well-prepared and well-attended International Training Course on Seismology and Mitigation of Seismic Disasters preceded the assembly.

ASC's Sixth General Assembly and the Symposium on Earthquake and Tsunami Disaster Preparedness and Mitigation was held in Bangkok, Thailand, during 7-10 November 2006. The conference was hosted by the Thai Meteorological Department in the Siam City Hotel. About 200 participants from 35 countries and regions attended the conference, highlighted by a welcome evening with local music and dances and by a dinner cruise along the river. Two field trips have been arranged:

one to the Srinagarind Dam (NW Thailand) and a post-field trip to the tsunami-hit areas around Phuket. The conference underscored the need to strengthen connections of scientists, earthquake engineers, disaster risk reduction specialists, policy-makers, and administrators to reduce the impact of earthquakes. Much attention was devoted to the great Sumatra 2004 event and the following tsunami both in science and social aspects.

ASC's Seventh General Assembly will be in Tsukuba, Japan, in 2008.

A pilot project, "Seismic Hazard and Risk Assessment in Asia," adopted at the ASC Fourth General Assembly, focuses on improving hazard evaluation, assessing and reducing seismic risk, and early warning and notification. Due to the unfortunate and premature demise of prof, Serguey Balassanian, the Project leader, the related activities have undergone a considerable slowing down.

With IASPEI's financial support, the European Seismological Commission (ESC) has Organized, in the past Quadrennium, two Training Courses for Young Seismologists to expose them to state-of-the-art moment tensor inversion and seismic hazard and risk assessment procedures.

The training course in Potsdam, 2004, took place in the four days before the ESC General Assembly. Thirty students from twenty countries attended the course.

The primary aim of the Young Seismologist Training Course in Potsdam was to provide some basic requirements on moment tensor inversion, the techniques and programs used to perform manipulation and analysis of the data. Facilities for the course were well organized by the University of Potsdam, Germany.

The 2006 Training Course on "Seismic Hazard and Risk Assessment" was organized at ETH-Zurich, Switzerland, from September 11 to 14, 2006, following the ESC Geneva General Assembly. This time the course was addressed not only to young seismologists but also to young engineers. The course lasted four days and was attended by 40 participants.

The ESC Bureau endorsed a proposal to hold a seventh training course in Hersonissos, in September 2008.

The ESC 29th General Assembly was held in Potsdam, Germany during 12-17 September 2004, jointly organized by the University of Potsdam and the GeoForschungsZentrum Potsdam. About 400

participants attended the conference. A comprehensive report is to be found on the ESC website.

The European Association of Earthquake Engineering (EAEE) and the European Seismological Commission (ESC) have held in common the First European Conference on Earthquake Engineering and Seismology (1st ECEES) - 13th ECEE and the 30th ESC General Assemblies - during 4-6 September 2006 in Geneva, Switzerland. The conference was well attended by about 1,200 participants. A comprehensive state-of-the-art volume on topical themes of the conference was published. During the ESC General Assembly the ESC Statutes have been extensively revised. Please see the ESC homepage for details: <www.esc.bgs.ac.uk>
The next general assembly will be held in Hersonissos, Crete (Greece), 7-12 September 2008.

The Third International Symposium on the effects of Surface Geology on Seismic Motion, has been held in Grenoble from August 30, to September 1, 2006, under the international umbrella of the ESG working group created jointly by IASPEI (International Association of Seismology and Physics of the Earth's Interior) and IAEE (International Association of Earthquake Engineering) two decades ago.

Third in the series, following the two previous in Odawara (Japan, 1992), and Yokohama (Japan, 1998), this ESG2006 symposium has been an opportunity to picture both the state-of-the-art and state-of-practice, in the very diverse aspects of ground motion estimation. A number of invited key-note papers, and a large number of "regular" papers as well, depicted the advances and issues in various domains: strong motion data and processing techniques, non-linearity in soils, microtremor techniques, site surveys, numerical simulation, empirical estimates of ground motion and case studies. One ESG peculiarity is also to be built around benchmarking exercises on ground motion prediction. Two such benchmarks have been proposed for ESG2006. The first one has

addressed the simulation of ground motion in the peculiar 3D Grenoble basin for local weak and moderate size earthquakes, while the second one investigated the capability of array noise measurements to provide reliable and robust estimates of the shear wave velocity profile.

In order to favor the exchanges and discussions, it was decided to have only plenary sessions with keynotes, benchmarks, and a few representative oral presentations spanning as much as possible the range of present-day issues in ground motion estimation. All posters have been exposed for the whole 3-day duration.

The numerous written contributions (about 150) are gathered in a two-volume Proceedings book.

The Publications Transfer Program of IASPEI's Committee for Developing Countries (CDC) has made material on seismology available to institutions in need, in particular those located in Africa, South and Latin America and Asia.

The following publications are available from the IASPEI Secretariat. IASPEI on approval distributes free copies of its publications to institutional libraries in less developed countries.

- *IASPEI: Cooperation for Better Understanding of the Earth* (26-page brochure).

- *International Handbook of Earthquake and Engineering Seismology (Part A and B)*, a two-volume comprehensive review, a state-of-the-art reference for seismologists, earthquake engineers, geologists, and geophysicists. For more information, consult the website, <http://www.academicpress.com/quake>.

- *New Manual of Seismological Observatory Practice* provides the essential scientific and technical fundamentals, reveals their inter-relationships, and motivates observatory personnel to do their jobs as carefully as possible.

Finally, IASPEI uses a bulk E-Mail System to broadcast timely announcements about forthcoming meetings and other information of interest to IASPEI members.

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CHEMISTRY OF THE EARTH'S INTERIOR
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Memberships:

IAVCEI individual memberships for the period 2003-2007 varied from 700 to 840 with the high coming just after the 2004 General Assembly. Thirty-nine members have chosen to become Life Members, including three members who were awarded Life Membership as Honorary Members in 2003-4. The IAVCEI web page is frequently revised and updated. The web site url is www.iavcei.org. The volcano listserver

administered by Arizona State University remains the official IAVCEI listserver. It has >2700 people listed, which exceeds the IAVCEI membership. Two or three issues of the newsletter "IAVCEI News" were mailed to members each year.

Meetings:

A number of highly successful meetings were held in 2003-2007, most with partial support from IAVCEI:

2003 Cities on volcanoes 3	Hilo Hawaii	350 people
2003 IUGG General Assembly	Sapporo, Japan	378 " (IAVCEI)
2003 State-of-the-Arc	Cascades, USA	50
2003 Basement volcanoes	Petropavlovsk, Russia	30
2003 Plume IV	Hveragerdi, Iceland	50
2003 South Aegean Arc	Milos Island, Greece	50
2004 Neogene Volcanic Belt	Mexico City, Mexico	100
2004 Volcanic Ash Aviation	Washington, DC	200
2004 2nd Intl. Maar Conf.	Hungary-Slov.-Germany	108
2004 IAVCEI General Assbly.	Pucon, Chile	936
2005 Ocean Island Volc.	Cape Verde Islands	60
2005 Caldera Volcanism	Tenerife, Spain	40
2006 Cities on Volcanoes 4	Quito, Ecuador	550
2006 Continental Volcanism	Guangzhou, China	200
2006 Walker Symposium	Reykjavik, Iceland	98
2007 State-of-the-arc	Chile	50 est
2007 Volc. and Tectonics	Havana, Cuba	100 "
2007 El Chichon, 25 y later	Chiapas, Mexico	100 "
2007 Magmas and Volc Gases	Taipei	60 "
2007 IUGG General Assembly	Perugia, Italy	400 "

The next IAVCEI General Assembly has been scheduled for August 2008 and will be held in Reykjavik, Iceland. The first circular was printed and distributed in December 2006.

Meetings of the IAVCEI Executive Committee were held in July 2003, November 2004, and December 2006.

Preparations are well under way for what is sure to be a successful IUGG meeting in July 2007 in Perugia.

Officers of IAVCEI for 2003-2007 were:

President	Oded Navon (Israel)
Vice-President	Jocelyn McPhie (Australia)
Vice-President	Toshitsugu Fujii (Japan)
Secretary-General	Steve McNutt (USA)
Members of Executive Committee	Anita Grunder (USA) Renato Solidum (Philippines) Hugo Moreno (Chile) Jean-Christophe Komorowski (France)
Past President	Steve Sparks (UK)
Editor Bull Volc	John Stix (Canada)

A nominations committee was formed in 2006 to determine qualified candidates for IAVCEI officers for the term July 2007 to July 2011. The committee was chaired by former IAVCEI president Grant Heiken and completed its work in early January 2007. The election will be a true contested election, with 3 candidates for the SG position and 3 for two vice-president positions, as well as 1 for president and 4 for the four EC positions. The election will be held in spring 2007 by mail vote of IAVCEI individual members and national correspondents.

Commission activities:

The Commission of Mitigation of Volcanic Disasters has begun a new Atlas series, the first volume of which covers the Caribbean region and was prepared under the leadership of Jan Lindsay. The IAVCEI Executive Committee authorized \$4000 to support the first volume of the series.

The Commission on Subduction Zone Magmatism held a highly successful workshop on the State-of-the-Arc (SOTA) in the Cascades in September, 2003. Another State-of-the-Arc workshop just took place in Chile in January-February 2007.

The Commission on Explosive Volcanism is continuing to work on compilation of a comprehensive database of all eruptions with volume >10 km³ for the last 2 million years. Two commissions held workshops in September 2004: The Second International Maar Conference in Hungary, and the MEEMSV IV International workshop in France.

A monograph based on all of the Symposia under the Sapporo 2003 Union theme "State of the Planet: Frontiers and Challenges," was published in 2004 (Dr. R.S.J. Sparks (IAVCEI), co-editor). IAVCEI received a grant of \$5000 from IUGG to distribute 137 copies of the book to scientists in developing countries.

A new book series was begun in 2005 with Grant Heiken as series editor. The series is called "IAVCEI Special Publications in Volcanology" and includes academic works as well as titles of a more practical nature, such as hazards assessments. The first title was published in 2006, "Statistics in Volcanology" edited by H.M. Mader, S.G. Coles, C.B. Connor, and L.J. Connor and is available from The Geological Society, London. IAVCEI members receive a 50 percent discount when ordering the books.

Awards:

Three outstanding volcanologists were awarded with IAVCEI Honorary Memberships. One was awarded at Sapporo 2003: Prof Shigeo Aramaki

(Japan); the other two in Pucon: Prof Hans-U. Schmincke (Germany), and Dr Robert Tilling (USA). The Thorarinsson medal was awarded to Wes Hildreth (USA), and two Wager medals to Andy Harris (USA) and Oleg Melnik (Russia). Two new awards were given for the first time in 2004: the Krafft medal to Tom Simkin (USA) and the Young Scientist award to Costanza Bonadonna (Italy). No medals or awards were given in 2005 or 2006.

Video and calendar sales:

IAVCEI sold several educational products in 2003-2007. Two videos on 1) understanding volcanic hazards and 2) reducing volcanic risk were produced professionally under contract with IAVCEI. Over 70 videos were sold in 2003, 60 in 2004, 60 in 2005, and 40 in 2006. We note that video sales are down somewhat as DVD becomes the preferred format. We plan to produce the IAVCEI videos in DVD format some time in early 2007.

Also, volcano calendars for each year from 2003 to 2007 were produced by IAVCEI members and were printed and marketed by a professional calendar company. Over 5,000 calendars were sold in 2003, 5000 in 2004, 8000 in 2005 with a second printing needed, and 8000 in 2006. An additional 800 were distributed each year by IAVCEI to various scientific, educational, and governmental organizations. IAVCEI received a small royalty payment (1 percent) for the calendars.

Fundraising:

IAVCEI recognized that its activities could be significantly expanded by improved fundraising. Towards this end, former President Steve Sparks wrote a series of articles on fundraising for IAVCEI News in 2002, and the issues were discussed in detail at the July 2003 meeting of the Executive Committee. Secretary-General Steve McNutt worked with a lawyer and submitted forms for incorporation as a non-profit corporation in fall 2003; the non-profit status was granted in December 2003. After meeting with a consultant, McNutt also submitted a full application for tax exempt status under section 501(c)3 with the Internal Revenue Service of the US. The application was approved by the IRS in June 2004 and IAVCEI now has tax exempt status. This status is important so that contributions may be received with a tax benefit to contributors. Over \$10,000 in contributions have been received as of February 16, 2007. The largest portion has been proceeds from the sale of books previously owned by IAVCEI member George P.L. Walker.

The 2003-2007 quadrennium included significant growth, improved fundraising, a variety of

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successful meetings covering many areas of the science of volcanology, continuation of video and calendar sales, and the introduction of several new awards. Some commissions have been active while others need to be restructured or refocussed. We

entrust this reform to the new Executive Committee who will be elected in spring 2007.

Steve McNutt
Secretary-General for IAVCEI

**REPORT OF THE IUGG COMMISSION ON GEOPHYSICAL RISK AND SUSTAINABILITY
 24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007**

This report serves to inform the IUGG Council of the activities of the Commission over the quadrennium since the last IUGG General Assembly. It reports on the membership, the public statement that the Commission issued, the meetings and symposia organised and endorsed, the publications produced, and the project-based activities undertaken.

The IUGG Commission on Geophysical Risk and Sustainability (IUGG GeoRisk Commission) established by the IUGG Bureau in August 2000 is dedicated (i) to promoting scientific studies applied to the reduction of risk from natural hazards in an

increasingly urbanized world and sustainability and (ii) to reducing death and destruction from natural and technological hazards by providing hazards data and information to emergency managers, policy-makers, scientists and the general public in the most timely and effective manner as possible. This includes the integration of knowledge concerning environmental, social and economic processes. The fundamental scope of this Commission is to facilitate communications – between scientists via meetings, workshops and publications, as well as between scientists and decision makers, between scientists and the public, and between scientists and schools.

IUGG GeoRisk Commission Membership

Name	Duty	Association	Country
Tom Beer	President (2000-2004), Past-President (2004-)	IUGG	Australia
Alik Ismail-Zadeh	President (2004-), Vice-President (2000-2004)	IASPEI/CMG	Germany/Russia
Kuniyoshi Takeuchi	Vice-President (2000-)	IAHS	Japan
Ramesh Singh	Vice-President (2004-)	IASPEI/IAPSO	India
Grant Heiken	Secretary General (2000-2004)	IAVCEI	USA
Gerd Tetzlaff	Secretary General (2004-)	IAMAS	Germany
Paula Dunbar	Treasurer (2000-)	IASPEI	USA
Hermann Drewes	Commissioner (2000-)	IAG	Germany
Harsh Gupta	Commissioner (2000-)	IUGG	India
Slava Gusiakov	Commissioner (2000-)	IASPEI	Russia
Kosuke Heki	Commissioner (2003-)	IAG	Japan
Amithirigala Jayawardena	Commissioner (2003-)	IAHS	Hong Kong/China
Evgeny Kontar	Commissioner (2000-)	IAPSO	Russia/USA
Volodya Kossobokov	Commissioner (2000-)	IASPEI	Russia/France
Susan McLean	Commissioner (2000-)	IAGA	USA
Uri Shamir	Commissioner (2000-)	IUGG	Israel
Zhongliang Wu	Commissioner (2003-)	IASPEI	China

Statement of the Commission

On 7th January 2005 the GeoRisk Commission adopted the Statement on the *Greatest Earthquake and Tsunami of the Early XXI Century and the Need for Urgent Action to Reduce Natural Disasters in the Indian Ocean Region and Elsewhere*. Among major recommendations of the Commission were the following:

1. The countries around the Indian Ocean to set up a Disaster Management Center in order to monitor land, ocean and atmosphere in relation to all kinds of natural hazards, especially those related to coastal regions. Such Centers should be established in any disaster-prone coastal regions where they do not already exist (e.g., Mediterranean Sea and Atlantic Ocean).
2. A Tsunami Warning System to be set up in the region. Before such systems are in operation in

the region, the Pacific Tsunami Warning Center in Hawaii should extend its warnings to cover all vulnerable areas in the Indian Ocean.

3. Multidisciplinary and multinational research programs and research networks on geophysical hazards and risks to be developed in the Indian Ocean countries in order to integrate diverse data streams, to improve understanding of the natural phenomena associated with the disasters, to develop predictive modeling capability, and to generate and to disseminate timely and accurate information needed by decision makers and the public (URL: http://www.iugg-georisk.org/reports/IUGG_GeoRisk_st_full.pdf)

Based on the Statement of the GeoRisk Commission, on 10th January 2005 IUGG issued a

Resolution on the Sumatra earthquake and tsunami (<http://www.iugg.org/tsunamiresolution05.pdf>). On 17th January 2005 International Council for Science (ICSU) produced a Position Statement based on the materials of the IUGG GeoRisk Commission's Statement (http://www.icsu.org/3_mediacentre/INSIGHT_SI_01_2005.html)

Scientific Meetings Organized by the Commission

1. 2nd IUGG GeoRisk Commission Advanced Research Workshop on Risk Science, Society and Sustainability, 26-27 August 2004, Stockholm, Sweden

The major scientific goals of this workshop were (i) to provide insight into the relationship between risk science, society and sustainable development; (ii) to search for new possibilities in risk science that focus on the major responsibility of the scientific community; and (iii) to address the problem of implementation of scientific initiatives as elements of public policy. The workshop focused on the question: can sustainable development be successful without taking into account the risk of hazards and their impacts? To this end, the workshop brought together experts from the fields of geophysics and mathematics with experts in social science and law specifically to deal with problems of risk and sustainability. Prof. G. Papadopoulos delivered the Rammal Award lecture. Other presentations were made by E. Kontar (Russia/USA), A. Makarenko (Ukraine), U. Shamir (Israel), T. Beer (Australia), P. Wiedemann (Germany), and J. Paterson (UK). The workshop was sponsored by EuroScience, IUGG, and NATO. A report of the meeting was published in *EOS, Transactions of the American Geophysical Union*, 85 (44) 453 (2 November 2004).

2. 3rd IUGG GeoRisk Commission Symposium on Geophysical Risk and Hazards, 2-4 December 2004, Hyderabad, India

Hazards 2004 was the name given to the combined meeting that constitutes the Third Workshop of the IUGG Commission on Geophysical Risk and Sustainability & the Tenth International Symposium on Natural and Human-Induced Hazards of the Natural Hazards Society. The meeting was held in Hyderabad, India 2-4 December 2004. There were 120 attendees comprising 40 foreign scientists and 80 Indian scientists. The conference itself was excellently organized. Dr R.K. Chadha and Dr. D. Srinagesh – the Chair and Secretary-General of the Local Organizing Committee – had the full support of Dr. V.P. Dimri, their employer and the Director of the National Geophysical Research Institute (NGRI) – one of the Indian CSIR research institutes and the location where the conference was held.

3. 4th IUGG GeoRisk Commission Workshop on Recent Geodynamics, Georisk and Sustainable Development of the Black Sea to Caspian Sea Region, 3-6 July 2005, Baku, Azerbaijan

The Workshop organized by the IUGG Commission on Geophysical Risk and Sustainability in association with the International Hydrological Program of UNESCO, American Geophysical Union, Azerbaijan National Academy of Sciences, Heidelberg Academy of Sciences and Humanities, and Earthquakes and Megacities Initiative, was held in Baku, Azerbaijan from 3 to 6 July 2005. About fifty scientists from 12 countries attended, and 19 invited speakers delivered talks at the workshop. The workshop was supported by IUGG, UNESCO, and ExxonMobil. The Workshop brought people of natural, social and political sciences together with the representatives of industry, governments, and mass media to prepare the social and political background for sustainable development in the Black Sea to Caspian Sea region. The invited and contributed presentations dealt with the recent geodynamics of the region, natural hazards (earthquakes, mud volcanoes, landslides, rapid sea level changes), associated risks, and mitigation of the impacts of geohazards on society.

4. Symposium “Marine Risk and Sustainability”, IAG/IAPSO/IABO Joint Scientific

Assembly, 22-25 August 2005, Cairns, Australia
This symposium was organized by the IUGG GeoRisk Commission (conveners: T. Beer and E. Kontar) at the 2005 IAG/IAPSO/IABO Scientific Assembly. K. Satake (AIST, Japan) opened the session with his talk on “Lessons learned from the 2004 Sumatra earthquake and the Asian tsunami”. The tsunami theme was followed by a number of speakers: D. King (James Cook University); Y. Tyupkin and V. Morozov (both Russian Academy of Sciences, Moscow); C. Pattiaratchi (University of Western Australia); R. Othman (Universiti Teknologi Malaysia). The second theme of the session was that related to coastal contamination from submarine groundwater. Detailed investigations in diverse geographic locations were presented by J. Zhang (Toyama University); C. Schrum (Schrum & Wehde Ecosystem Modeling); G. Kim (Seoul National University); M. Schlueter (Alfred Wegener Institut). The third theme of the session was sustainability issues. Speakers: D. McDonald, T. Beer, and E. Grist (all CSIRO Marine and Atmospheric Research), F. Rack (JOI Deep Sea Drilling Programme), E. Kontar (Russian Academy of Sciences, Moscow), E. Stanev (University of Sofia, Bulgaria), J. De (Indian National Institute of Oceanography), and F. Wang (Institute of Oceanology, Chinese Academy of Sciences).

5. Special Session on Mathematical Aspects of Geohazard Research, IUGG Conference on Mathematical Geophysics, 5th June 2006, Sea of Galilee, Israel

The scientific session was focused on several topics: (i) non-linear dynamics of the lithosphere, predictions of extreme natural events and limitations of the predictability (V. Keilis-Borok, UCLA); (ii) mathematical descriptions of physical phenomena associated with geohazards (B. Malamud, King's College London, UK, and M. Ghil, ENS Paris, France); (iii) mathematical and numerical modeling of extreme natural events (E. Aharonov, Weizmann Institute of Science, Rehovot, Israel; A. Ismail-Zadeh, Karlsruhe University, Germany; and J. Zvelebil, Geological Survey, Prague, Czech Republic), and (iv) quantitative analysis and compilations of geophysical data related to geohazards (V. Gusiakov Russian Academy of Sciences, Novosibirsk, Russia; and S. Sobolev, GFZ-Potsdam, Germany).

6. 5th IUGG GeoRisk Commission Symposium "Riding the storm: Can science keep us in the saddle?", 16th July 2006, Munich, Germany

The third joint symposium of the IUGG GeoRisk Commission and the European Association for Promotion of Science and Technology entitled "Riding the storm: Can science keep us in the saddle?" was held July 15-19 in Munich, Germany, during the EuroScience Open Forum. The meeting's topics were extreme natural events and humanitarian disasters (F. Wenzel, Karlsruhe University, Germany), the role of geoscience in preventive disaster management of catastrophic natural events (A. Ismail-Zadeh, IUGG GeoRisk Commission), integrated global observation strategy for disaster reduction (H. Moderassi, IGOS Geohazards and French Geological Survey, Orleans, France), prediction of extreme natural events (V. Kossobokov, Russian Academy of Sciences, Moscow), disaster risk management from an insurance perspective (A. Smolka, Munich Reinsurance), and relationship between disaster risk management and governance (J. Paterson, University of Aberdeen, UK). The symposium was followed by a press briefing.

Scientific Meetings Endorsed by the Commission OR Attended by GeoRisk Commissioners as session conveners or invited speakers

- Second Annual Meeting of the Asia-Oceania Geoscience Society, Singapore, 20-24 June 2005.
- 2nd International Geohazards Workshop, Orléans, France, 27-29 June 2005.

- 2nd International Conference of The Nigerian Union of Planetary and Radio Sciences, Port Arthur, Nigeria, 24-26 August 2005.
- 8th Workshop on Nonlinear Dynamics and Earthquake Prediction, Trieste, Italy, 3-15 October 2005.
- IOC/UNESCO International Workshop on Post-Disaster Assessment and Monitoring of Changes in Coastal, Ocean, and Human Systems in the Indian Ocean and Asian Waters, Phuket, Thailand, February 20-24, 2006.
- 3rd International Conference on Early Warning: From Concept to Action, Bonn, Germany, 27-29 March 2006.
- OECD Global Science Forum Workshop on Earthquake Science and its Contribution to Society, Potsdam, Germany, 1-2 June 2006.
- 11th International Symposium on Natural and Human Induced Hazards and 2nd Workshop on Earthquake Prediction, Patras, Greece, 22-25 June, 2006.
- 36th COSPAR Scientific Assembly, Beijing, China, 16-23 July 2006.
- General Assembly of the Asian Seismological Commission and Symposium "Earthquake and Tsunami Disaster Preparedness and Mitigation", Bangkok, Thailand, 7-10 November 2006.
- International Conference on Climate Change and Earthquakes, Islamabad, Pakistan, 13-17 November 2006.

Business meetings

- On 2 December 2004 the business meeting of the GeoRisk Commission was held in Hyderabad, India. New Executives of the Commission took the office after the meeting.
- On 29 March 2005 A. Ismail-Zadeh met in Paris A. Szollosi-Nagy, Secretary General, International Hydrological Program, UNESCO and discussed topics related to Webcyclopedia and Baku international workshop.
- On 19 June T. Beer and A. Ismail-Zadeh met in Paris H. Modaresi, S. Hosford, and G. Le Cozannet of the IGOS GeoHazards Bureau to discuss cooperation between IUGG (GeoRisk Commission), IGOS Geohazards team and GeoUnion Hazards Initiative.
- On 21 June 2006 T. Beer and A. Ismail-Zadeh met in Paris P. Dube (Botswana), a member of the ICSU Planning Group on Natural and Human Induced Environmental Hazards and Disasters, to discuss possibilities of cooperation on the topic of natural hazards in Africa.
- On 10 July 2006, A. Ismail-Zadeh met in Paris A. Gvishiani, Vice President of ICSU CODATA, to discuss cooperation between IUGG GeoRisk Commission and ICSU CODATA on the development of Webcyclopedia.
- On 15 January 2007 A. Ismail-Zadeh met in Kyoto K. Sassa, President of the International

Consortium on Landslides (ICL), Kyoto to discussed ways of cooperation between the GeoRisk Commission and ICL.

- At the invitation of International Consortium on Landslides, A. Ismail-Zadeh attended the First Session of the International Program on Landslides (IPL) held in United Nations University, Tokyo, Japan, January 22-25, 2007. The IUGG and GeoRisk Commission are invited to co-sponsor the First World Landslide Forum to be held 18-21 November 2008, Tokyo, Japan.
- On 30 January 2007 A. Ismail-Zadeh and T. Beer met in Tokyo Dr. Haruyama of the International Geographical Union (IGU) and discussed the topics related to cooperation between the IGU Commission on Hazards and Risks and IUGG GeoRisk Commission. Also they met Dr. M. Kono, IUGG Past-President, and discussed several aspects of the relationship between IUGG with Union Associations and Commissions.

Commission Projects

- “Near Earth Orbit Objects”, co-partner, funded by ICSU (2004)
- “Dark Nature”, co-partner, funded by ICSU (2004)
- Workshop in Stockholm (Sweden), funded by NATO and IUGG (2004)
- “Comprehensive historical earthquake and tsunami database for the South-West Pacific”, funded by IUGG (2004).
- Workshop in Baku (Azerbaijan), funded by IHP/UNESCO, IUGG, and ExxonMobil (2005).
- Symposium in Munich (Germany), funded by IUGG (2006).
- Workshop in Kampala (Uganda), funded by IUGG (2007).

The GeoRisk Commission submitted two ICSU project proposals, but the projects were not funded because of ICSU financial problems:

1. Geohazards: Extreme Natural Events and Societal Implications (led by IUGG / GeoRisk Commission). Sponsoring partners: ICSU GeoUnions.
2. The Role of Science and Data in Disaster Risk Management (led by ICSU CODATA). Supporting partner: IUGG / GeoRisk Commission

Webcyclopedia of Natural Hazards, Risks and Sustainability

The web-page of the Commission is maintained at the new site: <http://www.iugg-georisk.org>

The Webcyclopedia at: <http://www.iugg-georisk.org/webcyclopedia/index.html> continues to collate information. The Webcyclopedia is a matrix, ordered in terms of cities, hazards and risks, and authors. The hazards is determined by the

scientific skill base, as determined by the IUGG Associations - hydrological, meteorological, marine, tsunamis, volcanoes, seismic, geodetic (landslides), geomagnetic. The risks are determined by the sustainability issues such as infrastructure issues (building vulnerability, robustness of infrastructure), and health issues (air quality, water quality, contaminated land). The Webcyclopedia entities are varied, ranging from the traditional scientific paper through to interactive hazard maps, real time data, models of the phenomena, or merely hyperlinks to other sites providing information on the topic. The presentations, given at the meetings organized by the Commission or endorsed by the Commission, have been incorporated into the Webcyclopedia. The Commission continues to search for an editor for the project.

Publications

- Ismail-Zadeh, A. T., and T. Beer (Eds.) *Georisk: Interactions between Science and Society*, special issue of *Natural Hazards*, Springer, 2007 (peer-reviewed articles based on the Stockholm and Hyderabad workshops of the IUGG GeoRisk Commission).
- Singh, R. (Ed.), *Sumatra Tsunami and Earthquake*, special issue of the *International Journal of Remote Sensing* (Taylor and Francis), 2007.
- Ismail-Zadeh, A. T. (Ed.) *Recent Geodynamics, Georisk and Sustainable Development in the Black Sea to Caspian Sea Region*, American Institute of Physics Conference Proceedings, vol. 825, Melville, New York, 2006. 162 p. (peer-reviewed articles based on the Baku workshop of the IUGG GeoRisk Commission)
- Ell, R., Riding the storm: can science keep us in the saddle? *ESOF Newsletter*, No. 10, Feature article, http://www.esof2006.org/blog_article.php4?ID=24&what=Feature, 24 May 2006.
- Gupta, H., Mega –Tsunami of 26th December 2004: Indian Initiative for Early Warning system and Mitigation of Oceanogenic Hazards, *Episodes*, Vol. 28, No.1, 2-5, 2005.
- Ismail-Zadeh, A.T., Science for mitigation of natural disasters, *EuroScience News*, 30, 1, 2005.
- Ismail-Zadeh, A., and Beer, T., A focus on risk science and sustainable development, *EOS, Transactions of the American Geophysical Union*, vol. 85, No. 44, 453, 2004.
- Beer, T. and Ismail-Zadeh, A.T. (Eds.) *Risk Science and Sustainability*, Kluwer Academic Publishers, Dordrecht, 2003. 256 p. (peer-reviewed articles based on the Budapest workshop of the IUGG GeoRisk Commission).

Planned Activity

XXIV General Assembly of the International Union of Geodesy and Geophysics
Quadrennial Reports of the IUGG Associations and Union Commissions

IUGG GeoRisk Commission is involved in the organization of the following scientific meetings in 2007:

1. EGU Symposium "Earthquake Prediction: What can be done with the best science available?" The Union symposium will be held at the European Geophysical Union General Assembly, Vienna, Austria, 15-20 April 2007. The symposium is co-sponsored by UNESCO. Principal organizer: V. Kossobokov.
2. Union Symposia at the IUGG General Assembly, July 2-13, 2007, Perugia, Italy: US007 High-Performance Computations in Geosciences and US012 Early Warning of Natural Hazards. The symposia are co-sponsored by IASPEI. Principal organizers: A. Ismail-Zadeh, R. Singh, and Z. Wu.
3. Mini-Symposium "Strategy of Reducing Predictive Uncertainty of Geophysical Hazards", 30 July – 4 August 2007, Bangkok, Thailand. The symposium is co-sponsored by the Asia Pacific Geophysical Society. Principal organizers: K. Takeuchi and H. Gupta.
4. Workshop "Natural and Human-induced Hazards and Disasters in Africa", Kampala, Uganda, August 2007. The workshop is organized by ICSU Regional Office for Africa and co-sponsored by the GeoRisk Commission (principal contact A. Ismail-Zadeh).
5. Third International Geohazards Workshop, 6-9 November 2007, Frascati, Rome, Italy. The workshop is organized by the IGOS

Geohazards team and co-sponsored by the GeoRisk Commission (principal contact A. Ismail-Zadeh).

IUGG GeoRisk Commission intends to strengthen its cooperation with the

- IGOS-Geohazards Team and ICSU CODATA on the development of the Commission's project "Webcyclopedia of Natural Hazards, Risks and Sustainability";
- International Consortium for Landslides and International Program for Landslides and consider possibilities to take part in the organization of the First World Forum on Landslides, UNU Tokyo, January 2008;
- UNESCO International Hydrological Program and UNESCO section on Disaster Reduction;
- International Year of Planet Earth in organization of a conference on Geohazards, Georisks and Disasters, 2008-2009; and
- ICSU GeoUnions Hazard Initiative.

The next business meeting is to be held in Perugia, on *Friday 6 July, 12:00 a.m. to 2:00 p.m.* The President, Secretary General and Treasurer will report on the activity between December 2004 (the last business meeting) and June 2007.

The report is prepared by Alik Ismail-Zadeh.
February 15, 2007

REPORT OF THE COMMITTEE ON MATHEMATICAL GEOPHYSICS
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007

1 The 2006 CMG meeting

In the past year the CMG sponsored the the 26th International Conference on Mathematical Geophysics, which had the theme “Coupling in Earth Systems: Solids, Fluids, Life.” The conference was held June 4–8, 2006 near Tiberias, Israel on the Sea of Galilee. The conference was widely held to be a great success. A formal conference report was submitted to IUGG this past fall. The program, the book of abstracts, and a photo gallery is available at the conference website, <http://www.weizmann.ac.il/conferences/CMG2006/>.

2 The 2008 CMG meeting

The 27th International Conference on Mathematical Geophysics will be held from June 16–20, 2008 in Longyearbyen on Spitsbergen. The tentative theme for the meeting is “Dynamics in Earth Systems: Flow, Fracture and Waves.” The local organizers include Eirik Flekkoy of the University of Oslo and Alex Hansen of The Norwegian University of Science and Technology (NTNU) in Trondheim. Flekkoy and Hansen are currently consulting the officers of the CMG for suggestions concerning the program. Their specific interests are in featuring problems concerning the coupling of field observations and experiments to theoretical models, including computer simulations, the formulation of simple concepts, and analytic theory. Of particular interest are problems of coupled, evolving Earth systems. We expect to reach an agreement shortly (within weeks) concerning the overall construction of the scientific program. We shall then poll the CMG

representatives in the IUGG associations for specific suggestions. Shortly thereafter we shall start advertizing the meeting.

3 CMG symposium at the Pergugia meeting

Augusto Neri, in collaboration with G.Bergantz, E. Aharonov O. Melnik, is organizing a CMG-sponsored Union symposium at the IUGG XXIV General Assembly in Perugia, entitled “Modelling and Simulation of Geophysical Flows: Present and Future.” Currently, four members of the CMG, including the President and Secretary, expect to participate in the Symposium.

4 Committee membership

This past fall our Secretary, Marc Spiegelman, resigned from our committee. Prof. Claudia Pasquero of the University of California–Irvine is now the new Secretary. The current lineup of CMG officers is listed below.

President: Daniel H. Rothman,
MIT

Secretary: Claudia Pasquero,
University of California–Irvine

Vice-president: Einat Aharonov,
Weizmann Inst. of Science

Vice-president: Ray Pierrehumbert,
University of Chicago

Vice-president: Antonello Provenzale,
CNR-ISAC, Torino, Italy

Vice-president: Eli Tziperman,
Harvard University

Daniel H. Rothman, CMG Chair
Claudia Pasquero, CMG Secretary

**REPORT OF THE COMMITTEE ON STUDIES OF THE EARTH'S DEEP INTERIOR
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007**

The principal function of SEDI is to foster cross-disciplinary research on the dynamics and structure of the Earth's deep interior. SEDI works to achieve this goal by organizing biennial scientific meetings, distributing an electronic newsletter, *Deep Earth Digest* through www.sedigroup.org, and maintaining an email list for scientific exchange. Currently, the mailing list includes about 550 members.

During the past quadrennium, SEDI has organized two meetings, and a third is now in the planning stage. Professor Uli Christensen hosted the 9th SEDI meeting in Garmisch-Partenkirchen, Germany, 4-9 July 2004. Over 150 papers in 8 diverse sessions were presented over 5 days. The proceedings of this meeting were published in a special issue of *Physics of Earth and Planetary Interiors* (Volume 153, November 30, 2005). The 10th SEDI meeting was hosted by Professor Pavel Hejda in Prague, The Czech Republic, July 9-14, 2006. Nearly 200 participants were registered at this meeting and more than 160 papers were presented. Proceedings from the meeting are currently being edited and are scheduled to appear in either *Geophysical and Astrophysical Fluid Dynamics* or *Studia Geophysica et Geodetica*. Planning for the 11th SEDI meeting is under way.

SEDI is committed to promoting the interests and activities of young researchers. In addition to

supporting student travel, SEDI also supports two awards for young researchers. The Doornbos Memorial Prize was set up in 1994 following the tragic death of seismologist Durk Doornbos. The fund is managed by IASPEI and the prize is awarded for outstanding scientific contributions at the biennial SEDI meeting.

The Prize was awarded to Arwen Deuss of the University of Cambridge and Cinzia Farnetani of the Institut de Physique du Globe, Paris at the 2004 meeting. Julien Aubert of the Institut de Physique du Globe, Paris, Keith Koper of Saint Louis University and Jon Mound of Harvard University received the Prize in 2006. SEDI has also initiated the Zatman Lecture to honour the memory of Dr. Stephen Zatman, a dynamic and innovative young researcher who died under tragic circumstances in 2002. The inaugural Zatman Lecture was given by Dr. Richard Holme of the University of Liverpool at the 2004 meeting. Dr. John Aurnou of the University of California, Los Angeles gave the Zatman lecture in 2006.

SEDI has played a role in supporting the 24th General Assembly in Perugia, Italy. Professor Dave Loper and Professor Phillipe Cardin are co-convenors of special session JAS001, *Planetary Dynamos: theory, models, observations and experiments*. SEDI co-sponsored 3 additional special sessions at the 24th General Assembly.

**REPORT OF THE UNION COMMISSION ON CRYOSPHERIC SCIENCES
24TH GENERAL ASSEMBLY, PERUGIA, ITALY, 2-13 JULY 2007**

ICSI/UCCS activities in 2003–2006

In July 2003, during the IUGG General Assembly in Sapporo, the President of the International Commission on Snow and Ice (ICSI), Gerry Jones, the ICSI Secretary Georg Kaser, and Roger Barry presented an ICSI proposal to attain the status of an Association within IUGG, to the IUGG Executive Committee.

In September 2004, the IUGG Executive Committee established the IUGG Commission for the Cryospheric Sciences (UCCS). UCCS is an interim stage in the change of status of ICSI from that of a commission of the International Association of Hydrological Sciences (IAHS) to that of an Association (International Association for Cryospheric Sciences, IACS) of IUGG. The IUGG Council will bring down the final decision on the formation of IACS at the IUGG General Assembly in Perugia, 2007.

In the meanwhile UCCS has continued the work initiated by ICSI and further developed its activities as a Union Commission. UCCS maintains its activity under the statutes and by-laws of the former ICSI/IAHS with the addition of obligations to its new mother organisation, the IUGG. The current UCCS bureau, which is identical to the ICSI bureau elected during the IUGG Assembly in Sapporo, 2003, consists of Georg Kaser (President); Gerald Jones (Past President); Peter Jansson (Secretary/Treasurer); Jon Ove Hagen, Kumiko Goto-Azuma, Konrad Steffen (Vice Presidents); Julian Dowdeswell, Charles Fierz, Manfred Lange (Heads of Divisions).

Bureau meetings were held in

Cambridge (UK), November 2003

Paris (UNESCO, F), June 2004

Quebec City (CAN), December 2004

Paris (UNESCO, F), November 2005

Karthus (I), UCCS retreat meeting, June 2006

Geneva (WMO, CH), October 2006

The respective minutes are available at

<http://www.cryosphericciences.org/docs/documents.html>

UCCS web site

UCCS has organized a permanent web site with a new URL:

www.cryosphericciences.org

The web site is hosted at CIRES, Boulder Colorado (where the IUGG site is also hosted) with the kind assistance and support of CIRES Director Dr. Konrad Steffen and associates at CIRES.

Meetings

IAHS 7th Scientific Assembly, Foz de Iguassu, Brazil, 4–9 April 2005

UCCS participated in the IAHS Scientific Assembly 2005 by hosting the Symposium ‘*Contribution from Glaciers and Snow Cover to Runoff from Mountains in Different Climates*’ (S5). The two-day Symposium, organized by Regine Hock assisted by Mark Williams, Edson Ramirez and Gwyn Rees as co-conveners, consisted of 27 oral and 10 poster presentations by participants from 17 countries. In addition, the workshop ‘*Andean Glaciology*’ (W4) was convened by Jefferson Simoes with assistance from Georg Kaser, Gino Casassa, Pierre Ribstein, and Alberto Aristarain. Seventeen papers covering a wide spectrum of Andean glaciology from mass balance studies of small tropical glaciers to the morphology of Patagonian Fjords were discussed.

IAMAS 9th Scientific Assembly, Beijing, China, 2–11 August 2005

UCCS participated in the IAMAS Scientific Assembly 2005 by co-hosting the Joint Symposium ‘*Snow and ice covers feedback to interactions with forest, atmosphere and environment*’ (J1–J3). The first session ‘*Modelling forest snow processes*’ was chaired by Richard Essery and Shufen Sun, the second session ‘*Glacier mass balance and its coupling to atmospheric circulation*’ was chaired by Peter Jansson and Charles Fierz, and the third session ‘*Mountain snow and ice cover*’ was chaired by Manfred Staehli.

Conference on Glacial Sedimentary Processes and Products, University of Wales, Aberystwyth, 23–27 August 2005

The UCCS Division of Glaciers and Ice Sheets Working Group on Debris Transport in Glaciers organised an international symposium on Glacial Sedimentary Processes and Products in Wales 2005. The meeting was well attended; an abstract volume of 139 abstracts is accessible at <http://www.lboro.ac.uk/research/phys-geog/dtg/past.html>

International Symposium on Cryospheric Indicators of Global Climate Change: a joint WCRP–CliC/IGS/UCCS Symposium, Cambridge, England, 21–25 August 2006

The first event organized by the newly formed UCCS was the 'International Symposium on Cryospheric Indicators of Global Climate Change' held in Cambridge, UK, 21–25 August 2006. The Symposium, which was held jointly by UCCS, the International Glaciological Society (IGS), and the WCRP core project Climate and Cryosphere (CliC), attracted a large number of attendees and abstracts. A total of 224 delegates attended the meeting, 292 abstracts were submitted before the symposium, and by the time of the symposium some 111 talks and 105 posters were scheduled; approximately 80 papers were finally submitted for the proceedings volume to be published in the *Annals of Glaciology* 46.

Other activities

Field course on Methods of Glacier Observations, New Delhi, Chhota Shigri Glacier, India, 1–11 August 2003.

The field course 'Methods of Glacier Observations' was organised and held by ICSI and the HKH-Friend Snow and Glacier Group. It was sponsored by UNESCO/IHP, ICSI being the contractor. The French Institut de recherche pour le développement (IRD) supported the course. Preparatory work started with a workshop organised by HKH-FRIEND and ICSI in Kathmandu in March 2001. It was at this workshop that the decision to produce a glacier fieldwork manual was taken; the manual was subsequently prepared and published by ICSI (see publication list below). The field course was held on Chhota Shigri Glacier, Himachal Pradesh, India and attended by 20 trainees from India, Nepal and Bhutan and 7 trainers from ICSI and IRD (2). Local organisation was provided by the Glaciology Group of Jawaharlal Nehru University, New Delhi, India. Since the field course, the Chhota Shigri Glacier has remained the first and only benchmark glacier of a Regional HKH Glacier Mass Balance Network (HKH-GMN).

Field course on Methods of Glacier Observations, La Paz, Bolivia, 1–11 August 2005.

The field course 'Methods of Glacier Observations' was initiated and co-sponsored by UCCS together with the French Institut de recherche pour le développement (IRD/GREATICE), the Instituto de Hidráulica e Hidrología (IHH) of Universidad Mayor de San Andrés, Bolivia, Alliance Française (AF), and IHP/UNESCO. It was held in La Paz and on Glaciar Zongo, Bolivia. Financial support was provided by UNESCO IHP and IRD. The course organized by Dr. Bernard Francou (IRD) and Dr. Edson Ramirez (IHH) attracted 20 participants from Argentina, Bolivia, Brazil, Chile, Ecuador, Mexico, and Peru. Trainers came from Bolivia, France and Norway. The training course was organized to support the development of the Andean Glacier Mass Balance Network. It consisted of lectures on both general methodology of mass balance measurements and on those methodologies suitable for local conditions in the Andes. Results from existing (16 glaciers) and past investigations in the regions were also discussed as well as the important and particular climate glacier relationships. The course also contained field experience on the Zongo Glacier (5060 m a.s.l.). The workshop was concluded by setting goals for collection, analysis, exchange and scientific communication of results from the region through web-media, publications and scientific symposia.

World Glacier Monitoring Service

UCCS, as was the former ICSI, is responsible for the UNESCO/UNEP/FAGS activity of maintaining a glacier monitoring service. The service is currently housed at the University of Zürich. The service collects glacier monitoring data produces both bi-annual and five year reports of glacier data as well as maintains a data bas of glacier-related data.

Division activities

Glacier and Permafrost Hazards in Mountains

The joint UCCS/IPA working group on glacier and permafrost hazards in mountains (GAPHAZ) organized its third scientific session on glacier and permafrost hazards 'Climate change impacts on glaciers, permafrost and related hazards' at the European Geosciences Union (EGU) General Assembly 2006 held in Vienna. Further information and abstracts can be found at <http://www.copernicus.org> (go to EGU, assembly 2006, programme, Cryospheric Sciences, session CR12). A similar session has been proposed also for the EGU'07. A special issue of "Global and Planetary Change" resulting from the EGU'05 session is in press.

Division of Glaciers and Ice Sheets

Glacial debris transport and deposition

The main activity over the past year has been the acquisition of papers arising from the August 2005 conference in Aberystwyth and editing them. The full work was sent to the IAS Special publications editor in August 2006, and publication is expected in mid-2007. A Working Group website has been developed, thanks to the design

skills of the new Work Group Secretary, Dr David Graham of Loughborough University, UK. Please see: <http://www.lboro.ac.uk/research/phys-geog/dtg/index.html>.

Division of Snow and Avalanches

Snow Classification

The activity has progressed and is currently in a phase of revising the classification; the (shape) classification is augmented by a proper characterisation of a snow layer as a whole and not just through the grain types found in that layer. The revised classification will thus include guidelines on how to use other properties such as density, hardness, liquid water content etc. to characterise snow. The final goal of the WG is a revised classification to be presented at the General assembly in Perugia, 2007.

Intercomparison of Forest Snow Process Models (SnowMIP2)

Following on from the Snow Model Intercomparison Project (SnowMIP) for simulations of snowcovers without exposed vegetation, SnowMIP2 was commissioned by ICSI as an intercomparison of models simulating snow processes in forested environments. Following its inception, SnowMIP2 was also adopted as an activity of the GEWEX Land Atmosphere System Study (GLASS) and the WCRP Climate and Cryosphere project (CliC). Extending the original plan for an intercomparison of simulations at three sites, driving and evaluation datasets have been obtained for five sites (in Switzerland, Canada, Japan, the USA and Finland), each with a pair of nearby coniferous forest and open plots. The modelling phase of SnowMIP2 began in June 2006 with the release of finalized instructions and driving, initialization and calibration data. A remarkable response was received, with more than 30 centres in 12 countries registering to participate; the deadline for completion of simulations is December 2006, so it remains to be seen how many models will return results. More information on SnowMIP2 can be obtained from the project website <http://users.aber.ac.uk/rie/SnowMIP2.html>.

Publications

The following are publications produced as an outcome of ICSI/UCCS sponsored activities and workshops/Symposia 2003–2006:

2007

Annals of Glaciology, 46. Proceedings from the International Symposium on Cryospheric Indicators of Global Climate Change.

2006

Casassa, G., W. Haeberli, G. Jones, G. Kaser, P. Ribstein, A. Rivera, C. Schneider (eds). Proceedings of the Symposium on Andean Mass Balance, Valdivia, March 2003, Global and Planetary Change. doi:10.1016/j.gloplacha.2006.

Hock, R., Rees, G., Williams, M., and Ramirez, E. (eds.), 2006. Contribution from Glaciers and Snow to Runoff from the Mountains in Different Climates. *Hydr. Proc.* 20 (10).

2005

IUGG (CCS)-UNEP-UNESCO, 2005. Fluctuation of glaciers 1995-2000 (Vol. VIII).

IUGG (CCS)-UNEP-UNESCO-WMO, 2005. Glacier mass balance bulletin. Bulletin No. 8 (2002-2003).

2004

Pomeroy, J.W. (eds.), 2004. Snow processes and modeling: Recent advances. *J. Hydrometeorol.* 5 (5).

2003

Kaser, G., Fountain, A., and Jansson, P., 2003. A Manual For Monitoring the Mass Balance of Mountain Glaciers. IHP-VI Technical Documents in Hydrology No. 59. UNESCO, Paris.

Lang, H., and Kaser, G., (eds.), 2003. High mountain regions: hydrological processes and cryospheric processes, models and the variability of available water resources; in anticipation of the 'Year of the Mountains 2002'. *J. Hydrol.* 282 (1-4).

IAHS (ICSI)-UNEP-UNESCO-WMO, 2003. Glacier mass balance bulletin. Bulletin No. 7 (2000-2001).

The future

As stated above, UCCS is an interim organisation. The immediate future and the possibilities for the Cryospheric Sciences are highly dependent on the outcome of the IUGG General Assembly and decisions to be taken there by the IUGG council. UCCS activities, however, will continue to develop. Planning for the IUGG General Assembly is in progress. A total of 13 symposia and workshop activities are planned in conjunction with and will be hosted by IAG, IAHS, IAMAS, IAPSO and IAVCEI. UCCS is also collaborating on the plans for a joint IAMAS/IAPSO/UCCS Assembly in Montreal 2009. Workshops are also planned for the 33rd International Geological Congress in Oslo 2008. Both activities will be published in international journals. UCCS will continue to sponsor glacier monitoring efforts in less well investigated areas such as the Himalayas, the South American Andes and the tropical regions. The responsibility of the Cryospheric community to produce and improve data products for climate change assessments will also remain a strong focus for the

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Commission, The World glacier Monitoring Service (WGMS) is one example how such monitoring data is collected and distributed for assessments such as the IPCC.

Peter Jansson, Feb 13, 2007

Secretary/Treasurer



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