

**Annual Report for 2002 of the
INTERNATIONAL UNION OF GEODESY AND GEOPHYSICS (IUGG)**

**Jo Ann Joselyn
Secretary General**

INTRODUCTION

The International Union of Geodesy and Geophysics (IUGG) is a non-governmental, non-profit organization dedicated to advancing scientific knowledge of Earth including its physical components, dynamic behaviors, and environment in space, and to applying the knowledge gained by such studies to the needs of society, such as mineral resources, reduction of the effects of natural hazards and environmental preservation. Established in 1919, IUGG brings together seven semi-autonomous International Associations that address different disciplines of earth science. Through these Associations, IUGG promotes and enables research in the physical, chemical and mathematical studies of the Earth by providing a framework for collaborative research and information exchange. The Union gives particular emphasis to the scientific needs of developing countries, and strives to improve the capacity of all nations of the world to observe and understand the natural physical processes that bear upon their safety and economies.

Studies encompassed by IUGG include the shape of the Earth, its gravitational and magnetic fields, the dynamics of the Earth as a whole and of its component parts, the Earth's internal structure, composition and tectonics, the generation of magmas, volcanism and rock formation, the hydrological cycle including snow and ice, all physical aspects of the oceans, the atmosphere, ionosphere, magnetosphere and solar-terrestrial relations, and analogous problems associated with the Moon and other planets. Union activities embrace studies of the Earth by artificial satellites and other techniques for deploying instruments at high altitude.

The IUGG has initiated and vigorously supported collaborative efforts that have led to highly productive world-wide interdisciplinary research programs, such as the International Geophysical Year (1957-58), the Upper Mantle Project (1964-70), the Geodynamics Project (1972-79), the Global Atmospheric Research Programme (1970-80) and the International Lithosphere Programme (1981-). The Union is a partner with other Unions of ICSU in Inter-Union Commissions, such as the Scientific Committee on the Lithosphere, and co-operates with international agencies such as the World Meteorological Organization and UNESCO to achieve common goals.

The official languages of the Union are English and French; the website address is <http://www.IUGG.org>.

MEMBERSHIP

By their very nature, geodetic and geophysical studies require a high degree of international co-operation as well as effective central co-ordination. During 2002, the Union had 66 Member Adhering Bodies. However, several were in serious arrears of payment and are therefore in observer status. Three Adhering Bodies had Associate Member status. These Adhering Bodies do not pay dues and may not participate in Council meetings, vote, or hold office. However, they do have active National Committees and we enjoy good communication with them. New Member Country applications are being actively encouraged.

STRUCTURE

Responsibility for directing the Union's affairs is vested in the IUGG Council by the Statutes and Bylaws. The IUGG Council consists of the Council Delegates, who are designated by the adhering body of their respective countries as their representatives for

each Council meeting. A Bureau, an Executive Committee and a Finance Committee administer the IUGG between Council meetings. The Executive Committee has the particular responsibility of overseeing the scientific programmes of the Union. There is no permanent Secretariat; the National Committee of the Secretary General is expected to provide administrative support for Union affairs. The officers of IUGG are listed on the IUGG web site: <http://www.iugg.org>.

The Union brings together seven semi-autonomous Associations, each responsible for a specific range of topics or themes within the overall scope of the Union's activities and each with a sub-structure. The Associations convene their own general assemblies and sponsor particular symposia, often in partnership with one another. Each is managed by an Executive Committee elected during their Assemblies. Within its own discipline each Association is responsible for determining its own program of investigations and for supporting the activities of its own component parts. All earth scientists, worldwide, are eligible to participate in IUGG and Association assemblies, workshops, and symposia.

The seven International Associations are listed below, and short reports on their 2002 activities are included here. Additional information about each Association is given on their web sites, which can be accessed from the IUGG web site.

- **International Association of Geodesy (IAG/AIG)**
- **International Association of Geomagnetism and Aeronomy (IAGA/AIGA)**
- **International Association of Hydrological Sciences (IAHS/AIHS)**
- **International Association of Meteorology and Atmospheric Sciences (IAMAS/AIMSA)**
- **International Association for the Physical Sciences of the Ocean (IAPSO/AISPO)**
- **International Association of Seismology and Physics of the Earth's Interior (IASPEI/AISPIT)**
- **International Association of Volcanology and Chemistry of the Earth's Interior (IAVCEI/AIVCIT)**

Inter-Association Commissions, Committees, and Working Groups

Owing to the interactive nature of the subject fields managed by the Union's Associations, a number of Inter-Association Commissions have been established that promote the study of particular interdisciplinary problems.

The Commission on Geophysical Risk and Sustainability (GeoRisk) held their inaugural meeting and a Workshop on Science for Risk Reduction and Sustainable Development of Society in Budapest, Hungary, in June 2002. Of special note, they endorsed the Budapest Manifesto on Risk Science and Sustainability, posted at <http://www.iugg.org/budapest.pdf>. The Chair of the Commission worked with the Chair of the ICSU Committee on Disaster Reduction to prepare an ICSU position paper on natural disaster reduction entitled "Safer Sustainable Communities: making better decisions about risk." This paper is available on the IUGG web site and also on the ICSU web site.

The Commission on Mathematical Geophysics held their 24th scientific meeting "Pattern and Form in Earth Dynamics." in Torino, Italy, from 17-21 June, 2002. The complete program of the meeting is available at <http://www.icq.to.infn.it>.

The Committee on the Study of Earth's Deep Interior (SEDI) held their 8th Symposium in Granlibakken, Lake Tahoe, California, from July 22-26, 2002. There will be a special issue of *Physics of the Earth and Planetary Interiors* originating from presentations at the meeting.

One new inter-Association body was formed in 2002: an all-Associations Working Group on Geophysics: The Future. This Working Group is composed of representative young scientists from each of the Associations. All Inter-Associations bodies and their leadership are listed on the IUGG web page.

General Assemblies Of The Union

General Assemblies have been held since 1922 and, since 1963, at 4-year intervals. These assemblies provide an extraordinary opportunity for earth scientists from around the world to gather and exchange expertise, research data, and results. The XXIII General Assembly will be held in Sapporo, Japan, June 30 – July 11, 2003. Along with a full scientific programme arranged by the IUGG Associations, in Sapporo there will be a series of six, half-day symposia with the theme: "State of the Planet: Frontiers and Challenges." Invited speakers will explore topics ranging from chaos to predictability, and geophysical measurements to geophysical risk. An important feature of IUGG General Assemblies is the opportunity for inter-Association symposia. 60 such symposia and workshops have been arranged in addition to the regular topical Association programmes.

The IUGG Council meets during General Assemblies and acts to elect officers, adopt the quadrennial budget, agree on policies governing the Union, and to formulate research programs requiring international participation and coordination. The scientific results of programs in progress are discussed at the numerous symposia, Commission and Working Group meetings and other gatherings of scientists that are held during these assemblies.

Other Scientific Meetings

Each Association organizes its own scientific assembly in between general assemblies of the Union. At these important venues, topical scientific progress is reported and Association business is conducted. Associations sometimes meet jointly with the purpose of promoting interdisciplinary science. During 2001, approximately 3220 scientists attended the Association Assemblies held in Hungary, Vietnam, Austria, The Netherlands and Argentina.

The numerous topical and regional symposia and workshops organized on other occasions by the Associations, together with the general assemblies, provide opportunity for geodesists and geophysicists from most of the countries of the world to discuss their respective methodologies, results and hypotheses and to plan collaborative research projects. The symposia, often held in non-urban locales, are intended to be particularly helpful to the younger scientists from the developing countries of the world.

Publications

The IUGG publishes an annual Yearbook, in which the organizational structure and officers of each body within the Union are listed. The Yearbook is printed and mailed to all Members Countries and relevant persons and organizations, and is posted on the IUGG web site. The Union distributes a short electronic newsletter (the IUGG E-Journal) monthly to Adhering Bodies and National Committees. Each Association manages their own publications.

ACTIVITIES IN 2002

Administration

The IUGG Bureau met August 31- September 1, 2002, in Cape Town South Africa. Two members of the Finance Committee participated in discussions on September 2. Business included Membership issues, preparations for the 2003 General Assembly, and most especially, the proposed budget for the next Quadrennium. A summary of the minutes of the meeting is posted on the IUGG web site.

IUGG Grants

In 2002, IUGG awarded \$15,000 to support six scientific meetings proposed by the Associations and inter-Associations Commissions. This money was used primarily to assist attendance of young and underrepresented scientists from economically disadvantaged countries.

Also, in 2002, IUGG awarded \$50,000 to support five interdisciplinary initiatives proposed by the Associations and inter-Associations Commissions. These initiatives, besides being interdisciplinary, must also benefit developing countries.

ICSU

IUGG participated in the ICSU General Assembly in Rio de Janeiro, Brazil, on September 25-28, 2002. IUGG also provided input for the ISTC document for the World Summit on Sustainable Development and assisted to provide a statement on Water Systems Including Quality (with SCOWAR), and a Statement on "Safer Sustainable Communities: making better decisions about risk." (with the ICSU Committee on Disaster Reduction).

ICSU Grants

In 2002 IUGG received one Category II award of \$12,000 to the International Association of Geomagnetism and Aeronomy (IAGA), to support the INTERMAGNET Real-Time Global Digital Magnetic Observatory Network. The Grant was used to train scientists and support staff at geomagnetic observatories in developing countries in the modern methods and technologies of geomagnetic observation.

Activities of the Associations

The following reports, prepared by the Secretaries General of the Associations have been edited for the sake of brevity. These reports illustrate the impressive range of activities within each Association as well as their dedication to supporting science within developing countries. Each Association has an internet site where much more information can be found.

International Association of Geodesy (IAG)

<http://www.gfy.ku.dk/~iag>

(1) Central Bureau activities.

The Bureau publishes a bi-monthly newsletter, which is printed in the Journal of Geodesy. This is with the Journal distributed to all national representatives and the members of the IAG Executive Committee. The newsletter includes a listing of all geodetic publications (provided by the IAG Bibliographic Service). It also includes updates to the Geodesists Handbook, book reviews and meeting reports. The central bureau maintains the IAG home-page, and updates a database of addresses.

(2) The Executive Committee (EC).

The EC had one meeting in Nice, France, April 26-27, where the main items were the preparation of the IUGG/IAG General Assembly 2003 and the re-structuring of IAG. The report from a planning group with the task of preparing the implementation of the new structure was discussed and approved. The establishment of an Intercommission Committee on Theory was discussed, and it is expected to be approved by the Council in 2003. A planning group for a new IAG project, IGGOS, with G.Beutler as president was approved. It was also decided to establish a planning group for an inter-commission committee on geodetic standards.

(3) Symposia and meetings.

Int. Congress on Geodesy and Cartography, Caracas Venezuela, March 18-22, 2002.
Second Symposium on Geodesy for Geotechnical and Structural Engineering, Berlin, Germany, May 21-24,
2002 EUREF Symposium, Ponta Delgada, Azores Island, Portugal, June 5-8, 2002.
V Hotine-Marussi Symposium, Matera, Italy, June 10-14, 2002.
Eleventh General Assembly of the Wegner Project, Athens, Greece, June 12-14, 2002.
International Workshop on Satellite Altimetry for Geodesy, Geophysics and Oceanography, September 8-13, 2002, Wuhan, China.
3rd. Meeting of the International Gravity and Geoid Commission, Thessaloniki, Greece, Aug. 26-30, 2002.
Celebrating 50 Years of Geodetic Science at Ohio State University 1-5 October 2002, Ohio, USA

IAG International Symposium On Recent Crustal Deformations In South America And Surrounding Areas, and VII International Congress of Earth Sciences 2002 October 21 - 25 , 2002 Santiago, Chile

(4) Educational Activities:

School on the Determination and use of the Geoid was organized by the International Geoid Service in collaboration with the University of Thessaloniki from August 30 to Sep. 5.

Joint BGI/ICET Summer School 2002 on Terrestrial gravity data acquisition techniques, Louvain-la-Neuve, Belgium, Sept. 4 - 1, 2002.

Workshop on vertical crustal motion and sea-level change. Toulouse, France, Sept. 17-19, 2002. (Organized jointly with IAPSO, and sponsored by IUGG).

(5) Developing Countries.

The possibilities for establishing a geodetic reference system for Africa is being investigated on the initiative of IAG Commission X. An application for the support of a pilot project was submitted to ICSU but not funded.

Considerable efforts were made in the last two years to improve the quality of the fundamental station networks and the gravity densification in South America, with special emphasis to Argentina, Brazil, Chile, Ecuador and Paraguay. Important work has been done in the framework of SIRGAS (Sistema de Referencia Geocentrico para Las Americas), which has received financial support of its work from IUGG

IAG has, using the so-called IAG Fund and special funds from IUGG, sponsored the participation of a number of scientists from developing countries at IAG sponsored meetings and workshops.

C.C.Tscherning
IAG Secretary General

International Association of Geomagnetism and Aeronomy (IAGA)

<http://www.IUGG.org/IAGA>

Following the IAGA-IASPEI Joint Scientific Assembly held in Hanoi, Vietnam, in 2001, much of the Association's work in 2002 was devoted to preparations for the XXIII IUGG General Assembly, to be held in Sapporo, Japan in 2003. At the Hanoi Assembly, Herbert Kroehl (USA) retired from the position of IAGA Secretary-General and Bengt Hultqvist (Sweden) was elected as his successor. The process of handing over the Secretary-General's responsibilities was carried out during the early months of 2002.

Preparations for the IUGG 2003 General Assembly

The IAGA scientific community is involved in the planning and preparations for the IAGA scientific programme at the Sapporo IUGG General Assembly. A total of 52 IAGA-led symposia are in the programme. IAGA will also contribute to a number of Inter-Association symposia.

Planning for the IAGA 2005 Scientific Assembly

The President and Secretary-General visited Toulouse to meet and to provide information and advice to members the Local Organising Committee. The facilities offered for the meeting, which will include the participation of the International Commission on the Middle Atmosphere, are excellent.

IAGA-sponsored workshops and meetings

In 2002 IAGA sponsored a number of scientific meetings within its fields of science. IAGA was the main sponsor of the following workshops and topical meetings:

- The 10th IAGA Workshop on Geomagnetic Observatory Instruments Data Acquisition and Processing, at Hermanus Geomagnetic Observatory, South Africa, on 15-24 April 2002;
- The 16th Induction Workshop in Santa Fe, USA, on 16-22 June 2002;
- Mesospheric Clouds, in Perth, Scotland, on 19-23 August 2002;

IAGA also co-sponsored the 34th COSPAR Assembly in Houston, USA, on 10-19 October 2002, and will be the main sponsor of a workshop on 'Solar Forcing of the Middle Atmosphere' to be held in Prague on 15-18 September 2003.

Executive Committee meeting

The Executive Committee (EC) of IAGA met in Prague on 12-13 September 2002 at the invitation of Jan Lastovicka, Vice-President of IAGA. At this meeting the EC acted on a number of matters:

- EC member Professor Samuel Ogunade sadly, had died unexpectedly on 21 December 2001. Dr. B. R. Arora, leader of the Interdivisional Commission on Developing Countries, was appointed to take Professor Ogunade's place on the EC until the end of the 2003 IUGG General Assembly.
- The IAGA accounts for 1999, 2000 and 2001, which had been submitted to and accepted by IUGG, were noted.
- The IAGA budgets for 2002 and 2003 proposed by the Secretary-General were approved.
- Matters raised by the IAGA Financial Committee at the Hanoi Assembly in 2001 were considered and a response agreed.
- It was agreed to continue IAGA's financial support for EMSEV (the IAGA/IASPEI/IAVCEI sponsored Inter-Association Working Group on Electric and Magnetic Studies of Earthquakes and Volcanoes) into 2003.
- A report of plans for the IAGA Scientific Assembly in Toulouse in 2005 was received.
- The format and content of a new IAGA brochure were discussed and agreed, and funds were reserved for its publication.
- It was agreed that the IAGA Division Leaders should be encouraged to propose topics for new IAGA Guides.
- It was agreed to encourage nominations for the IAGA Long Service Medal, and the case for establishing a new IAGA medal was discussed.
- It was concluded, following consideration of a report from Division IV concerning an initiative by the ISO organisation to nominate a standard magnetospheric model, that although IAGA should be involved in defining specifications for and in evaluating models, it would not be appropriate to endorse a specific model as a standard.
- It was agreed to re-launch the IAGA web site with address www.iugg.org/IAGA

Other activities

ICSU provided a grant of USD 12000 for the INTERMAGNET programme in 2002. This enabled INTERMAGNET to continue to promote modernisation of instrumentation and of practice in data collection and dissemination in the global magnetic observatory network, and to provide training to observatory workers from developing countries.

An application made through IAGA's Division V (Chair, Vladimir Papitashvili) to ICSU to support a project 'Rescue of Old Analogue Magnetograms by Converting to Digital Images' was successful. A grant of USD 35000 was awarded for 2003.

Under its Inter-Association Initiatives scheme, IUGG provided funds for the project 'Detailed Study on the Active Tectonics of Afro-Arabian Rift Region using Palaeomagnetic and Potential Field Data and its Incorporation with Seismic Activity', led by Attia Abdelkader El-Sayed that had been supported by IAGA and IASPEI.

Bengt Hultqvist
IAGA Secretary-General

International Association of Hydrological Sciences (IAHS)

<http://www.cig.enscm.fr/~iahs>

The Hydrology 2020 Working Group, launched in Maastricht was inaugurated in Edinburgh (23-25 January 2002), where its objectives and working methods were defined precisely. UNESCO has asked this Group to plan the Kovacs Symposium held in Paris (13-15 June 2002) just before the IHP Intergovernmental Council. The group will continue this year to work by e-mail and will have its next meeting in Sapporo, where a provisional report will be presented.

The Prediction of Ungauged Basins (PUBs) Working Group was also created in Maastricht. Its objective is to promote the development of science and technology to provide hydrological data where the ground based observations are needed but missing. PUBs consists of theoretical hydrology, remote sensing, in situ observations and modelling of the quantity and quality of hydrological phenomena, together with capacity building for the people in need so that they can really use the advanced science and technology and predict the hydrological phenomena for the basins where they are concerned. PUBs connects existing programmes inside and outside IAHS and provides a forum, network and the framework for integration. Two important PUB meetings were held in 2002. The first one was in Kofu-Japan (28-29 March 2002), and the second one, the official launching of the IAHS PUB initiative, in Brasilia-Brazil (20-22 November 2002).

In 2002, more than 50 scientific events were organized or sponsored by IAHS and its Commissions. Among them are the following: International Conference on Flood Estimation (Berne, Switzerland, 6-8 March 2002), FRIEND Conference: Bridging the Gap between Research and Practice (Cape Town, South Africa, 18-22 March 2002), ICCORES Workshop on Ecological, Sociological and Economic Implications of Sediment Management (Paestun, Italy, 8-10 April 2002), Kovacs Symposium (Paris, France, 13-15 June 2002), MODEL CARE'2002 : Conference on Calibration and Reliability in Groundwater Modelling (Prague, Czech Republic, 17-20 June 2002), Erosion and sediment transport measurement : Technological and methodological advances (Oslo, Norway, 19-21 June 2002), HYDROINFORMATICS 2002 (Cardiff , Wales, UK, 1-5 July 2002), Third Celtic Hydrology Colloquium Pointing the Way to Quality (Galway, Ireland, 8-10 July 2002), GEWEX-IAHS Workshop on the Application of GEWEX Scientific Research to Water Resources Management (Dresden, Germany, 24 July 2002), XIX Congreso Nacional del Agua (Villa Carlos Paz, Argentina, 13-16 August 2002), International Symposium on the structure, function and management implications of fluvial sedimentary systems (Alice Springs, Northern Territory, Australia, 2-6 September 2002), XXIth Conference of the Danubian countries on the hydrological forecasting and hydrological bases of water management (Bucharest, Romania, 2-6 September 2002), The Water in the Mediterranean Basin "Resources and Sustainable development" (Monastir, Tunisia, 10-12 October 2002), Paleofloods, Historical Data and Climatic Variability : Applications in Flood Risk Assessment (Barcelona, Spain, 16-19 October 2002), Preventing and Fighting Hydrological Disasters (Timisoara, Romania, 21-22 November 2002), On Snow Hydrology in Mediterranean Regions (Beirut, Lebanon, 16-17 December 2002). IAHS was also represented at the 24th IUGG conference on Mathematical Geophysics held in Torino (Italy), 17-21 June 2002.

In 2002 IAHS Press published six issues of the Hydrological Science Journal, plus a special issue "Towards Integrated Water Resources Management for Sustainable Development". Three issues of the IAHS Newsletter were also published and widely disseminated free of charge, both as hardcopies and on the Web. IAHS Press also published six "Red Books."

The Extremes of the Extremes: Extraordinary Floods, edited by Árni Snorasson, Helga P. Finnsdóttir & Marshall E. Moss, IAHS Publication no. 271 (published March 2002)

Integrated Water Resources Management, edited by Miguel A. Mariño & Slobodan P. Simonovic, IAHS Publication no. 272 (published December 2001)

Agricultural Effects on Ground and Surface Waters: Research at the Edge of Science and Society, edited by Joop Steenvoorden, Frans Claessen & Jaap Willems, IAHS Publication no. 273 (published April 2002)

FRIEND 2000 , Regional Hydrology: Bridging the Gap between Research and Practice, edited by Henny A. J. van Lanen & Siegfried Demuth, co-editors: E. Servat, R. Ibbitt, C. Prudhomme, M. F. Bari, D. Hughes, M. del Carmen Llasat & S. H. Mkhani, IAHS Publication no. 274 (published March 2002)

Groundwater Quality: Natural and Enhanced Restoration of Groundwater Pollution, edited by Steven F. Thornton & Sascha E. Oswald, IAHS Publication no. 275 (published August 2002)

The Structure, Function and Management Implications of Fluvial Sedimentary Systems, edited by Fiona J. Dyer, Martin C. Thoms & Jon M. Olley, IAHS Publication no. 276 (published August 2002).

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. This task was supported by an ICSU block grant of \$5000.

Our close cooperation with UNESCO and WMO has been continued. IAHS participated to the XVth session of the IHP intergovernmental council (UNESCO, Paris, France, 17-22 June 2002) and to the meeting of the WMO-Chy (Commission of Hydrology) Advisory Working Group (Geneva, Switzerland, 9-13 December 2002). IAHS is involved in the preparation of the next editions of the WMO "Guide of hydrological practices" and of the UNESCO-WMO "International Glossary of Hydrology".

IAHS, together with IUGG, was represented at the Kick-Off Meeting (Kyoto, June 2001) of 3rd World Water Forum to be held in Kyoto, Shiga and Osaka Japan in March 2003 where they will have a significant presence. Finally IAHS actively contributed to the Preparation of the Sapporo XXIIIrd IUGG General Assembly, where we will organize alone 4 symposia and 8 workshops and 20 events together with other associations.

*P. Hubert
IAHS Secretary General*

International Association of Meteorology and Atmospheric Sciences (IAMAS) <http://IAMAS.org>

In terms of events, 2002 was slow because IAMAS and its ten Commissions are preparing for the upcoming conferences. The Commission for Atmospheric Electricity cosponsored a session at the 34th COSPAR Scientific Assembly in October 2002 on "Changing Middle Atmosphere Electrodynamical Phenomena", and the Commission for Polar Meteorology was involved in a workshop on an improved data base of Antarctic climate data. IAMAS participated in the inaugural meeting of the Commission on Geophysical Risk and sustainability (GeoRisk) in June in Budapest.

The planning and finalizing of the originally 47 IAMAS-controlled scientific symposia at the IUGG Assembly in Sapporo, June 30 to July 11, 2003, continued on the basis of the outline prepared at the IAMAS 2001 Assembly in Innsbruck. Two Japan-specific events were planned: the "Special Nakaya-Magono Celebration: the growth of ice crystals and snow", honoring two science giants from the University of Hokkaido, Sapporo, and the "Sushi Lunch Lecture Series". This series is open to all IUGG2003 attendees, addresses key issues related to the atmosphere and related geophysical fields while providing a relaxed learning atmosphere whereby listeners can eat Sushi or a sandwich, have a pop and be entertained by top speakers.

Attention needs to be paid world-wide to an issue as far-reaching as the effects of the ozone hole. New crucial patterns have come to light in the atmospheric sciences, where an overabundance of Cloud Condensation Nuclei, CCN, (>800 cm³) from the burning of biomass is seen to suppress the rain formation process. Satellites show how such smoke clouds are crossing continents and subcontinents. The effect is caused by the burning of fields after harvest (and resulting forest fires), and the ineffective use of coal, wood and dung for cooking and heating. The countries that are hit directly, provide the causing conditions themselves. Unfortunately, these are mostly developing countries. Policies and

strategies need to be designed on how to address these issues. IUGG needs to be not only involved but leading!

The scientific community needs a wake up call to finally realize that precipitation, the big unknown in climate models and summer weather forecasting, needs more attention! The IAMAS Secretary General started the political battle in spring 2002 at the Executive Council Meeting of the World Meteorological Organization where he asked for an opening of minds in the Intergovernmental Climate Change Program, ICCP.

The financial accounting for 2002 showed the best ever financial result. Top organization and the great atmosphere of the 2001 IAMAS Assembly in Innsbruck made this meeting the most enjoyable event, but financial accounting, finalized in 2002, is beyond dreams for IAMAS because all those funds are available to support scientists from developing and needy countries and allow them to attend the IAMAS meetings.

R. List
IAMAS Secretary General

International Association for the Physical Sciences of the Ocean (IAPSO)

<http://www.olympus.net/IAPSO/>

IAPSO activities in 2002 included preparation of the final IAPSO Scientific Program for the 2003 IUGG General Assembly, appointment of convenors, and solicitation of abstracts. Initial planning was carried out for a Joint IAPSO/IABO Assembly in Perugia, Italy in September 2005.

A questionnaire was prepared and information was solicited from all National Correspondents relating to the future of IAPSO. A special Task Committee was formed and that committee met in Cape Town in October to review input and determine directions.

A new Working Group on Deep Ocean Mixing was formed jointly between IAPSO and ICSU's Scientific Committee on Oceanic Research (SCOR). An initial meeting of that working group is planned at the IUGG General Assembly in Sapporo. Initial action was undertaken to restructure the IAPSO Commission on Sea Ice to provide a broader scope. That action is continuing. Other Commissions were reviewed.

Activities of the IAPSO/IAHS Joint Commission on Groundwater-Seawater Interactions have continued. Action also progressed on the new Inter-Association IUGG Commission on GeoRisk. Activities of the Permanent Service on Mean Sea Level (sponsored by IAPSO), and IAPSO's Standard Sea Water Service (operated by Ocean Scientific International) continued in 2002. IAPSO's Commission on Sea Level and Tides operates in cooperation with the PSMSL.

Maintenance and updating of the IAPSO Web page continued. Links to university, laboratory and institute Web pages were added or revised. The abstract books from the 2001 Joint Assembly were added. IAPSO has found that Assembly abstract books are heavily accessed for significant periods of time following the Assemblies. The IAPSO Secretariat continues to respond to various inquiries for information.

F. Camfield
IAPSO Secretary General

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

[http:// www.iaspei.org](http://www.iaspei.org)

Scientific Meetings

ASC2002

ASC2002 consisted of: (1) Fourth General Assembly of Asian Seismological Commission (24 November 2002); (2) Symposium on Seismology, Earthquake Hazard Assessment and Risk Management (24 - 26 November 2002); and Pre-Symposium Training Course on Earthquake Vulnerability Reduction for Cities (18 - 22 November 2002). The Symposium ASC2002 was held from 24 - 26 November 2002, at Hyatt Regency Hotel, Kathmandu. About 150 seismologists, geologists, earthquake engineers, civil engineers, disaster managers, etc. from 22 countries participated.

The National Society for Earthquake Technology-Nepal (NSET) was the main organizer. The co-organizer was the Asian Disaster Preparedness Center, Bangkok, Thailand (ADPC), and the sponsors were Ministry of Science and Technology (MOST), HMG/Nepal, the International Association of Seismology and Physics of the Earth's Interior (IASPEI), the Asian Seismological Commission (ASC), and B.P. Koirala India-Nepal Foundation. A Local Organizing Committee, consisting of representatives of government agencies, academic institutions and the private sector provided guidance to the Convener in aspects of the conference. An International Advisory Committee, consisting of reputed scientists from different countries, assisted by reviewing the submitted abstracts. Many of the International Advisers attended the conference.

Dr. Upendra Devkota, Minister for Health and Science and Technology was the Chief Guest at the Inauguration Ceremony. Eminent personalities such as: Prof. Krasae Chanawongse, Adviser to the Prime Minister and Minister of Health and Education, Royal Thai Government, and Chairman, Board of Trustee, ADPC; Prof. Serguei Balassanian, President, ASC; Prof. Zhu Chuanzhen, Secretary General, ASC; and Prof. Wu Zhongliang, Executive Member, IASPEI, also addressed the participants and guests at the Inauguration.

This conference had three parallel sessions broadly classified into Science, Engineering, and Implementation of Earthquake Risk Management Actions. A total of 75 presentations were made, including 47 papers in science of seismology, 13 in earthquake engineering, and 15 in earthquake risk management. 8 invited presentations (keynotes); a Poster Session and a Shake Table Demonstration also took place. The conference underscored the need to use the science of seismology and geology in reducing the impact of earthquakes for which it was necessary to establish and strengthen dialogue and sharing of knowledge/vision among scientists, earthquake engineers, disaster risk reduction specialists, policy-makers and administrators.

The Council Meeting of ASC was also held. The Council concluded that the ASC2002 was organized exceptionally well, at high standards and thanked NSET, the Local Organizing Committee and NSET. It was decided that the Fifth General Assembly of ASC would be held in Armenia in 2004. The Council also endorsed the proposal made by the President, Prof. Balassanian, to put efforts on project implementation. The proposed and endorsed project proposals pertained to 1) Earthquake Hazard Assessment (regional/subregional level), 2) Earthquake Risk Assessment (regional/subregional level), and 3) Earthquake Vulnerability Reduction (national/site level). Researches on Earthquake Prognosis were the fourth item of the proposal.

NSET plans to bring out the ASC2002 Proceedings in the middle of the year 2003. At the suggestion of Prof. Balassanian, a two-stage publication strategy has been adopted. First, NSET will collect all papers and subject to international review. The recommended papers will be published in a Proceedings volume to be brought out by NSET. Subsequently, a reputable publisher, subject to conditions agreeable to NSET and ASC, may publish selected papers.

Workshop/Summer School

The workshop/school on Structure and Tectonics of Convergent Plate Margins was held between July 1-6, 2002 at Castle of Zahradky, North Bohemia, Czech Republic. It was organised jointly by the Geophysical Institute of the Academy of Sciences of the Czech Republic (GI) and the Faculty of Mathematics and Physics of the Charles University (FMP) under the auspices of International Association of Seismology and Physics of the Earth Interior (IASPEI). The workshop/school was aimed at exchange of the latest results of research related to dynamics of active convergent margins, namely to the process of subduction, and at providing MSc and PhD students modern views and summaries on this problem. The topics presented and discussed at the workshop/school were as follows:

- onset and cyclicity of subduction
- subduction, seismicity pattern and volcanism
- slabs imaged by seismic tomography

- deep earthquakes
- constraints on slab dynamics from focal mechanism studies
- characteristics of individual convergent regions
- slab rheology, phase transforms, numerical modelling of the process of subduction

Oral presentations were committed solely to the invited lecturers. The length of each presentation was 60 minutes. Poster sessions (usually 2 sessions, an hour each, took place every day) were offered namely to students and post-doc participants; all together, 24 posters were presented.

The workshop/summer school was attended by 62 participants from the USA, Switzerland, Germany, Japan, France, Poland, Netherlands, Italy, Belgium, Canada, Great Britain, and the Czech Republic); 20 of them were students (17 foreign and 3 Czech). Travel expenses to and from the Czech Republic were covered for 13 invited lecturers; accommodation and full board to 14 lecturers.

Elsevier publishing house offered a special issue of one of its journals, *Physics of the Earth and Planetary Interiors*, for contributions presented at the meeting. The guest editors of the special issue are B. Engdahl, O. Cadek and A. Spicak. The volume should be issued by the end of 2003.

ESC Training Course

The ESC, with the financial support of IASPEI, has sponsored four training courses for Young Seismologists in order to expose them to data acquisition, processing techniques, empirical evaluation of site effects and earthquake location, and their uncertainties, under the tutorship of many established seismologists throughout Europe and the World. The recent training course in Genoa, following the now established format, took place in the three days before the General Assembly and focused on analysis of digital broadband data. Seventeen students from eight countries attended the course. The primary aim of the Young Seismologist Training Course in Genoa was to provide some basic requirements on data analysis and seismogram interpretation from single stations, seismic networks and arrays using digital broadband data. It was clear that the students had a varied level of experience and background knowledge, a situation that is always difficult to cater to for many of the students had not analysed digital broadband data. Despite this, and because of the expertise of the lecturers, significant advances in understanding and technical ability were achieved for all students. Following receipt of a positive report on the training course, the ESC Bureau commended the lecturers and organisers on behalf of ESC members and endorsed a proposal to hold a fifth training course before the next General Assembly in Potsdam, September, 2004.

ASC2002 Training Course

30 participants (engineers, geologists, emergency response personnel, professors) attended the training program on Earthquake Vulnerability Reduction for Cities (EVRC-2). This was the second of such training programs. The first EVRC-1 was organized in Kathmandu in May 2002 by ADPC in collaboration with NSET, WSSI and EMI. This time the EVRC-2 was organized by NSET in collaboration with ADPC, ITC (Netherlands), and the International Center for Integrated Mountain Development (ICIMOD). Of the 30 participants, 13 were Nepalese and the rest came from Bhutan, China, India, Iran, Malaysia, Pakistan, Philippines, and Thailand. These were senior professionals, leaders of their profession and organizations in their respective countries. NSET supported the participation of attendees from Iran, Pakistan, India, and Nepal. Most of the attendees supported by NSET also participated in the ASC2002 Symposium.

Activities Involving Developing Countries

Seismic Hazard Assessment in Afro-Arab Region and Risk Estimation in Selected Large Cities

The northern African seismological group "NASG" has achieved many goals this year. As the IASPEI support was not available until October 2002, most of the activity has

been funded by ICTP. In general, the following represents the main steps achieved by our group.

A. Bilateral visits

A considerable number of visits have been supported this year to force the co-operation between scientists in the region. The center of this activity was located at Geology Department Mansoura University, Egypt. To facilitate the work the team of Mansoura University has requested some software for GIS, graphics in addition to scientific programmers. Recently we have also ordered a new workstation to fulfill the needs of the member. Some of visiting scientist has requested some books and recently we are trying to get online journals for the net group (still in progress). The output of the bilateral visits included two papers published in national and international Journals. The members have worked together to collect and construct a database. Recently the NASG groups are trying to make these data, as well as the results of the member's work accessible. See <http://www.ictp.trieste.it/~attia/working-group.html>

B. Meeting (Algeria)

About 90 scientists from the northern African countries came together in Algeria in the period (8-10 October 2002). The main sponsor of this meeting was IGCP457 and Bab el Zoar University. However, NASG has also contributed to cover the traveling expensive to three scientists. As a result of this meeting a link has been established between the IGCP457 UNESCO project and NASG. Recently, the two groups are trying to involve in the Mediterranean Activity program of EC "Mediterranean Dialogue".

C. Cairo-UNESCO meeting "Training Course on Seismic Risk Reduction: Learning to Design Seismic Codes"

The financial support for this meeting became available in October 2002. The group has collected and homogenized a catalogue for each country in the Northern Africa. Individual studies have been carried to estimate the attenuation relationship, physical properties of the crustal structure. All these collected data have been used to compute the seismic hazard for frequencies 1 to 10Hz. As emphasized in this meeting it became an urgent need to have common hazard maps and to enforce both public and governmental levels to apply building codes in the recent construction. In December 2002 Prof. Benouar from Algeria and Prof. Suleimain from Libya will visit Mansoura to merge the collected catalogues in order to generate a homogenized map for the area that are based on deterministic approach. We are planning to intensify our research cooperation through more visits to the participating countries organize one course on seismology and building codes for fifteen days in Mansoura University (Egypt).

Seismic Hazard and Risk Assessment in Asia

Asia is the most populated continent of the Earth, and has a high level of seismic hazard. Earthquakes are the major threat to the social and economic development of many developing nations in Asia. Death tolls from the recent earthquakes in urban areas have been the largest all over the world. The rapid growth of the Asian population in earthquake prone urban areas will make such disasters more deadly and more frequent.

With the increasing scale of disasters projected for the 21st century by the experts, the ASC should play an important role as a catalyst and coordinator for the Earthquake Hazard Assessment and Risk Management Strategy developed and implemented in Asia and Pacific for prevention of the earthquake hazards impact on population, vital infrastructure and property.

The ASC should promote the understanding that Earthquake Hazard Assessment and Risk Management in Asia and Pacific are immediately linked to the ability of the country to function appropriately for the guarantee of business continuity and hence economic growth and the potential of any Asian country to prosper and develop.

To promote this critical understanding for benefit and safety in particular for the most vulnerable developing countries the ASC should undertake steps by way of the ASC pilot

projects. Considering the existing background of earthquake hazard assessment and risk management in Asia and Pacific, the ASC pilot project "Seismic Hazard and Risk Assessment in Asia" for the Asian and Pacific countries should be focused on the following issues:

- Further improvement of the seismic hazard evaluation in developing countries.
- Seismic risk assessment: regional and local contexts.
- Seismic risk reduction in the selected most vulnerable urban areas.
- Current Seismic Hazard Assessment for early warning and notification.

The implementation of the ASC pilot projects will promote the ASC further capacity building through networking and cooperation.

Publications

International Handbook of Earthquake and Engineering Seismology (Part A)

The first of a two-volume comprehensive review of earthquake and engineering seismology is now available. This state-of-the-art work, edited by W.H.K. Lee, H. Kanamori, P.C. Jennings, and C. Kisslinger, fulfills an IASPEI ambition to create a useful reference for earthquake and engineering seismologists, as well as earthquake engineers, geologists, and geophysicists. Part A, which includes a CD-ROM, features 56 full-length chapters detailing the history of seismology, theoretical and observational seismology, earthquake geology and mechanics, and the Earth's structure. Part B will be published in Spring 2003, and features 34 chapters detailing strong-motion seismology, selected topics in earthquake engineering, earthquake prediction and hazards mitigation, and miscellaneous topics, including over 50 national reports and 2 CD-ROMs. Each volume contains about 1,000 pages. For more information, please consult the website <http://www.academicpress.com/quake>

IASPEI Manual of Seismological Observatory Practice

The new Manual, edited by Peter Bormann, outlines in a very consistent way the social and scientific goals as well as the scope, technology, methodology and basic procedures of observatory seismology. It provides the essential scientific and technical fundamentals, reveals their inter-relationship and motivates observatory personnel to do their job as carefully as possible. The Manual will appear in two volumes as a loose-leaf collection in two clamp-folders. Volume 1 comprises 13 topically and didactically closely linked chapters. Volume 2 is an annex volume comprising information sheets with a more elaborate treatment of special problems, program descriptions, data sheets and practical exercises related to basic observatory tasks. For more information, please consult http://www.seismo.com/msop/msop_intro.html and http://www.gfz-potsdam.de/pb2/pb21/index_e.html

IASPEI Bulk E-Mail System

IASPEI uses this system to broadcast announcements about forthcoming meetings and other information of interest to IASPEI members.

IASPEI Home Page

IASPEI continues development of its Home Page on the WorldWideWeb which contains organizational information, a publications list, meeting announcements and Internet connections and other information of interest to IASPEI scientists

IASPEI Brochure

The IASPEI Secretariat with the assistance of Carl Kisslinger (Editor) has published a 26 page Brochure entitled "The International Association of Seismology and Physics of the Earth's Interior: Cooperation for Better Understanding of the Earth". Copies can be obtained from the IASPEI Secretariat.

R.E. Engdahl
IASPEI Secretary-General

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

<http://www.iavcei.org>

A highlight of 2002 was the highly successful conference "Mount Pelee 1902-2002" in St. Pierre, Martinique. Approximately 200 volcanologists, attended the meeting from May 12-16, 2002. May 8, 2002 was the 100-year anniversary of the famous 1902 eruption that destroyed the city of St. Pierre. A mid-conference field trip viewed the city and the deposits from the 1902 eruption. The five-day meeting brought together scientists and multidisciplinary experts from around the globe to discuss many aspects of volcanology with an emphasis on pyroclastic flows and related effects. The meeting was organized by representatives of IPGP. The meeting consisted of 244 abstracts presented in eight theme sessions. IAVCEI travel grants helped pay expenses for 6 young scientists or scientists from developing countries.

Two outstanding young volcanologists were awarded the IAVCEI Wager Prize at Martinique: Andy Woods (UK) and James Gardner (USA).

The IAVCEI Executive Committee met in Martinique and conducted a full day meeting covering many aspects of IAVCEI business. A Nominations Committee was formed, chaired by Wally Johnson (Australia) to certify candidates for the postal vote to be held in spring 2003.

One new commission has been formed, the Commission of Cities on Volcanoes. The leader is David Johnston (NZ) and secretary is Diane Tilyard (NZ). The main activity this year is the conference Cities on Volcanoes III to be held in Hilo, Hawaii in July 2003. The commission has organized it self and has prepared a web page.

The Commission of Mitigation of Volcanic Disasters has begun a new Atlas series, the first volume of which will cover the Caribbean region and will be prepared under the leadership of Jan Lindsay. The IAVCEI Executive Committee authorized \$4000 to support the first volume of the series.

The Commission on Explosive Volcanism is working on compilation of a comprehensive database of all eruptions with volume >10 km³ for the last 2 million years. The Executive Committee authorized \$2000 to help fund this significant activity.

IAVCEI was co-applicant for an ICSU grant to support training in volcanology for Latin American scientists. The grant provides \$12,000 per year for three years. The first year's funds are being spent to support attendance at a workshop on volcanic gases in Nicaragua to be held in March 2003. Applications are being received for the second year's funds.

IAVCEI sold several educational products in 2002. 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 2002. Also, a volcano calendar was produced by IAVCEI members and was printed and marketed by a professional calendar company. Over 5,000 calendars were sold and an additional 800 were distributed by IAVCEI to various scientific, educational, and governmental organizations. IAVCEI received a small royalty payment for the calendars.

IAVCEI recognizes that its activities could be significantly expanded by improved fundraising. Towards this end, President Steve Sparks wrote a series of articles on fundraising for IAVCEI News, and the issues were discussed in detail at the May meeting of the Executive Committee. Secretary-General Steve McNutt is working with a lawyer to obtain tax free 501(c)3 status with the Internal Revenue Service of the US so that contributions may be received with a tax benefit to contributors.

The next General Assembly has been scheduled for November 14-19,2004 in Chile. Over the next few years, IAVCEI will also focus its efforts on several smaller meetings, including the IAVCEI sponsored "Cities on Volcanoes III" conference. We expect a strong showing for volcanology at the July 2003 IUGG meeting in Sapporo, Japan, as well as excellent field trips. IAVCEI representatives developed the Scientific Program for the IUGG 2003 Volcanology Program during spring 2002.

IAVCEI ended the year on a high note with 704 paid individual members, the highest total to date. Nineteen members chose to become Life Members. The IAVCEI web page is

frequently revised and updated. The volcano listserver administered by Arizona State University remains the official IAVCEI listserver. It has >2500 people listed, which far exceeds the IAVCEI membership. Thus we hope to further boost the membership in IAVCEI. Three issues of the newsletter "IAVCEI News" were mailed to members in 2002.

2002 was an especially active and productive year for IAVCEI.

S. McNutt
IAVCEI Secretary-General

CONCLUSION AND FUTURE PLANS

In addition to on-going activities, IUGG and all of its Associations spent much of 2002 preparing for our quadrennial XXIII General Assembly, to be held in Sapporo, Japan, from June 30 – July 11, 2003. At that time, potential changes to the IUGG Statutes and By-laws will be considered, new officers elected, and the budget for the 2004-2007 quadrennium will be approved. As usual, along with the business meetings there will be two weeks of scientific presentations on the disciplines of our Associations. It will be a busy and exciting time.