

Annual Report 2004

INTERNATIONAL UNION
OF GEOLOGICAL SCIENCES



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Description of Dead Pan photo:

“Dead Pan at the end of the Tsauchab River, Namib Desert, Namibia”.

The Tsauchab River is an ephemeral drainage that rises out of the Naukluft Mountains in the east and cuts westwards across the Namib Desert to end in terminal pans within the main Namib Sand Sea. In recent geological history, the northward migrating dunes of the main Namib Sand Sea have blocked the middle reaches of the river forming impressive pans. The pans are composed largely of calcareous silts. Gravels characteristic of the catchment are exposed amongst the dunes to the west of the pans, indicating earlier extensions westwards to the Atlantic Ocean. In places, the silts of these former extensions harbour fossilised shells of freshwater gastropods. Run-off down the Tsauchab River is dependent on summer rainfall in the catchment area -an extremely variable factor in this marginal zone east of the Namib Desert. Remnants of former pans, such as Dead Pan can be found to the south, as well as to the west of the present active pan. Dead trees in these former pans gave a radiocarbon date of about 900 years before present, and are proof that water reached these pans during that time (Photo courtesy of Gabi Schneider).

Please cite the report as:

“IUGS 2005. Annual Report of the International Union of Geological Sciences for 2004”

Please note that a list of acronyms used in the report is given in Appendix 9, at the very end of the document, together with the Internet address of the organisations.



Foreword

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This fourth Annual Report of the International Union of Geological Sciences covers activities in 2004, including the 52nd and 54th Executive Committee meetings held in Oslo (Norway, March 2004) and Florence (Italy, August 2004), respectively. Over this period, a new Executive Committee was elected, while Union continued to grow in membership, in number of Affiliated Organisations, in public outreach, in relation to other International Council of Science (ICSU) geo-unions, and in its ability to generate financial support for international science projects.

The Statutes of IUGS declare: “The aims of the Union are to unite the global geological community in (a) promoting development of the earth sciences through the support of broad-based scientific studies relevant to the entire earth-system, (b) applying the results of these and other studies to preserving Earth’s natural environment, using all natural resources wisely, and improving the prosperity of nations and the quality of human life, and (c) strengthening public awareness of geology and promoting geological education in the widest sense”.

The strength of IUGS is its broad coverage of geoscience fields under one umbrella. IUGS continues to function as a forum for geoscientists acting to exchange ideas, develop scientific standards, and for the communication of geoscience information. IUGS is geographically the most widely represented member of ICSU. Our links with other ICSU unions complies fully with the IUGS’ mid-term vision and our future global position, as expressed in the Mid-Term Vision and Strategic Action Plan for the International Union of Geological Sciences (<http://www.iugs.org>).

We are uniquely positioned to challenge and prompt and organize the world geological community to address the global research problems that require the collaboration of many disciplines as well as many countries. The challenge is to prompt and organize the global geoscience community and find socially and scientifically relevant and challenging collaborative projects: for example, the devastating December 26th, 2004 earthquake and tsunami in the Indian Ocean basin.

The work of the new Executive Committee will build on the progress of earlier executive committees, including the Statutes and By-laws, IUGS-International Geological Congress (IGC), Strategic Plan and the International Year of Planet Earth (<http://www.esfs.org/> or www.yearofplanetearth.org).

The International Year of Planet Earth



By Eduardo F. J.
de MULDER
President of IUGS
2000-2004

The International Year of Planet Earth (subtitle: Earth sciences for society) aims to demonstrate the great potential of the Earth sciences in the building of a safer, healthier and wealthier society. Moreover, the International Year encourages society to apply this knowledge more effectively. The tsunami disaster on December 26th made very clear that the world's governments have not grasped the need to use our understanding of the Earth so far.

In 2004, the Management Team of the International Year worked hard on creating a political platform of countries prepared to request the UN system to proclaim an UN Year of Planet Earth. At a high-level information meeting held at UNESCO headquarters in Paris in February chaired by UNSECO Director General (see photo), six nations (Argentina, Brazil, China, Italy, Jordan and the Russian Federation) promised to support proclamation of the International Year of Planet Earth once proposed in the General Assembly of the UN. In the course of 2004, another eight nations (Germany, India, Israel, Lithuania, Mexico,

Pakistan, Romania, and South Africa) added their political support for the Year.

International scientific support was spurred by adopting the Florence Declaration at the 32nd IGC, in August, by representatives of geoscientific communities of 140 nations. The group of Founding Partners, sharing also financial responsibilities with the Initiators (IUGS and UNESCO) was expanded by ISRIC and IUSS while several other Associate Partners joined in.

Dr. Henk Schalke had to resign due to severe illness, the Chairman of the Management Team, and his position was assumed by Prof. Eduardo de Mulder. The Team expanded by inclusion of Li Zhijian (China) and Andrey Volkov (Russian Federation).

In 2004, the Science Programme Committee made good progress by printing 4 brochures for the science themes. In addition to the eight themes (Groundwater, Health, Hazards, Resources, Climate, Megacities, Ocean and Deep Earth) earlier adopted, a theme on 'Soil' was added and, by September 2004, a tenth theme on 'Life' was offered for consideration. By the end of 2004, several geological surveys in Europe (including Austria, Norway, Finland, Sweden and Ireland) agreed to sponsor printing costs of such brochures.

In sum, the International Year matured in 2004. For more information, please check <http://www.esfs.org/> or www.yearofplanetearth.org



Koichiro Matsuura (Director General, UNESCO):
"Wish you well in your deliberations"
(Image source: <http://www.esfs.org/>)

THE INTERNATIONAL COUNCIL FOR SCIENCE (ICSU)

By Eduardo F. J. de MULDER
President of IUGS 2000-2004

The International Council for Science (<http://www.icsu.org>), formerly known as the International Council of Scientific Unions (ICSU), was founded in 1931 to be the umbrella organization for the different unions in each scientific discipline. There are now almost 30 of these, including the four Earth science unions: the International Union of Geological Sciences (IUGS), the International Union of Geodesy and Geophysics (IUGG), the International Geographical Union (IGU), and the International Union of Soil Sciences (IUSS). Much of ICSU's funding comes from its national members that are commonly the National Academy of Sciences for a given country.

ISC/ICSU has found a very useful niche in today's post-Cold War period. Together with its unions, it acts as the main representative and facilitator of international science. ICSU serves the scientific world and the general public in several areas:

- 1) Forming standing scientific committees that cross union disciplinary boundaries in order to encourage research and scholarship in those areas that require a multidisciplinary approach. Examples include Polar Regions, oceans and the environment. Large international interdisciplinary programmes launched by ICSU include the International Geosphere-Biosphere Programme (IGBP; <http://www.icsu.org>) and DIVERSITAS.
- 2) Acting as a lighthouse in the enforcement of freedom of access for all scientists to international meetings, workshops, and visits; and listing behavioural standards of scientific ethics.
- 3) Capacity building, especially in developing countries, by working with its unions to ensure that scientists in developing countries are included in projects, made aware that they can contribute, and are not left out.
- 2) Issuing position statements on topics that are controversial to some, but in which scientists have a firm opinion. Examples of this are the topics of "creationism" which has recently morphed into "intelligent design", and genetic engineering.
- 2) Conducting a small but useful cross-disciplinary grants programme, funded mainly by UNESCO, in which ICSU's unions and scientific committees can apply for up to US \$100,000. Grants usually involve several unions and/or scientific committees, and the topics chosen are of societal importance.
- 2) ICSU increasingly finds UNESCO as a partner in such activities as the World Science Conference in Budapest several years ago, and the Sustainability Meeting in Johannesburg, 2001. These large meetings show the decision-makers and the press the increasing relevance science has to today's problems.

In 2004, IUGS was strongly represented in ICSU, as IUGS Past President Robin Brett occupied a seat in its Executive Board, representing the Geo-Unions. Many interactions between IUGS Bureau members and the ICSU Executive Director and its staff occurred in 2004. In February 2004, these Geo-Unions met for the first time on the invitation of the IUGS President Eduardo de Mulder in Paris.)n that occasion, they decided to join forces and collaborate on strategic matters and on five geoscientific themes (Health, Cities, Hazards,

Groundwater and Desertification). This collaboration was expanded in a second meeting in Boulder (USA) in September when a fifth ICSU Union, JSPRS, joined. Much work was done in 2004 on the major ICSU grant given to IUGS on Medical Geology. Among others, this will result in a 1000 page monograph on this topic.

IUGS / IGC UPDATE – STATUTES AND BYLAWS



**By Eldridge Moores
(Vice President)**

Following the recommendations of the IUGS Strategic Planning Committee report in 2000, the IUGS Executive Committee suggested to the IGC Steering Committee that the Union and International Geological Congress (IGC) develop a much closer relationship. The IUGS Council and IGC General Assembly were officially combined in August 2004 at the 32nd IGC in Florence, Italy. The combined body is the IUGS/IGC Council. The envisaged advantages of this combination will be a clear and simple representation of the global geological community by a unified body and a more effective management of both IUGS and IGC.

The newly established joint Council of IGC and IUGS requested in Florence to combine and “streamline” the existing statutes and bylaws for IGC and IUGS. It was agreed to form a special Task Group to address this issue. The Task Group consists of two individuals appointed by the Executive Board of IUGS and two individuals appointed by the IGC Steering Committee; a fifth individual in the position of Chair should be collectively appointed that has not previously held direct positions in either IUGS or the IGC.

FUNDING WITHIN IUGS: How to increase IUGS income



**By Antonio Brambati
(IUGS Treasurer)**

During the current year, the Treasurer brought to the attention of the Executive Committee the necessity to reduce expenses and to improve the

Budget. The policy adopted by the Bureau, during the discussion of the 2004 budget, has led to a decrease of the overall administrative expenses of about 10%, highlighting the intention to increase funding for sciences. Moreover, it was discussed in details how to attract inactive members and, in general, how to further involve all the Adhering Organisations (country members). It was decided, as a general policy, to encourage all Adhering Organisations to upgrade their category of membership and to develop a policy focused on motivating other bodies to become Associate Members of the IUGS. In this sense, the IUGS President started with a widespread series of contacts, with representative bodies/people of several countries, being personally present during congresses or conventions in various areas of the world.

It is still uncertain how to solve the problem that the representation within the Bureau positions (President, Secretary General and Treasurer) is restricted to scientists from nations capable to financially support them. With this regard a proposition paper was drafted by the Treasurer and presented in the EC meetings in Florence in 2004. This proposal suggests that some or all of the costs of the Bureau positions might be covered by IUGS's funds. During the discussion, the EC agreed that a solution must be found to open the Bureau positions to all the countries irrespective of their capability to support them financially. Anyway, an alternative mechanism of funding remains uncer-

tain. It was decided that IUGS could not presently support any extra expenses, let alone to pay the full costs of the entire Bureau. It was furthermore agreed to suspend any decision and that the problem should be examined again. For the moment the EC agreed to leave the rules unchanged.

During past and present terms, the EC became aware of the lack of representation of several geoscientific communities within the IUGS's framework. Therefore the EC started to discuss the opportunity of establishing a new committee to cover the needs of the developing world, young scientists and women within the Earth Sciences. With this regard the IUGS Bureau and EC pledged to contact organisations of young scientists and organisations of women in geosciences. Finally, the possibility to attract inactive members by offering them a special waiver or facilitations is still under discussion. To a certain extent, this proposal gave rise to positive results.

THE NEW IMAGE OF IUGS

By Peter Bobrowsky (IUGS Secretary General)



The new IUGS logo represents a person shouldering the Earth; essentially, accepting responsibility for the Earth. A large full-colour panel display, highlighting IUGS' journal, Episodes, and the many

activities and Affiliated Organisations in IUGS featured prominently at 32nd IGC in Florence in 2004 and other professional venues. As a supplement to this panel, IUGS now has a small information flyer that is widely distributed both at meetings and by mail when the opportunity arises. Perhaps the most successful and important avenues for information dissemination and visibility enhancement is the restructured IUGS website (<http://www.iugs.org>)

which is regularly updated and cross-linked with a number of other important geoscience websites. The website remains IUGS' most critical modern link to the outside world.

IUGS continues to support the educational importance of the geosciences, for example through activities with IGEO. The Union has continued to facilitate cooperation amongst individuals, organizations and groups involved in the promotion and preservation of our geological heritage. IUGS is being credited with the launching of an International Year of Planet Earth (2007-2009), described in detail elsewhere in this Annual Report.

"Corporate accountability" is maintained through the publication of an Annual Report and Minutes of the Executive Committee Meeting. These formal documents create a more professional and structured image to non-geologists and are welcomed by government politicians and bureaucrats, non-geological organizations and societies. In 2004, the Annual Report for 2003 was printed released as a digital file on the IUGS homepage.

The IUGS and IGC wall poster at the GSA meeting in Denver.



The 2004 Annual Report is also digital and downloadable from the IUGS website. The release of electronic Bulletins to its Adhering Organisations, scientific bodies and Affiliated Organisations has been widely lauded. These short, informal “news bites” briefly convey the activities and accomplishments within the Union and are meant to keep others abreast of changes and events in the community at large. The IUGS Permanent Secretariat released two e-Bulletins in 2004, and they were sent to over 2,000 addresses.

Collectively, the accomplishments and efforts summarized above indicate that the new Executive Committee is proactive and striving to meet the demands and needs expressed by the members. Great achievements have been made in the past few years, although much more work and time is required to fully benefit from these changes. We trust that those who have experienced any of the above support our philosophy.

IGCP UPDATE



By Sylvi Haldorsen
(Vice-President)

IUGS and UNESCO jointly initiated the International Geological Correlation Programme in 1972 with the aim of providing funding for pro-

moting research in the Earth sciences. The current objectives of IGCP are to increase understanding of the environment, to assist in the improvement of human welfare, to establish better methods for finding and assessing the natural resources of the world, to further our understanding of geological processes and to improve research methods and techniques in the geosciences.

In February 2004, the IGCP Scientific Board presented a proclamation supporting the plan-

ning of the Year of the Planet Earth. The plans were presented in a plenary meeting in UNESCO, which was jointly chaired by the acting IGCP Chairperson and the IUGS President. An external evaluation of the IGCP was undertaken and the report was commented on by the IGCP Scientific Board at its meeting in Paris in February and thereafter completed and approved by UNESCO's Executive Board.

Proposals submitted to IGCP are reviewed by a Scientific Board, now consisting of five working groups, each covering different aspects of geology:

- Working Group 1 –
Stratigraphy, Palaeontology,
Sedimentology and Fossil Fuels
- Working Group 2 –
Quaternary, Environmental and
Engineering Geosciences
- Working Group 3 –
Mineral Deposits, Petrology,
Volcanology and Geochemistry
- Working Group 4 –
Geophysics, Tectonics and
Structural Geology
- Working Group 5 – Hydrogeology

Each Working Group has four representatives and these, together with a chairperson, comprise the selection panel. The President and Secretary General of IUGS are ex-officio members of the board.

ON FIRM FOOTING: PUBLICATIONS FROM IUGS



By Godfrey S. Nowlan
(Chair, IUGS Publications
Committee)

The IUGS has been in a year of transition with respect to its publication program. A new Policy for IUGS Publications was established in 2003 that sets out guidelines to be followed in the production of any new book-length scientific work. In the same year an agreement was developed with the Geological Society of London (GSL) for publication of work arising from IUGS programs. The year 2004 saw the first full year of operation under the new publication policy and the agreement with GSL.

Thus far, the policy and agreement have been working well. GSL has commissioned four books originating from IUGS programs including volumes on Sustainable Development and Management of the Subsurface, Devonian Neritic – Pelagic Correlations and Events, The Rise and Fall of the Ediacaran Biota and Decay Constants in Geochronology. The manuscripts for these books are due in early 2006. Once published, royalties will accrue back to IUGS and the money will be used to assist with future scientific programs. In addition to the books from IUGS programs, GSL has commissioned eleven volumes from among the sessions held at the International Geological Congress in Florence in 2004. Several manuscripts are close to being ready. GSL has kindly agreed to offer to pay IUGS a finder's fee for each of the books that are published. Thus, a total of 15 books have been commissioned since the institution of the agreement and this has to be deemed a success.

The IUGS journal *Episodes* remains under the purview of the Publications Committee (PC) and

a scheduled formal review of the journal was conducted in April 2004. The 2001-2004 Memorandum of Understanding (MOU) between China and IUGS governing production of *Episodes* mandated this review. The review committee comprised: Godfrey Nowlan (Canada, Chair), Wolfgang Eder (UNESCO), Ed de Mulder (President of IUGS), Xiao Xuchang (Chinese Academy of Sciences) and Liu Dunyi (Chinese Academy of Geological Sciences). This report was filed in July 2004 in time for review at the IGC in Florence. The report was favourable, indicating the excellent job that *Episodes* editor and staff had done over the four-year period. A number of recommendations were made for the future.

A new formal MOU between IUGS and the China Ministry of Land and Resources was signed in Beijing in April 2004. The agreement was signed on behalf of IUGS by then President Eduardo de Mulder, and for China by Madame Shou Jiahua, Vice-Minister of Land and Resources. This MOU, modeled closely on the MOU for the previous four years, covers the period of 2005-2008.

Professor Zhang Hongren, long-time Editor of *Episodes*, was elected President of IUGS in August 2004. It was therefore necessary to find a replacement editor. Professor Zhenyu Yang, a professor in the Department of Earth Sciences at Nanjing University, has been appointed as the new editor.

In late 2004 the Publications Committee began to look towards the future. This plan is currently under consideration by the EC and some decisions expected in the near future.

The PC owes a considerable debt of gratitude to Tony Berger, its former chair who resigned in August 2004. Tony oversaw the transition from the Advisory Board on Publications to the PC. He also did much of the work to establish agreements with GSL for publication of IUGS publications and provided considerable assistance to the staff at *Episodes*. His excellent work is greatly appreciated and we will miss him on the PC.



The
Geological
Society

IUGS – role, structure, membership

THE ROLE OF IUGS

The International Union of Geological Sciences is a member of the International Council of Science (ICSU; <http://www.icsu.org>) and has represented all geological scientists at the highest international level since its formation in 1961. Both fundamental research and applied aspects of the Earth sciences of an international and interdisciplinary nature are supported by the Union, through a number of Commissions, Task Groups and Initiatives, detailed below. IUGS collaborates with UNESCO (<http://www.unesco.org>) in supporting the International Geosciences Programme (IGCP), and also works with its Affiliated Organisations and with ICSU on topics of mutual interest. IUGS, which has 116 Adhering and 38 Affiliated Organisations, is



the largest body within ICSU. IUGS keeps a non-political, and thus a non-governmental stance and is a non-profit making organisation.

The office of the IUGS Secretariat is located above the entrance to the Geological Survey of Norway (top left windows). Photo: NGU

STRUCTURE OF IUGS

The Council, which is the highest body of IUGS, meets every four years at the International Geological Congress, where the representatives of the active members vote on the direction the Union shall take in the next four years.

The Executive Committee comprises the ten elected Executive Officers of IUGS: (President, Secretary-General and Treasurer, the Past-President, two Vice-Presidents and four Councillors). The officers play an active role in running the Union, developing new science programmes, representing it at congresses, preparing the electronic-bulletin and acting on both standing and ad-hoc committees. The day-to-day work is carried out by the Bureau, comprising the President, Secretary General and Treasurer; these officers meet regularly throughout the year to discuss the progress of the various matters of concern and interest to the Union.

At the Council meeting in Rio de Janeiro (2000), it was decided that in order to expedite major decisions, the Council could be asked to vote electronically on matters submitted by the Executive Committee. This process was successfully used several times during the term of the current Executive Committee.

Most of the present Executive Committee (Appendix 1) will serve until the 33rd IGC meeting, in Oslo, Norway, in August 2008, but, as proposed in the Strategic Planning Committee, the two Councillors appointed in 2002 will remain in office until 2006, thus providing the Executive Committee with much needed continuity.

The Executive Committee is currently involved with the International Year of Planet Earth, which forms a major part of IUGS' plans to make both politicians and the community at large more cognisant of the significant role the Earth sciences can and should have in most large-scale planning decisions.

The Permanent Secretariat (Appendix 1) in Trondheim, which is generously funded by the Norwegian Government and based at the Norwegian Geological Survey, in Trondheim, is very important for the day-to-day operations of the IUGS, distributing to and collecting/collating documents from the Adhering Organisations.



The Permanent Secretariat is also responsible for IUGS' archives.

A very considerable amount of information, including contact information, links to the Union's Committees, Commissions, Task Group, Initiatives and collaborative projects with UNESCO and ICSU, as well as copies of the minutes of recent Executive Committee and Council meetings, can be obtained from the IUGS homepage (<http://www.iugs.org>) which is run by the webmaster, John Aaron. The Union's quarterly journal, *Episodes*, also publishes much new scientific and general information stemming from IUGS; on-line back issues of the journal on-line are available for downloading at the journal's website (<http://www.episodes.org>).

Executive and Bureau Meetings in 2004

The 52nd Executive Committee meeting was held at Oslo, Norway from March 15th to 19th. The 53rd and 54th meetings were held in Bologna and Florence, Italy. A full list of Executive and Bureau meetings in 2003-2004 is given in Appendix 1.

MEMBERSHIP OF IUGS

The Adhering Organisations of IUGS cover the majority geoscientists of the world. In 2004, membership fee payments increased because of the 32nd IGC. Appendix 2, gives a full list of the Adhering Organisations, together with their membership category and status. There were: 79 active members; 37 inactive; and 9 members pending, giving a total number of 117 adhering organizations. Most Adhering Organisations (66), and also most inactive Adhering Organisations, lie within Category 1, with fewer members in the higher categories. There are only three Adhering Organisations in Category 8 (Japan, Russia and the USA), and relatively few countries in Category 7. IUGS has one Associate Member, the Saudi Arabia Directorate of Technology and International Cooperation. In

2004, the former Associate member, the Australian Academy of Sciences, merged together with the Australian Geological Survey Organization into one Adhering Organization in Category 6.

Inactive Adhering Organisations must pay the Membership Fees for the previous two years as well as the current outstanding year (i.e., 2002-2004) in order to regain an active status. The Fees for 2003-2005 are given in Appendix 3. Members are classified as inactive if they have not paid for 3 years. Only those Adhering Organisations with an active status can vote on IUGS matters; inactive Adhering Organisations can participate as observers. Each category of membership has been assigned a number of units that acts as a multiplier of the basic unit of the Membership Fee (Appendix 3). This unit is linked to the inflation rate of the USA, giving a basic unit of US \$ 460 in 2004.

TREASURER'S REPORT

Reports from active, inactive and pending members in 2004 were very diverse and contained suggestions for what can be done by IUGS in the future. There is a need for training in geosciences, not enough news is circulated about commissions and other IUGS matters, regional committees could be established to promote cooperation between developed and developing countries.

During 2004 the numerous IUGS accounts in Europe (Orl ans - France, Reston - U.S.A and Canada were closed and money from old accounts was transferred to two new accounts in Trieste. In Vienna there are still open two IUGS accounts (in USD and in EUROS) that will be both set at zero in March 2005 (IUGS expenses) and then will be used for the YEAR Treasury (interim Treasurer for the Management Team of the YEAR: Werner Janoschek).

Another US \$400,000 was placed in a short-term guaranteed deposit account (also in Trieste). It is suggested that as an IUGS policy, current

bank accounts keep only the amount necessary for IUGS working, and another investment in a short-term deposit account should be considered. IUGS received US \$12, 887.80 in bank interest (US \$ 9,901.37 from the short-term guaranteed deposit account and US \$ 2,986.44 from the normal bank accounts).

The 2004 balance is synthetically reported in the following table (see appendix for the details).

Income 2004:	USD 596,411.05
Expenses 2004:	USD 715,021.06
Deficit:	USD 118,610.01

The table shows results a deficit of US \$118, 610.01 due to the investments in Science in view of the 32nd IGC in Florence. This deficit in reality decreases to US \$25,630.01 as the IUGS has a credit from UNESCO of US \$12,000 and from the 32nd IGC in Florence US \$80, 980 (US \$4,049 full members x 20). In particular € 30,000 was transferred to the IUGS on January 2005; this amount has not been considered in the 2004 balance. The remaining € 32,280 will be transferred to the IUGS as soon as European Union transfers the funds to IGC. Therefore the “virtual income” for 2004 is US \$596, 411.05 (real) + US \$12,000 UNESCO credit + US \$80,980 IGC credit = US \$689,391.05. Nevertheless, as already has been highlighted, even considering the “virtual income”, the 2004 balances of the accounts will still be negative: US \$25, 630.01 (US \$715, 021.06 – \$689, 391.05). On December 31st 2004 the amount of money in the bank accounts was US \$707,485.99. A detailed financial statement is given in Appendices 4 and 5.

IUGS must work to ensure that it does not lose the income from the dues of inactive members. A number of suggestions to improve the IUGS budget include: a) attract inactive members with a special one-year membership waiver to get member status instead of requiring payment for all years membership was not renewed; b) members pay a lower category for two years and go back to a

high category afterwards; c) encourage to upgrade membership categories; and d) develop a policy focused on motivating the interest of other bodies to become associate members.

Some other comments on income and expenses: 51% of the total IUGS income came from regarding adhering bodies and associate members. The US contribution to IGCP was US \$75,000.00, the same as in the previous years. UNESCO contributed US \$79,500.00 (+ US \$9,000.00 USD paid in 2005) to IGCP projects. The ICSU contribution for 2004 was US \$100,000.00. Expenses include US \$173,700.00 to IGCP, and US \$131,000.00 for Geological Application of Remote Sensing (GARS), Scientific Commission on the Lithosphere (ILP) and Dark Nature. Commissions, Task Groups, Initiatives, Committees, Affiliated Organisations accounted for expenditure amounting to US \$144,621.62, with the largest amount allocated to the International Commission on Stratigraphy – ICS (US \$50,000.00). Affiliated Organisations were supported with US \$16,500.00, the others with US \$78, 121.62. To the International Year of Planet Earth was allocated US \$22,500.00. IUGS Contributions to ICSU, GEOHOST – 32nd IGC Florence and Episodes amounted to US \$79,957.80. The Hutchinson Award for 32nd IGC Florence was US \$ 9,600. Other expenses amounted to US \$163,241.64 that included: US \$110,443.15 for routine meetings and representative routine meetings; US \$15,468.80 for Exhibit panel wall for EC Oslo and 32nd IGC Florence and IUGS gadgets and contingency; US \$23,173.00 for the electronic version of the Annual Report 2002 and expenses for the Annual Report 2003 and the IUGS Brochure; and US \$14,156.69 for Bank charges.

IUGS expenditures often do not reflect the real costs. IUGS annual contribution of US \$23,000 to EPISODES for editing, lay-out, printing and distribution, is relatively small in comparison with the costs incurred by the Chinese Ministry of Land and Resources which hosts the Journal. The same holds

true for the costs related to IUGS meetings, which are covered, at least in part, by the countries hosting such meetings and for a very substantial part by the parent organisations of the Bureau members which covers salary and all their travel costs. These forms of support save IUGS an estimated US \$100,000 per year. A comparable amount is further saved by IUGS having been given the continuous generous contribution of the Norwegian government to fully financially support the IUGS Permanent Secretariat in Trondheim. IUGS is extremely grateful all the countries for this generous support that enables the Union to invest significantly more in science development than would be otherwise possible.

THE JAMES HARRISON OUTSTANDING ACHIEVEMENT AWARD

By Eduardo F. J. de MULDER

President of IUGS 2000-2004

Laudatio Hanne Refsdal



When Hanne Refsdal was invited in 1984 as the assistant of the then Secretary-General of IUGS, Richard Sinding-Larsen, she would not have believed that the next twenty years of her life would be dominated

by the Union. Recently her husband told me that he would have been very happy if he got only 10% of the attention Hanne gave to IUGS over the years.

Twenty years of daily service to IUGS is unprecedented in its 43 years history and will most probably never be beaten. Over these 20 years she has seen her Secretariat growing to the professional Permanent Secretariat that it is now and where she works together with her fine colleague Anne Dehls. Very few Unions have such a treat and many of my colleagues envy us. This is partic-

ularly so as this permanent secretariat has been financed by the Norwegian Government through its National Committee. A rough calculation shows that the Norwegians thus supported the Union with about 2 million \$US, for which IUGS is enormously grateful.

Hanne Refsdal is not a geologist but she knows more about the Union than anyone of us here. With her excellent memory she is the best-informed person in the IUGS family. I recommend the next EC to consult her as much as possible as well on the whereabouts of past commissions, current affiliated bodies and particularly of individuals. She has served 5 Executive Committees, did the minutes of some 20 EC and of about 100 Bureau meetings in every corner of the world. And she made hundreds of friends in the Union. Hanne's real profession is architecture and that is reflected by the excellent layout of the many IUGS products.

The IUGS' Permanent Secretariat has a wide variety of tasks. One of these is filing and storing documents and publications. So much paper was piled up in the secretariat that there was hardly any room left for the people working there. To solve this problem they found a typical Norwegian solution: the non-critical parts of the files were stored in an abandoned mine, outside of Trondheim and guarded by an army of trolls.

IUGS has never had awards. This Executive Committee, however, considered it necessary to do so, to honour people who served the Union in an extraordinary way for a long-time but have no recognised position as officer in the Union. This Outstanding Achievement Award is named after the late Canadian James Harrison, who served as the first IUGS President from 1961-1965. We may call him the father of IUGS.

I am extremely happy that I may present this very first James Harrison Outstanding Achievement Award to Hanne Refsdal, the mother of IUGS.

Citation for John Aaron



John Aaron has served IUGS almost as long as Hanne Refsdal, nearly twenty years. He took over the Chairmanship of the Advisory Board on Publications in February 1985. He hardly knew of IUGS when he was appointed, and there were no Executive Committee members on the Board because the Board was supposed to advise the Executive Committee. The Board had the same problems as today – the relevance and visibility of IUGS and its publications. His chairing this Board was the first step of his seduction by IUGS.

At that time the Geological Survey of Canada was publishing *Episodes*, the IUGS journal. It decided that it could no longer afford to do so, so John in 1989 decided that the US Geological Survey would take over. John was in charge of the Survey's large publications empire and all of its libraries. He would volunteer the Survey's resources, but his job as Editor would be in his own spare time. His USGS work was twice the work of most people, and *Episodes* gave him a third full-time job. John inspired extreme loyalty from his staff, but he worried about his and his staff's dual obligation to the IUGS and USGS. As one of the top managers at the USGS, this conflict caused him stress, concern and sleepless nights – how much should he serve the USGS versus IUGS. He obviously had to serve both, which was most wearing. John and his dedicated secretary, Priscilla Utterback, were usually in the office by 5:00 a.m. and left at 7:00 p.m. What a life, and what dedication to IUGS! In 1993 the USGS could no longer divert the staff required to publish *Episodes*, so it went to the British Geological Survey.

After 34 years with the USGS, John, like many others, found little joy there, and retired. He decided to give back to the geological community, which had given him a lot, and decided that IUGS needed a Web site even though he had no experience in building one. In 1996, the site was launched and it is one of the most useful, well-designed sites in the geological sciences today. <www.iugs.org> Go there if you don't know it! The site continues to grow in scope and popularity. John still is Webmaster nearly eight years later. The site serves scientists in more than 90 countries of the world. It would have cost IUGS a six-figure number in US dollars to pay for his work as Webmaster.

In 1999, Aaron agreed to be rapporteur for the Strategic Planning Committee. He participated fully in the discussion, and contributed many useful ideas. Most of the final writing in the report is his own. Aaron's work, therefore, has had a large contribution to the future of IUGS.

John Aaron has done as much for IUGS as anyone I can think of. Like everything in his life, he is passionate about it. He has also gained in areas not immediately obvious. Through travelling to Executive Committee meetings to far-away places with strange sounding names, he has seen more different birds than he ever dreamed of. He has also refined his knowledge of wine. John Aaron knows the "terroir." I cannot say that working for IUGS has been all positive. John plays ice hockey twice a week with two different teams. He says that sitting for hours at his computer doing IUGS work has made his body flabby and muscles weak. He still plays, but it is clear that the gain to IUGS is far greater than the gain to John.

How lucky we are to have such a person working for IUGS for nearly 20 years! I present the other first winner of the James Harrison Award, John Aaron. It will be hard to find other equally qualified awardees in future.

Publications Committee

The Publications Committee is charged with overseeing the material published directly or indirectly by IUGS. The PC had its annual meeting in April 2004 in Beijing. Publications Committee comprises Godfrey Nowlan (Canada), Victor Mocanu (Romania), Fred Spilhaus (USA), and Kaigala Subbarao (India), with ex-officio members: John Aaron (USA) IUGS Webmaster and Zhenyu Yang (China) Editor of Episodes. Tony Berger (Canada) was the chairman of the Publications Committee for the early part of 2004, resigning in August. Our deepest appreciation goes to him for his commitment to the PC. The chairmanship has now been passed to Nowlan of the Geological Survey of Canada.



and to contribute to the Calendar of Forthcoming Events whenever the opportunity arises.

The Committee also keeps in close contact with John Aaron, Webmaster of the IUGS homepage. All geoscientists are advised to check the website regularly

IUGS Grants Evaluation Committee

In 2004 the IUGS Grant Policy was put into effect for the first time. Copies of the IUGS Grant Policy and Expressions of Interest (EoI) Forms were distributed to all IUGS Commissions, Initiatives and Task Groups. In accordance with the Grants Policy, Affiliated organizations were invited as co-proposers.

Eight EoIs were received, collected by the Permanent Secretariat in Norway, and sent to an evaluation group comprising E. Derbyshire & G. Wörner from the IUGS Committee on Research Directions and E. de Mulder, W. Janoschek and R. Brett from the Executive Committee. The proposals submitted were all excellent.

At its meeting in Oslo in March 2004 the Executive Committee approved the Evaluation group's selection of the EoI entitled "Application of Geosciences for Sustainable Development of Cross-Border Areas (M. Graniczny et al.)" applied by the Working Group "International Borders—Geoenvironmental Concerns" (IBC) of the COGEOENVIRONMENT Commission of Geological Sciences for Environmental Planning of IUGS. The main goal of this project is to increase the availability, applicability and accessibility of the geoscientific and environmental data, in cross-boundary areas.



The proposal from the IUGS Affiliated organization, International Permafrost Association (IPA) titled “The Thermal State of Permafrost (Jerry Brown, IPA)” was also highly ranked. The main goal is to create a database of permafrost ground temperatures (TSP) over spatially representative regions that will serve as a baseline in the future to establish the rate of change of near-surface permafrost temperatures, to access changes in permafrost boundaries, and to validate models, climatic scenarios and temperature reanalyses approaches.

Unfortunately funding was postponed until technical aspects were fulfilled. Actual transfer of funding will not occur until 2005.

Nominating Committee

Eduardo de Mulder was elected the Chair of the Nominating Committee in Florence. The Nominating Committee is responsible for making nominations for the positions on the Executive Committee. It becomes active if there are changes

in the EC, and will certainly be active before the next IGC Congress. IUGS Executive Committee have proposed Prof. Sospeter Muhongo (Tanzania) to replace Henri Kampuzu, who passed away in 2004. Sospeter Muhongo is the current Chairman of IGCP and has a long-standing reputation in the IUGS family. Results of this e-ballot will be made known to the Council.

Ad-hoc Review Committee

Following the recommendation of the Strategic Planning Committee, the Executive Committee have made strenuous attempts to institute reviews of as many of the Committees and scientific bodies run by the Union as possible, during their term of office. In 2004, the ARC held a review of the Task Group on Geochronology. The Commission on Fossil Fuels (formerly a Task Group) and the International Commission on Stratigraphy are proposed to be reviewed in 2005.

The Union is scientifically active through a series of Commissions, Task Groups and Initiatives. IUGS is also active with UNESCO, through (IGCP and in the Geological Applications of Remote Sensing (GARS) and the Mineral Resources Sustainability Project (MRSP) programmes. IUGS also collaborates with ICSU and IUGG in the Scientific Committee for the Lithosphere (SCL), which co-ordinates the International Lithosphere Programme (ILP). In these programmes, IUGS provides both financial support and scientific input. The results of these research activities are not only widely published, but also form a major part of the programme at the quadrennial IGC.

IUGS COMMISSIONS

Commissions undertake the main scientific work of the IUGS. Normally, a Commission lasts for two to three terms of the Executive Committee, after which it either regroups as a new Commission or is terminated.

Commission Fossil Fuels (TGFF)

This new Commission (<http://www.geointelligence.org/>) has expanded from the Task Group on Fossil Fuels (TGFF) and helps developing countries see how the region's fossil fuel deposits and the potential future supply are of vital importance for good resource management and sustainable economic growth. Natural resources can contribute to a region's economic growth and development but sadly can also lead to political strife, conflict and war. In the past years, the Task Group has concentrated on the Central African area, where conflict is breaking out concerning existing and potential deposits. Regional cooperation on the geology of the Central African Rift System has been initiated and is contributing to the fragile peace developing in the Sudan. Richard Sinding-Larsen (richard.sinding-larsen@geo.ntnu.no) leads this Commission.

Commission for Geological Education, Training and Technology Transfer (COGEOETT)

Spurred by the Executive Council's decision to develop a Commission on Education, Training and Technology Transfer, the Executive Committee spent much effort in developing such a body. Outlines for such a Commission have been discussed with the affiliated International Geoscience Education Organisation (IGEO). Gary Lewis, Education and Outreach Director of the Geological Society of America, another organisation affiliated to IUGS, agreed to chair the new Commission. GSA hosted the Commission's inaugural meeting in autumn 2004 in the USA.

Commission for Geoscience in Environmental Management (GEM)

GEM, comprises 11 geoscientists presenting 11 countries, aims to provide guidance to geoscientists on how best to integrate geoscience into environmental policy and to communicate the concepts to potential interest groups such as policy makers, politicians, environmental organisations, scientists from other disciplines, and the general public. GEM builds on the excellent work of the former Commission on Geological Sciences for Environmental Planning (COGEOENVIRONMENT) that has completed its full term. GEM has developed its Terms of Reference, and in this attempt has attained precise objectives reached through Working Groups. Of special interest is the working group on International Borders-Geoenvironmental Concerns. Trans-boundary problems being a field in which international organisations are highly necessary.

In 2004, GEM cooperated with various organizations to hold several meetings such as "International Dialogue on Engineering Geology for Sustainable Development" (Hong Kong); the International Workshop on "International Borders

– Geoenvironmental Concerns” (Poland) and Geo-Environment 2004 (Spain). GEM also had an active presence during the Florence IGC and a fruitful Inaugural Meeting. Working groups in GEM prepared information to help geoscientists communicate with policy and decision makers in the appropriate language. Articles announcing the formation and website of GEM and its Working Groups have been prepared and submitted to the editors of Episodes, IAEG Bulletin and IAH Newsletter. Published in 2004 were the proceedings of a workshop held in Vilnius “Geosciences for urban development and environmental planning”, a report on the Urban Geology Workshop for City Planning in Southern Africa, and an article for an AGU publication “Earth sciences in the cities.” For the coming years, outreach and communication will broaden and identify new target groups. Brochures and a website have been prepared, with a mock-up focusing on African and Asian regions. GEM also plans to expand its networking and is developing strong affiliations with IAEG and IAE. Technical workshops for capacity building have been successful and others are planned. GEM will also explore linkages with IYPE, in particular to the Megacities and Climate programs.

Commission on the Management and Application of Geoscience Information (CGI)

The aims of this Commission (http://www.bgs.ac.uk/cgi_web/welcome.html) are to provide the means for exchanging knowledge on geoscience information and systems, to support the dissemination of best practices in geoscience information applications, to encourage the development of geoscience standards, to keep IUGS informed on geoscience information matters and to help bring interested bodies and persons together. CGI have well defined objectives and action plans, the leadership and council are dynamic and representative, outreach is excellent (flyers, website, etc.), and work-

ing groups are active. The Commission is lead by Kristine Asch (Kristine.Asch@bgr.de), Ian Jackson (Secretary; ij@bgs.ac.uk) and Max Fernandez (Treasurer; mfernandez@africamuseum.be).

The IUGS Council formally ratified the new Commission in 2004 at Florence and a full Open Meeting during the IGC with more than 70 attendees. For its first meeting, new Statutes were produced and agreed upon, elections were prepared, and the web site was completely overhauled and refreshed, flyers were distributed, and invitations to the Open Meeting were mailed to over 1500 people worldwide. Its working groups continue to make progress on developing a geoscience data model and overhauling the Multi-lingual Thesaurus.

Commission on Solid Earth Chemistry and Evolution (SECE)

The IUGS Council officially approved the reformulation of the Commission on Solid Earth Chemistry and Evolution (SECE) in August 2004 from the previous commission COPSCE (Physics and Chemistry of the Earth) and earlier CIMP (Commission on Igneous and Metamorphic Petrogenesis). SECE is a new commission comprising mostly younger researchers, that aims to promote petrologic and geochemical investigation of the Earth's crust and mantle through organizing symposia, publishing proceedings of sponsored conferences; and supporting participation of young geologists in international conferences, symposia and workshops. Since August 2004 work has focused on organizing the commission. At present, membership is too limited and there is a need to include more European members (particularly from the Mediterranean region), South America. Asian (e.g., India, west Asia and the Middle East) and African members should be included. SECE also aims to publish conference proceedings.

Commission on Systematics in Petrology (CSP)

This Commission (<http://www.dmp.unipd.it/IUGS-CSP/IUGS-CSPindex.htm>), chaired by Giuliano Bellieni (giuliano@dmp.unipd.it) with Raffaele Sassi as Secretary-General, seeks to provide a unified and standardised system of nomenclature for igneous, metamorphic and sedimentary rocks, in order to ease communication between geoscientists. A Sub-commission has been established for each of these three main branches of petrology. Close links are kept with other, related bodies, such as the Commission on the Management and Application of Geoscience Information (CGI), the Commission on New Mineral Names (part of IMA) and several IGCP Projects. The Commission aims to provide a unified and standardised system of nomenclature for igneous, metamorphic and sedimentary rocks in order to ease communication between geoscientists. A Sub-commission has been established for each of these three main branches of petrology. Close links are kept with other related bodies, such as the Commission on the Management and Application of Geoscience Information (CGI).

International Commission on the History of Geological Sciences (INHIGEO)

INHIGEO is a commission of both IUGS and the International Union on the History and Philosophy of Science (IUHPS), has 166 members in 40 countries, and 9 Honorary Senior Members, who receive the Commission's newsletter and may, if they wish, participate in INHIGEO activities, but have no formal obligations to the Commission.

After eight years, David Oldroyd transferred the position of Secretary General to Kennard Baker Bork (bork@denison.edu). The overall objectives (studies in the history of geological sciences and publication of works on this subject) fit within the stated objectives of IUGS. The Commission attempts to be involved with other international

projects such as the IUHPS.

INHIGEO hosted technical sessions at the 32nd IGC in Florence, Italy, and conducted a field conference in Italy, following the IGC meetings: Session T-20.01 ("Origin of modern geology in Italy"). INHIGEO organized a technical session in the 32nd IGC of Florence and field conferences in Italy, publishing the book: *Geological Travellers* containing papers presented at the INHIGEO meeting (Dublin). Chief products in 2004 included a fieldtrip guidebook "Italian Institutions and Geological Sites in the History of Geosciences" and Newsletter #36. Other articles will appear in 2005 and in particular a field trip guide book on Italian Institutions and Geological sites in the History of Geosciences. A five-volume *Encyclopaedia of Geology*, published by Elsevier and scheduled to appear in December 2004, incorporated a number of articles on the history of geology, authored by INHIGEO members and solicited and edited by David Oldroyd.

INHIGEO now has a dedicated website, thanks to the support of John Aaron. It underwent significant updating in November 2004, with input from Ken Bork and site management by John Aaron. Lastly, 2004 saw implementation of the concept of allowing members over the age of 70 years to serve on the Commission without being "counted" toward a country's limit of eleven active members. INHIGEO also continues to develop a history of IUGS in Episodes.

International Commission on Stratigraphy (ICS)

This Commission (<http://www.stratigraphy.org>) is charged with the important and complex task of establishing global stratotype sections and points (GSSPs) for the complete Earth's history. The Commission, which also promotes and coordinates long-term international cooperation in a number of other related stratigraphic topics, is the largest and oldest body within IUGS.

Felix Gradstein (felix.gradstein@geologi.uio.no) and James Ogg (jogg@purdue.edu) lead the Commission as Chairman and Secretary-General, respectively.

The 14 Sub-commissions on Stratigraphy, including one for each Phanerozoic System, determine where to fix the GSSPs defining the base of the Systems, Series and Stages (and thus the boundaries between) in the geological time-scale that comprise the stratigraphic column. ICS maintains strong links with the NSF (USA) concerning the scientific database initiative CHRONOS (<http://www.chronos.org>), a multi-million dollar, 6-year developmental programme being considered. This aims to develop a global network of databases for Earth System history. This will link Life-through-Time, Climate-through-Time, Radiometric Ages, Palaeomagnetism, and the standard Geological Time Scale. ICS members also maintain active links with international research groups, including The (British) Micropaleontology Society, the North American Micropaleontology Society, and the Association of American Stratigraphic Palynologists, and international paleontological research groups on Graptolites, Conodonts, Ammonites, Radiolarians (Interrad), Nannofossils, Foraminifers, etc. In addition, there are many ICS stratigraphers involved with the Ocean Drilling Project (ODP).

The standardization of the International Chronostratigraphic Scale (GSSP approvals) is ongoing. The new International Geological Time Scale went to completion (GTS2004, published by Cambridge University Press). The entire time scale is illustrated by superior (colour) graphics at various scales, formats, and audiences. During the summer of 2004, ICS published the new International Stratigraphic Chart (in Episodes), and an overview of established GSSPs (in Lethaia). Summary charts of the International Geological Time Scale were distributed free to all participants (~5000) at the IGC in Florence (August 2004). The 2004 International Geological

Timescale was published with sponsorship from outside ICS and IUGS. Approximately 2000 copies of the GTS2004 time scale poster (printed by Geological Survey of Canada) were distributed at-cost by the Commission on the Geologic Map of the World (CGMW) at their Florence IGC booth. The major drive for promoting the International Stratigraphic Chart and the compilations within GTS2004 was partially supported by donations from ExxonMobil, Chevron, Shell, BP and Statoil petroleum companies.

In addition to the main ICS website: www.stratigraphy.org, most of the sub-commissions have established websites that have placed an impressive amount of virtual information on geological time into the public domain. Nearly all sub-commissions of ICS publish regular newsletters or circulars of a high scientific calibre. ICS receives very little financial support from sources other than IUGS. ICS is internationally well linked and also very active concerning PR (e.g., launch of the Ediacaran and website). ICS has the mandate to have all GSSPs in place by the end of 2008, but the progress is not sufficient to date to meet this deadline. There is also the potential pitfall of doing things in a haste, as for example appeared to have been done with the Ediacaran and Quaternary, where some researchers, particularly from Russia, Europe and North America, are not in agreement.

IUGS INITIATIVES

Geoindicators Initiative (GEOIN)

This Initiative (<http://www.geoindicators.org>) was a part of COGEOENVIRONMENT until 2002. Antony Berger (aberger@uvic.ca) and Jonas Satkunas (Jonas.Satkunas.lgt.lt), together with David Liverman (Geol Surv. Newfoundland) and John Ridgeway (BGS) lead this group. The Initiative's overall objective is to track and assess rapid geological change using the geoindicators approach.

The geoindicator concept has now entered the geological “lexicon”, and applications have been developed in state-of-the-environment reporting, the management of parks and protected areas, assessing the environmental impacts of mining and quarrying, and in linking geology and human health issues. Twenty-seven geoindicators have been defined in a checklist format that represents a menu of core landscape indicators. These can be combined with other indicators (biological, climatic, even socio-economic) to construct a full picture of environmental condition and the stresses on ecosystems originating from both natural and human sources. Each geoindicator is described using a framework of sixteen different descriptors (Appendix 8). The Geoindicators list comprises the following features: Coral chemistry and growth patterns; Desert surface crusts and fissures; Dune formation and reactivation; Dust storm magnitude, duration and frequency; Frozen ground activity; Glacier fluctuations; Groundwater quality; Groundwater chemistry in the unsaturated zone; Groundwater level; Karst activity; Lake levels and salinity; Relative sea level; Sediment sequence and composition; Seismicity; Shoreline position and morphology; Slope failure (landslides); Soil and sediment erosion; Soil quality; Stream flow; Stream channel morphology; Stream sediment storage and load; Subsurface temperature regime; Surface displacement; Surface water quality; Volcanic unrest; Wetlands extent, structure and hydrology; Wind erosion.

In 2004, GEOIN’s leadership developed Dark Nature’s successful ICSU grant proposal and is currently a major partner in the project. GEOIN is also cooperating with IPA, LESTARI (Malaysia), INGEOMINAS (Colombia), National park systems (US and Canada), the Millennium Ecosystem Assessment, and a US NRC Committee. Meetings and sessions in 2004 included: “Geoindicators: methods and techniques for monitoring rapid geological change” (session, 32nd IGC); “The effects of

climate change in the western Sahara” (workshop, Dark Nature); two successful geoindicator training course in Mozambique; a training course on megafloods (Dark Nature) and a workshop on landscape change (LESTARI, UKM). Its leaders held lectures on geoindicators throughout the globe and updated the Geoindicator Checklist (on-line). A number of articles on geoindicators were published in 2004. The group contributed an article to “Quaternary International” and material to the abstracts and field guides in 2004. An article is in press for *Geoinformatics* entitled: “Geoindicators: An earth science tool for decision-makers, managers and planners in *Geoinformatics*.” A small-scale field project to monitor stream sediment load and storage also continued in 2004 in Gros Morne National Park, Newfoundland. Efforts continue to incorporate geological monitoring into the management of parks and protected areas and into state-of-the-environment reporting. The GEOIN website continues to be maintained by the Geological Survey of Lithuania (<http://www.lgt.lt/geoin/>).

Medical Geology (MGI)

This Initiative (<http://www.medicalgeology.org>), which evolved from COGEOENVIRONMENT in 2002, aims to show the importance of Earth sciences for human and animal health, to promote medical geology, to link geosciences with medical sciences and to foster collaboration between developing and developed countries. The Initiative is led by Olle Selinus (olle.selinus@sgu.se) with Bob Finkelman (rbf@usgs.gov) and Jose Centeno (centeno@afip.osd.mil) as co-directors. The medical geology concept provides an important opportunity for the Earth sciences to interact with the medical world and to have a major impact on human health and welfare. Interest in the topic, from both the geosciences and, critically, the medical side, is growing rapidly. This successful IUGS Initiative will terminate in 2005 and to

properly harness this interest, a professional body, the International Medical Geology Association (IMGA) is being formed, with the above-mentioned persons being the Directors, with six Councillors from around the world who will be active in medical geology within their disciplines, networks and geographical regions.

IUGS recognizes that the Initiative involves many developed and developing nations, and has been extremely successful at bringing together medical and earth sciences. At present there are 200 active members and 74 member countries. The work of MGI has resulted in a greater understanding of the relation between geology and health. It has a very clear capacity building profile and makes IUGS visible outside the geological community. The Initiative's myriad recent activities and accomplishments include presentations at numerous scientific and medical meetings, and the publication of a new book, *Essentials of Medical Geology*. The website was update weekly. A biannual newsletter is also produced. Courses in Medical Geology have been successful at bringing together medical and earth scientists. The topic of Medical Geology is also planned as one of the eight themes of the International Year of Planet Earth. A brochure has been produced.

IUGS TASK GROUPS

Task Group on Public Affairs (TGPA)

This Task Group (<http://www.agiweb.org/gap/iugs>) was originally established to assist IUGS better understand the policy issues that the Union's members believe to be of major importance and to determine what activities were being undertaken to address those issues. An IUGS ad hoc review in 2004 showed that TGPA met all their goals. David Applegate leads the Task Group, with representatives from 18 countries or organisations. The Task Group is scheduled to terminate in 2005.

Task Group on Global Geochemical Baselines (TGGGB)

The principal aim of this Task Group (<http://www.bgs.ac.uk/iugs/home.html>) is to prepare a global geochemical database, and its representation in map form, to document the concentration and distribution of chemical elements and species in the Earth's near-surface environment. The database and accompanying maps can then be used to create a geochemical baseline against which future human-induced or natural changes to the chemistry of the land surface may be recognised and measured. Jane Plant (japl@bgs.ac.uk) and David Smith (dsmith@usgs.org) lead the Task Group.

In 2004, sampling in East Africa (Kenya, Tanzania and Uganda) and a field course in Tanzania took place. In Europe, work continued under the FOREGS banner on the project; all analyses and quality checks have been made and the data compilation and management processes are under way, with the first set of maps finalized and ready for publication. Within Europe, significant progress was made on the FOREGS Geochemical Atlas of Europe. In particular, the final introductory and background texts and all distribution maps are finalised and ready for publication. Numerous publications resulted from IUGS/IAGC/FOREGS Workshop and the 32nd IGC. The first volume of the 'Geochemical Atlas of Europe', which includes all introductory and background texts, as well as a complete set of maps of European geochemical data, were completed in December 2004.

Task Group on Geochronological Decay Constants (TGGDC)

The goal of this Task Group is to formulate new, specific recommendations for isotopic decay constants, isotopic abundances, and uncertainties. The decay constants that have been in use in the geological community for the last 22 years were endorsed and recommended by IUGS. However, recent analytical improvements have exposed po-

tential problems with the 1977 recommendations. Critical to the success of the work of the Task Group is that its members were viewed by the entire scientific community as accomplished, recognized practitioners, rather than consumers, of radioisotope geochemistry and geochronology. The new values were presented at the IGC in Florence, 2004 and subsequently published in *Episodes*. An ad hoc review of the Task Group was held in Oslo March, 2004 that concluded that it is necessary to have a body dealing with isotopic geochronology, with special emphasis in standardization, that this body should be outside ICS, and that if possible it should be linked to International Union of Pure and Applied Chemistry (IUPAC) and the International Union of Pure and Applied Physics (IUPAP). In this regard, the IUGS and IUPAC agreed in seeking to establish an Inter-union Working Group to promote standardization, recommend conventions in methodology, and promote a database of radiometric standards.

Task Group on Tectonics and Structural Geology (TECTASK)

The group encourages innovative research and continued education in Tectonics and Structural Geology, the growth of intellectual capital and hence the impact of our science on the wealth of the global society. The group was accepted in October 2004, but has already established a network of contacts through the USA (various NSF funded programmes) and Europe. Its Vice President is a member of the European advisory council for Africa Array, a new African based initiative to promote geophysics research and training in Africa. TecTask was formed as successor of the dissolved COMTEC committee in October 2004. The group first identified initial topics and goals for short-term developments and implemented a web portal (www.tectask.org) as the major platform for the group's activities. Cees Passchier (TecTask chair) hosted a meeting of TecTask officers at the

Department of Earth Sciences at University of Mainz to discuss prospective and future activities of the task group

IUGS COLLABORATIVE PROJECTS

International Geoscience

Programme (IGCP)

In 1972, IUGS and UNESCO jointly initiated the International Geological Correlation Programme with the aim of providing funding to promote research in the Earth sciences:

<http://www.unesco.org/science/earthsciences/igcp/index>.

htm <http://www.iugs.org/iugs/news/igcp04.htm>



The current objectives of IGCP are to increase understanding of the environment, to assist in the improvement of human welfare, to establish better methods for finding and assessing the natural resources of the world, to further our understanding of geological processes and to improve research meth-

ods and techniques in the geosciences. IGCP has been more successful than any other programme.

A list of projects supported in 2004 is given in Appendix 7. IUGS and UNESCO announced the funding of nine new projects in their joint enterprise, bringing the total number of IGCP projects active or on extended term in 2004 to 43. Eight IGCP projects were terminated at the end of 2004 (projects 430, 433, 443, 448, 449, 450, 453 and 454). The financial support to IGCP in 2004 was around average for the past 8 years. Out of a total of US \$276,000, 35% (US\$ 95,500) was funding from IUGS. The average funding to each scientific project was US \$7,500. Project details and application forms can be downloaded from the IGCP homepage, given above.

Geological Applications of Remote Sensing (GARS)



The GARS programme contributes to the advancement of geological research throughout the world and the development of the understanding of the Earth system, in order to address problems of particular relevance to the welfare of the Earth's population (<http://www.unesco.org/science/earthsciences/gars/>). GARS is a joint operation of IUGS and UNESCO and now involves 40 institutes and individuals from 28 countries, most from the developing world. Currently, under IGOS, GARS is focussing on three of the five strategic issues identified by IUGS: Reducing the vulnerability of communities at risk to natural hazards (IGOS Geohazards Theme); Managing resources in a sustainable and environmentally sound way (Groundwater Initiative) and Contributing to understanding of global environmental changes. GARS is now in charge of implementing IGOS' Geohazards strategy, as a result of which it has gained significant international recognition and has become a major player in the Earth observation arena.

The critical accomplishment during 2004 was the formal publication and widespread promotion of the Integrated Global Observing Strategy for Geohazards. The final glossy publication was unveiled at the 11th Plenary of the IGOS Partnership in Rome in June 2004. Promotion of the strategy included the major, four yearly Congresses of the IUGS, covering the geosciences, and the International Society for Photogrammetry and Remote Sensing, for the Earth Observation community, as well as the International Astronautical Congress, capturing the space agency community. Also important was the restructuring of the GARS

Programme to include active participation of the space agencies with the geological surveys. Buy-in to the GARS Programme was achieved at Director level in both the Japanese Space Agency (JAXA) and the United States Geologic Survey, USGS. A GARS-IGOS Geohazards Joint Committee was established successfully. Also of note was the establishment of the IGOS Geohazards Executive Bureau within the BRGM in November 2004. This full-time office will be the vehicle for coordinating the implementation of the strategy. Importantly, it will allow the GARS Programme to place less emphasis on IGOS in 2005 than in recent years and so to develop the next GARS theme, groundwater and trans-boundary aquifers.

Mineral Resources Sustainability Programme (MRSP)

This is a joint UNESCO-IUGS programme (<http://www.unesco.org/science/earthsciences/dmp/>) which advances geoscientific knowledge and expertise in mineral deposit modelling for use in exploration, resource and environmental assessment and development of resources, to facilitate the transfer of such knowledge and expertise to developing countries and to assist in the training of geoscientists from such regions, so that they can carry out exploration in conjunction with resource and environmental assessments in their home countries. Before ending in 2004, MRSP co-sponsored a session at the 32nd IGC in Florence on Global and Continental-Scale Mineral Resources Assessments (including 17 oral presentations and 18 posters). The main objectives of MRSP fit perfectly within IUGS science policy. Of the six new directions for the development of sciences, the fifth is "managing resources and sustaining the environment". MRSP has also developed activities concerning expertise in mineral deposit modelling for use in exploration, resource assessment and transfer of knowledge to developing countries.

Scientific Committee on the Lithosphere (SCL; International Lithosphere Programme (ILP))

This programme (<http://www.sclilp.org>) is a joint venture of IUGS, IUGG and ICSU, seeking to elucidate the nature, dynamics, origin and evolution of the lithosphere, through international, interdisciplinary collaboration. Sierd Cloetingh (cloeting@geo.vu.nl) was appointed as ILP President early in 2004, with J. Negendank as Secretary General, leads the Programme that involves several hundred scientists from over 60 countries. A number of challenges face ILP including the need to strengthen the connection between solid-earth and non-solid-earth aspects

relevant to the lithosphere and vice-versa; bolster the profile and impact of lithosphere research and topics of societal relevance (i.e., energy and environment); attract young researchers by choosing topics and adopting integrated approaches; promote training of young researchers on lithosphere studies; and to initiate dedicated programmes that address world-class problems. The road map for 2004-2005 includes restructuring the Programme to bring it in line with challenges; launching new task forces; promoting a strong presence at international meetings; producing Special Volumes on the results of ILP research; and promoting young scientists through an active award system.

GEOPARKS APPROACH – SCIENCE, HERITAGE, COMMUNICATION, SOCIO-ECONOMY AND EDUCATION



By Werner Janoschek
Secretary General of
IUGS 2002-2004

GEOSEE is a joint initiative of IUGS, UNESCO and IGU that serves as an international entity between UNESCO Global

Geoparks, the European Geoparks Network and the Chinese Geoparks and many existing activities in the field of geological parks, geoconservation, geotourism and sustainable development.

GEOSEE was created during the 1st International Conference on GeoParks in China in June 2004. Earlier in the year, IUGS met with representatives from IGU, the European Geoparks Network (EGN; <http://www.europeangeoparks.org/>), UNESCO, the UK Joint Nature Conservancy Council (<http://www.jncc.gov.uk/>), the European Association for the Conservation of the Geological Heritage (ProGeo; <http://www.sgu.se/hotell/progeo/>), the European Commission on the Geological Sciences for Environmental Planning

(http://europa.eu.int/comm/environment/index_en.htm) and representatives from Austria, China, Namibia, Malaysia, Germany, Canada and The Netherlands. A Secretariat has been established in Beijing, where Zhao Xun serves as the Secretary General and the Treasurer of GEOSEE. At the Global UNESCO Geopark Mount Lushan, the Chinese partners donated an Italian-style villa and installed an office for GEOSEE and the SE Asian Network on Geoparks (to be created).

Local dignitaries attended the official opening.

To date, achievements include: 1) a Task Force comprising a group of interested parties; 2) a Mandate of Operations; 3) Terms of Reference; and 4) a List of Objectives and Partners. For the future, GEOSEE aims to define the organization, establish statutes and bylaws, and set up regional chapters. This new organization will compliment the planned IYPE. The group intends to expand its address database include addresses from UNESCO Global Geoparks, National Geoparks and National Parks. It plans to establish a home page and produce a preliminary electronic newsletter. In the near future, the Task Force intends to examine the possibility of becoming an international (scientific) body, formulating statutes and bylaws, and the development of a four-year work plan.



GEOPARKS

IUGS is also strongly involved with Geoparks initiatives. Since October 2002 IUGS is a member of the Advisory Group of the European Geoparks Network (EGN). The Secretary General of IUGS, Werner Janoschek, performed this function. This group prepares all decisions of the EGN and meets three times a year. In accordance with UNESCO, Earth Science Division (until October 2004, then Division of Ecological and Earth Sciences), the criteria to establish European Geoparks (protected term) are evaluated at three-annual evaluations. This initiative is similar to the Chinese Global (UNESCO) Geoparks Network, which represents eight Global (UNESCO) Geoparks in China. IUGS is invited to contribute in the development of the Chinese Geoparks with its experience. There is also a national Chinese Geoparks Network with some 80 National Geoparks in China. The target of the Chinese administration is to create some 300 national Geoparks, 30 of which would be cer-

tificated as Global Geoparks (through UNESCO), by 2010. Furthermore, it is planned to develop Global (UNESCO) Geoparks Networks on all other continents.

A Geopark, as understood by IUGS and UNESCO, in full accordance with the EGN and the Chinese Geoparks Network, should contribute to protect geological heritage, to educate the society on all levels in geosciences, to link various fields of science, as geosciences, archaeology, morphology, history, soil sciences and many others, and to contribute to a sustainable development of the region. This combination of targets makes the Geoparks movement of high interest for scientists, economists, and politicians. The 32nd IGC in Florence was a milestone to bring the Geoparks idea to a broad geoscientific auditory: many sessions dealt with these items. At present there are plenty of various activities on all continents to create Geoparks on UNESCO level. The expertise of IUGS in this procedure is necessary and is well appreciated.



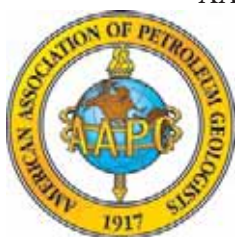
Organisations Affiliated with IUGS

Through its expanding number of Affiliated Organisations, currently 38, IUGS maintains contact with the broadest possible range of Earth scientists. The Affiliated Organisations not only provide important expertise for the Union, but also disseminate information coming from IUGS to their members. As the time approaches for the start of the International Year of Planet Earth, IUGS and UNESCO will be relying on the Affiliated Organisations to take an active role in promoting the aims of the Year and encouraging their members to participate in the activities.

Organisations Affiliated with IUGS

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American Association of Petroleum Geologists (AAPG)



AAPG (<http://www.aapg.org>) aims to foster scientific research, to advance the science of geology, to promote technology, and to inspire high professional conduct, still guides the Association today. It is currently the world's largest professional geological society with a membership of over 31,000, over 4,000 of which are students; over 30% of the membership works in the international arena. AAPG, together with sister organisations, is setting up branch offices around the world to better serve these members. AAPG provides publications, conferences, and educational opportunities to geoscientists and disseminates the most current geological information available to the general public. AAPG's GIS Upstream Digital Reference Information Library (GIS-UDRIL) is now one of AAPG's most sought after products. AAPG is also a major player in the Geoscience World; and the publications aggregate now investigating the feasibility of publishing all key geoscience journals electronically. AAPG supports a code of ethics for professional geologists to assure employers and clients of the integrity of its members. Officers guide the Association and a House of Delegates elected annually. The organization's programs are administered by an Executive Director and staff which are located in Tulsa, Oklahoma.

American Geological Institute (AGI)



The American Geological Institute (<http://www.agiweb.org>) is a non-profit federation of 42 geoscientific and professional associations representing over 100,000 members. It aims to voice the shared interests of the geological profession. In addition, it plays a major role in

strengthening geoscience education and societal awareness. AGI's 7th annual Earth Science Week was held from October 10-16, 2004, celebrating the theme "Living on a Restless Earth: Natural Hazards and Mitigation." For 2004, AGI distributed almost 15,000 packets to teachers and geoscientists across USA (up from 11,500 in 2003). The GeoRef database, established by AGI added approximately 87,500 new references and now contains over 2.4 million references and remains the largest and most comprehensive geoscience database available. The AusGeoRef database, launched in October 2004, is a bibliographic database produced with selected GeoRef references supplemented with references provided by Geoscience Australia. Web-based access to GeoRef now includes EBSCO, Cambridge Scientific Abstracts, the Community of Science, OCLC, DIALOG and Ovid (Silverplatter).

American Geophysical Union (AGU)



AGU helps to promote the development of Earth science worldwide and seeks to assure that the increasing understanding of the Earth is taken into account in formulating public policy. AGU is self-supporting although some grants, primarily from U.S. government agencies, to support special limited-term projects are also obtained. AGU is formally related with ICSU activities through the START Secretariat, an ICSU/IGBP activity that operates under AGU's umbrella in Washington, DC. AGU also interacts with IUGG. Attendance to its Fall Meeting in San Francisco grew 17% in 2004 to 11,500 registrants, which may make it the largest geological meeting held to date. All AGU journals are now fully electronic and their publication is faster than at any time in the past 15 years even as more pages are being published. A portion of a new AGU publication, Space Weather, is available on the web free at: <http://www.agu.org>.

Arab Geologists Association (AGA)

AGA has a significant role in the organisation of geology in Arabian countries, which helps in promoting IUGS visibility in this area. In 2004, AGA was invited to the Symposium on the Environmental Effect of Chemical Wastes held in Tripoli and the Jordanian Geological Conference held in Amman. AGA had planned a Council meeting to be held parallel with the Jordanian Conference, but due to difficulties in communication between the host and AGA member organizations, the meeting had to be postponed. AGA was also involved in the IGC Scientific Programme and a member of the IGC Mediterranean Consortium. The AGA Secretary General visited various groups to discuss cooperation including ICSU (Carthage Smith) and the Jordanian Environmental Society. Despite security conditions in Iraq, AGA will try to renew efforts for the organization of the International Symposium on Gypsum Soil. In addition, AGA is cooperating with the University of the United Arab Emirates for the organization of the Sixth Conference on the Geology of the Middle East, which will be held in Abu Dhabi. The first circular of the meeting and the web site are under preparation.

Association Internationale Pour l'Etude des Argile (AIPEA)



aipea

The aim of AIPEA (<http://www.agr.ku-leuven.ac.be/intorg/aiepa/aiepa.htm>) is the worldwide promotion of clay research and technology and to foster international cooperation in these fields. These aims are fulfilled by sponsoring international conferences; stimulating young clay mineralogists and by stimulating communications between clay researchers and clay technologists. The group, which has a large number of affiliated clay societies, runs two committees, on Nomenclature and on Teaching.

The society offers an award to assist scientists attending the International Clay Conference.

Association of European Geologists (AEGS)



The Association (<http://www.uni-essen.de/geologie/aegs.htm>) currently has 30 members from 29 countries. Membership to AEGS is open to all non-governmental societies, institutions and organisations in Europe active on a country wide scale in the geological or earthsciences. Since 1975, AEGS has helped in the organization of the biannual meetings: MAEGS (Meeting of the Association of European Geological Societies). In this way the association serves as a "clamp" for European geological sciences, especially on the level of the national geological societies (www.aegs.de or www.aegs.org). AEGS' main task in 2004 had been the organization of MAEGS-14 that will be held in Turin in September 2005. The meeting will reflect AEGS's strategy of treating geoscience subjects relevant to trans-European cooperation and societal needs. The upcoming MAEGS-14 "Natural hazards related to recent geological processes and regional evolution" will concentrate on geohazards that arise as a consequence of longer-term geological processes.

Association of Applied Geochemists (AAG)

The Association of Applied Geochemists (<http://www.appliedgeochemists.org/>) (formerly the Association of Exploration Geochemists - AEG) specializes in advancing the science of exploration and environmental geochemistry and furthering the interests of both geochemists and geochemistry by encouraging research and development and the distribution of scientific information. The new



name better reflects its scope and its membership. In 2004, AAG co-sponsored a training course on Exploration Geochemistry held in Langfang, Hebei that was organized and led by China's Institute of Geophysical and Geochemical Exploration. The AAG's Distinguished Lecturer, Dr. Cliff Stanley, delivered a series of lectures at this training course. In partnership with GSL, AAG sponsors the publication of the journal "Geochemistry: Exploration, Environment, Analysis in partnership". AAG's monthly newsletter, EXPLORE, is distributed throughout the world and contains timely articles on a variety of applied geochemistry topics. The Association also produces special publications and conducts short courses on topics of concern in the fields of applied geochemistry. The AAG is continuing preparations to host its biennial International Applied Geochemistry Symposium. The Symposium will be held September 19th to 23rd, 2005 in Perth, Western Australia.

Association of Geoscientists for International Development (AGID)

The Association (<http://agid.igc.usp.br>) encourages communication between individuals, societies, agencies and corporations with interest in the application of geosciences to sustainable development and further encourages and promotes activities in geoscientific fields that are related to the needs of developing countries. At the last AGID General Assembly it was decided that reform and continuation was preferred to closure. The Head Quarters were relocated to Bangladesh. In recent years, there has been a fall in membership in the 'developed' world; however, the activities of AGID in the Indian sub-continent demonstrate that a decentralised AGID can continue to function successfully as a regional network. The vol-

unteer services of AGID officers keep the expenditures of the organizations low. UNESCO provides modest support to a regularly published regional geoscience Newsletter. AGID continued to distribute its journal *Geoscience and Development* in 2004. 700 copies of the S and W Asia edition of the *Geoscience Newsletter* were distributed worldwide. Plans are to make available these publications available on-line. A donation of \$30,000 from BHP Billiton of Australia paid for shipments of over 1600 individual titles and extensive holdings journals to Ghana, Uganda, Botswana and Cuba. AGID interfaces with several international projects bringing to them their experience with developing countries; for example, IYPE, the Geological Society of London, IAH and IGCP.

Carpathian Balkan Geological Association (CBGA)



The objective of this group is to promote and encourage joint fundamental and applied geological research, as well as training and specialization, in the Carpathian-Balkan realm. This concerns virtually all branches of the geological sciences (including geophysics), their environmental implications, and related disciplines. CBGA Interfaces internationally with IGCP, and partly with Central European Initiative (CEI). In 2004, the CBGA continued with the organisation of the XVIII Congress that will be held in September 2006 in Belgrade (Serbia and Montenegro). The First circular (call for the papers) for the XVIII Congress CBGA was distributed to 900 participants of the last two Congresses CBGA and 200 between National Committees. The last session (The XVII Congress of CBGA) took place from September 1st to 4th, 2002 in Bratislava - with over 400 participants from member-countries

and guests. A session of the Board of CBGA took place May 24th 2004 in Belgrade with discussion and proposals for changes in the actual Statutes of CBGA.

Centre Internationale pour la Formation et les Echanges Géologiques (CIFEG)



The main goal of CIEFG is to facilitate multilateral exchange geoscientific knowledge between the North and South. CIFEG played a large part in the organisation of the 20th Colloquium of African Geology held in June 2004 in Orleans (France), co-organised by BRGM and the Geological Society of Africa. The group participated in the 41st CCOP annual session on November 2004 in Tsukuba. In December 8-9, 2004, a restitution meeting was organised in Bangkok under the umbrella and participation of UNESCO and IUGS (the chairperson of CGI attended this meeting), which gathered representatives from SANGIS member countries. This meeting organised by CCOP and CIFEG, was co-funded by UNESCO and French Ministry of foreign affairs (including the CGI participation). The agenda dealt with the presentation of the Thesaurus first version (with 7 Asian languages only) in computerized format, the outcome, the dissemination policy, and its possible extension. In particular, there is a strong expectation for an upgrading of the AMT content. The final first version of AMT is expected in March 2005. It will comprise 9 Asian languages.

Commission for the Geological Map of the World (CGMW)

CGMW (http://ccgm.free.fr/index_bg.html) aims to promote, coordinate, publish and disseminate



Earth Science maps at small scale of continental and/or oceanic areas of the World. Geological Surveys (or organizations responsible for national geological mapping) of all countries and

territories of the World are statutory members, while others interested groups are allowed to join as Associated Members. CGMW produced various new maps in 2004 including "The Map of the Indian Ocean", the WHYMAP, the "Hydrogeological Map of the World," and The Metamorphic Map of the Alps. In addition, the book "Mediterranean Basin Water Atlas" was published in cooperation with UNESCO Water Science Division. More than 5000 maps were distributed at GeoExpo in Florence, August 2004. The sales of maps increased significantly in 2004 due mainly to the diffusion of the CGMW publications to the university and colleges. The sales income is essential to compensate the decrease in the revenues from membership fees and UNESCO support.

Circum-Pacific Council for Energy and Mineral Resources (CPC)



The Council (<http://www.circum-pacificcouncil.org/>) develops and promotes research and cooperation among industry, government and academia for the sustainable utilization of earth resources in the Pacific Region. Its "Crowding the Rim Project" has created tools to promote cross-sector international discussion to mitigate regional catastrophes. These tools included: 1) HazPac, short for hazards of the Pacific is a compilation of digital data on natural hazards, popu-

lation and infrastructure. See <http://www.hazpac.org>; 2) RimSim, short for PacificRim Simulation is a conflict negotiation simulation that provides an opportunity to address risk in an increasingly interconnected global community; 3) The CTR Educational Module, a set of secondary-level classroom curricula, was developed to educate young people and others about risk in the context of the Pacific Rim. A new initiative has recently established: "Powering The Rim" addresses the future of energy security in the Circum-Pacific region and an international conference is scheduled for 2006 in China. The Initiative's first completed product is now available through the AAPG and AGI, a 2-DVD set entitled, "Perspectives on Energy: today and tomorrow. Concerns, complaints and praise to the international geoscience community".

European Association of Science Editors (EASE)

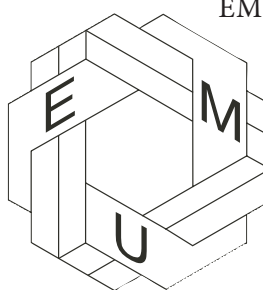


EASE (<http://www.ease.org.uk/>) is a non-governmental and not-for-profit organization operated exclusively for the advancement of science editing and educational purposes. Since 2000, it has

been a Company Limited by Guarantee in the UK. Membership at the end of the year was just under 900, with the number countries represented being 55; the breakdown of membership remains virtually unchanged at about 14% of members from countries outside Europe. EASE is an international non-governmental organization in category C relationship with UNESCO and Category A liaison with Technical Committee 46 (Information and Documentation Subcommittee 9; Presentation, identification and description of documents) of ISO. In 2004 the Association held an Annual General Meeting in Barcelona, Spain. EASE con-

tinues to provide sponsored membership, from funds received from WERK (The Netherlands). The journal of EASE, *European Science Editing*, Volume 30, was distributed to members and subscribers. Revision of the *Science Editors' Handbook* proved to be a success, and at least nine new chapters are in the process of being written.

European Mineralogical Union (EMU)



EMU members are national scientific societies from European countries, including Russia, with only one member per country allowed. It is dedicated to furthering European cooperation in the mineralogical sciences (mineralogy,

petrology and geochemistry) and supports conferences within Europe of a high scientific standing and of an international character. In particular, it supports the Experimental Mineralogy, Petrology and Geochemistry (EMPG) and the European Union of Geosciences (EUG) meetings. In 2004 EMU gave sponsorship to the 'Tenth International Symposium on Experimental Mineralogy, Petrology and Geochemistry - EMPG' (Frankfurt/Main) and to the symposium 'Micro- and mesoporous mineral phases - mineralogical, crystallographic and technological aspects' (Rome). It also co-sponsored the '5th European Conference on Mineralogy and Spectroscopy' organized by the Austrian Mineralogical Society. EMU helped 56 institutional libraries facing serious financial difficulties (mainly in Eastern Europe and Latin America) by donating to them free subscription of *European Journal of Mineralogy*. EMU published the sixth volume of the EMU Notes in Mineralogy: 'Mineralogy and Spectroscopy'.

Geochemical Society (GS)



The Geochemical Society encourages the application of chemistry to the solution of geological and cosmological problems. Its membership is international and diverse in background, encompassing such fields as biogeochemistry, organic geochemistry, high and low-temperature geochemistry, petrology, meteoritics, fluid-rock interaction, and isotope geochemistry. The Geochemical Society sponsors (jointly with the European Association of Geochemistry) the V. M. Goldschmidt Conference, a broad-scope conference covering all aspects of geochemistry and cosmochemistry. The Geochemical Society sponsors (jointly with the Meteoritical Society) the professional research journal "Geochimica et Cosmochimica Acta," as well as a quarterly newsletter "The Geochemical News," a quarterly newsletter which distributed to all members. In addition, the society publishes two book series, the Special Publications Series and, jointly with the Mineralogical Society of America, the Reviews in Mineralogy and Geochemistry Series. The Geochemical Society sponsors (jointly with the European Association of Geochemistry) the V. M. Goldschmidt Conference, a broad-scope conference covering all aspects of geochemistry and cosmochemistry.

Geological Society of Africa (GSAf)



This Society aims to promote the advancement of the geological sciences throughout the African continent by encouraging and supporting education, training, research, the establishment of national societies and local groups and the organisation of confer-

ences and other meetings. In 2004, over 30 countries from Africa and elsewhere were represented at the Society's 20th Colloquium of African Geology (CAG20) organized at BRGM (France). The Society additionally supported, directly and indirectly five meetings in Africa and one in Florence during the IGC 32. Society members continue to be active in the IGCP programme, but are largely under-represented. The Society will aim for the solid African representative in the IUGS IYPE initiative. The Society continued to maintain its homepage with the valued assistance of Elsevier Science and the production and dissemination of its newsletter AfricaGeonews. The work programme for 2005 will include the realisation of GSAf13, the Society's international conference, to be held in Cairo. In addition, it plans to give required support to the local organising committee of the 21st Colloquium of African Geology (CAG21), which will take place in Maputo, Mozambique in 2006. IUGS financial moral, and professional support is vital to maintain the GSAf activities. GSAf is an Associate Partner in the International Year of Planet Earth.

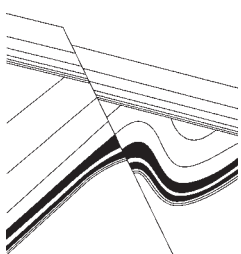
Geological Society of America (GSA)



GSA is a broad, unifying scientific society, which hopes to foster the human quest for understanding the Earth, planets, and life, catalyzing new scientific ways of thinking about natural systems and applying geoscience knowledge and insight to human needs and aspirations and stewardship of the Earth. In 2004, a dramatic change in the area of publications took place as GSA participated as a founding member in GeoScienceWorld (GSW), which is a fully integrated electronic collection of 31 journals. Notable is the development of an all-electronic journal, Geosphere, and partnering in the founding of GeoScienceWorld (GSW), a ful-

ly integrated collection of 31 journals, including AGI's Georef. February 25, 2005 is the launch date for GSW that will eventually include journals from around the world. The Society continues to expand its efforts to support student member activities. This past year, Council approved participation in the "Virtual Student Expo," a web-based system that will bring students together with industry, academic and governmental recruiters. Its' annual meetings, which attract over 6500 participants have been instrumental improving the Society's financial performance. Future annual meetings are now planned through 2011 (2005 – Salt Lake City; 2006 – Philadelphia; 2007 – Denver; 2008 – Chicago; 2009 –Portland, Oregon, 2010 – Denver, and 2011 – Minneapolis).

Geologische Vereinigung (GV)



GV (<http://www.g-v.de/>) promotes the Earth sciences within the framework of modern society; fostering understanding between individuals, organisations and institutions

is regarded as being an important part of its role, which it undertakes through promoting Annual Meetings, short courses and excursions. 500 scientists attended its annual meeting held jointly with Societe Geologique de France in September 2004 in Strasbourg. Represented at the meeting was EUCOR-URGENT, an international project of the universities of Strasbourg, Freiburg, Karlsruhe and Basel on the Upper Rhine Graben. The symposium was well attended, and there are plans for a book that will be part of a series published together with Societe Geologique de France. In 2004 year, the ranking of the International Journal of Earth Sciences (Geologische Rundschau) improved as reflected by journals citation index, now at 1.878. Since 1996, all articles have been available

on-line. In 2004, subscriptions declined; however, this appears to be compensated by the distribution in on-line packages to libraries. The society communicates with its members by GMit (Geowissenschaftliche Mitteilungen), a quarterly jointly edited with the other earth-science societies of Germany, and its website. It is worth noting that GV spends about 12 % of its budget for public relations.

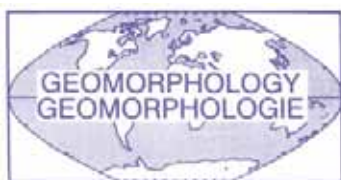
International Association for Engineering Geology and the Environment (IAEG)



The IAEG (<http://www.civil.ntua.gr/IAEG.html>) is devoted to the investigation, study and solution of the engineering and environ-

mental problems, which may arise as the result of the interaction between geology and the works and activities of man as well as to the prediction and the development of measures for prevention or remediation of geological hazards. IAEG is a worldwide scientific society with more than 5500 members in 66 National Groups and in individual memberships. The Association cooperates with a number of other international bodies (IAH, ISRM, ISSMGE and GEMS) expects to cooperate with these groups on several topics including education and training, professional practice, sustainable use of underground space, ancient monuments, soft rocks and indurated soils. The Association publishes The Bulletin of Engineering Geology and the Environment, distributes a newsletter and runs nine Commissions. An IAEG international congress is held every four years, and its 10th in Nottingham in 2006 will be entitled "Engineering for tomorrow's cities." Every two years a medal and a prize are awarded: The Hans Cloos Medal (senior award) and the Richard Wolters Prize specially recognises meritorious achievement by a younger member of the engineering geology profession.

International Association of Geomorphologists (IAG)



IAG (<http://www.geomorph.org/>) was founded to promote and develop collaboration in geomorphology between nations; affiliation is via National Scientific Members. IAG runs a number of working groups and task forces, such as those on Arid Regions, Geoarchaeology, Large Rivers and Volcanoes. The Association also sponsors conferences and publishes scientific material. IAG's income is derived from annual fees paid by affiliated National Scientific Members. Changes in the IAG constitutions now give member organizations from severely low income countries exemption from fees provided they submit annual report of their activities. In 2004, several students in Geomorphology from Eastern Europe were provided grants in order to allow them to participate in various international training courses. The IAG Executive Committee believes that it is important to broaden the scope of such grants. The next International Conference on Geomorphology will be held in Zaragoza, Spain, between 7th to 11th September 2005 and its second circular has been issued. An International Conference on Natural Hazards sponsored by UNESCO, IUGS and IAG was planned to take place in Oum el Bouaghi, Algeria, 26th February to 4th March 2005. IAG is very active in publishing, and they have a very positive approach to co-operation with other scientific bodies.

International Association on Geochemistry and Cosmogeochimistry (IAGC)

The IAGC is a pre-eminent international geochemical organisation whose prime objective is to foster co-operation in, and advancement of, geochemistry in its broadest sense. They sponsor meetings

and publications organised by Working Groups to study problems that benefit from international co-operation. In 2004, IAGC changed its name to International Association of GeoChemistry to better reflect its objectives, members' interests and journal "Applied Geochemistry". They joined with 6 other geochemical societies to provide a new international magazine: "Elements". Sessions were held at the 32nd IGC (Florence) and at the Annual GSA Meeting (Denver). Prof. Stephen Moorbath delivered the International Ingerson Lecture at the 32nd IGC in Florence. Future plans include sponsoring and assisting in organising the 15th Annual Goldschmidt Conference (Idaho), Geochemistry of the Earth's Surface (Aix-en-Provence) and Applied Isotope Geology (Prague).

International Association on the Genesis of Ore Deposits (IAGOD)

The Association's principal objective is to foster cooperation in, and advancement of, geochemistry and cosmochemistry in their broadest sense by working with any interested group in planning symposia and other types of meetings related to geochemistry, by sponsoring publications on topics not normally covered by existing organizations; and by the appointment of Working Groups to study problems that require, or would profit from, international cooperation. In September 2004, 164 people attended the Interim IAGOD Conference that was held in Vladivostok, Russia and carried the title 'Metallogeny of the Pacific Northwest'. During the IGC, IAGOD convened four symposia and one workshop. In addition IAGOD continued to support IGCP-486 activities. Ore Geology Reviews is the official journal of the association. Various books were published by IAGOD in 2004. IAGOD plays a vital role in ore deposit research, together with other bodies (SGA, SEG, IGCP), with whom they cooperate. It is noteworthy, how much is achieved by IAGOD with small financial

contributions by its membership. IAGOD did not receive a subsidy from IUGS in 2004. IAGOD is an Associate Partner in the International Year of Planet Earth.

International Association of Hydrogeologists (IAH)



IAH aims to advance public education and promote research in hydrogeological sciences. IAH is an organisation of more than 3700 individual members from over

140 countries. In parallel with the preparation for the World Water Forum IAH continues in international partnership projects with UNESCO. The most significant are WHYMAP (Hydrogeological Map of the World) that reached a significant benchmark in its development with the publication and presentation of a special edition of the world map at the IGC in Florence. The 2004 Annual Meeting of IAH was held in Zacatecas, Mexico during the XXXIII Congress of IAH. The main theme of the congress was "Understanding Groundwater Flow from Local to Regional scale". The Hydrogeology Journal, published 12 times a year by Springer, received approximately 200 manuscripts for review. IAH also continue to publish an annual Spanish/Portuguese journal in cooperation with IGME (Spain) and UNESCO. During 2004 the ownership of their book-publishing partner, Balkema, transferred to Taylor and Francis Publishers. Because of delays induced by this change no new publications appeared in 2004. IAH is an Associate Partner in the International Year of Planet Earth.

International Association for Mathematical Geology (IAMG)



This specialist Association (www.iamg.org/), with

453 members from 49 countries members, aims to promote international cooperation in the application and use of mathematics in geological research and technology.

This is done through the organization of meetings, field excursions and visits to centres of research and technology, through publications and through cooperation with other professional organisations. Already in 2000, the Association began to run a Student Grants Programme that supports graduate student research in broad areas of mathematical geology for the purposes of advancing the development and application of quantitative methods in the geosciences. The Association publishes *Computers & Geosciences* (now on-line), *Mathematical Geology and Natural Resources Research*. During the 32nd IGC, this group held its 9th General Assembly and five symposia and four short courses. IAMG's Lecture Series was highly successful last year: Frits Agterberg toured the Southern Hemisphere and gave fourteen lectures. This series serves to increase the visibility of mathematical geology and the organization. Toronto was selected as the site of the IAMG'05 (21-25 August 2005).

International Association of Sedimentologists (IAS)



IAS promotes the study of sedimentology by publications, discussion and comparison of research results, by encouraging the interchange of research through international collaboration and by favouring integration with other disciplines. Membership has gently decreased because of the process of online registration, with 1700 members from 97 countries in the year 2004. In September 2004, IAS held the 23rd Meeting of Sedimentology in Coimbra, Portugal attended by 340 participants representing 36 countries. In addition the group sponsored conferences and workshops in Argentina, Hungary, Slovakia and Germany. The IAS friendship scheme for scientists and libraries in developing countries continues. In 2004, 165 individuals and 36 libraries benefited. The new IAS Postgraduate Grant Scheme offered 28 grants, ranging from 850 to 1000 Euros, to young researchers from 15 different countries. IAS continues to promote the study of sedimentology by publications (*Journal of Sedimentology*), discussion and by interchange of research through international collaboration.

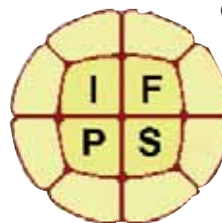
International Consortium on Landslides (ICL)



ICL (<http://icl.dpri.kyoto-u.ac.jp/>) is involved with international co-ordination, exchange of information and dissemination of research activities and capacity building through various meetings, dispatching experts, developing a landslide database, and publishing its journal "Landslides". Four issues

of the journal were published and distributed in 2004. ICL's central activity is the International Programme on Landslides (IPL). The construction of the headquarter building of UNITWIN (university twinning and networking) was jointly conducted by ICL, UNESCO and Kyoto University. ICL also interfaces with IGCP 425 and IGOS.

International Federation of Palynological Societies (IFPS)



Currently, 22 societies are members of IFPS (<http://www.geo.arizona.edu/palynology/ifps.html>) and the number of affiliated palynological societies and members increased in the beginning of 2005. The main events were the XIth International Palynological Congress, Granada, Spain, a new third edition of the World Directory of palynologists and election of a new President and some councillors. Some 671 registered palynologists attended the event. The participants included palynologists from 52 nations. A total of 315 talks were presented in 37 symposia in four concurrent sessions; and there were 367 poster presentations. The abstracts were published as Volume 14 of the journal "Pollen". Ten proceedings volumes are planned for publication in various international journals. The IFPS Council selected Bonn, Germany as the site of the next, IPC-XII in August 2008. The third edition of the World Directory of Palynologists was edited due to enormous effort and work of Past-President, Owen Davis. The Directory contains the list and contacts for about 3000 palynologists in all parts of the world.

International Geological Education Organisation (IGEO)



The Organisation (<http://www.cosm.sc.edu/~csemgr/igeo.html>) promotes education in the geosciences at all levels, works for the enhancement of quality in the international provision of geoscience education and encourages all developments that raise public awareness of the geosciences, in particular amongst younger people. At the 32nd IGC, IGEO convened three well-attended sessions all which included oral and poster presentations and more than 50 abstracts were submitted indicating the high level of interest. Chan-Jong Kim, IGEO Vice-President of IGEO hosted the first meeting of the International Earth Science Olympiad (IESO) in Seoul in November 2004. During IESO international leaders of Earth science education and Earth science presented their nation's status and curriculum of earth science education. At the August 2003 IGEO Council meeting in Calgary it was agreed that IGEO would help develop the IUGS Commission on Geoscience Education (see: COGEOETT). The Commission met in November to establish an action plan, its budget as well as discrete tasks for the next twelve months. The next four-yearly international conference of IGEO is to be held in Bayreuth, Bavaria, Germany, in September 2006.

International Mineralogical Association (IMA)



IMA (<http://www.dst.unipi.it/ima/>) comprises 38 mineralogical societies or groups (one per country) with a limited number of individual memberships. The Association promotes inter-course among mineralogists of all nations by organising events or publishing relevant literature. In 2004, the IMA sponsored three large meetings: the IGC (Italy), the 8th International Congress on Applied Mineralogy, ICAM 2004 (Brazil) and the 5th International Conference on Mineralogy and Museums (France). Beginning in 2005, news on IMA activities will become a regular feature of "Elements", a journal devoted to Mineralogy, Geochemistry and Petrology a magazine and created by several national (Canada, Great Britain and Ireland, USA) and international societies (GS, Clay Mineral Society). IMA and its membership participated in 29 scientific sessions of the last IGC, where it was decided to better integrate within the organization of the next IGC. The Commission on New Minerals and Minerals Names (CNMMN) was active and in 2004 received 68 new mineral proposals. Activities of the Commission of Gem Materials (CGM focused on preparing an illustrated glossary of minerals). The new Working Group on Environmental Mineralogy (WGEM), which is under constitution, will look at "mineralogy and health". A working of the Committee on Internet and Computer Applications (CICA) hopes to establish a worldwide standard in the development of an interchange file format for the various mineralogical databases.

International Palaeontological Association (IPA)



IPA's 1200 members and nineteen corporate member organisations aim to promote and coordinate international cooperation in paleontology and to encourage the integration and synthesis of all paleontological knowledge (<http://ipa.geo.ku.edu/index3.html>). In 2004, IPA sponsorship was granted to the several meetings: The IV International symposium on Extant and Fossil Charophytes, (New South Wales, Australia); The 15th International Symposium on Ostracoda (Berlin) and The Evolution of life on the Earth, ELE-2005, Tomsk, Russia. The new homepage contains a link to fossil collections of the world, to a very popular directory of paleontologists and to a PalaeoLink database. A brief article (Aldridge et al., 2004) describing the IPA was published in its journal *Lethaia* 37(1). A similar article about the IPA and its activities was posted to the electronic mailing list PaleoNet. Corporate members of IPA and organizers of paleontological meetings are encouraged to refer to these articles.

International Permafrost Association (IPA)



The objectives of IPA (<http://www.geo.uio.no/IPA/>) include the dissemination of knowledge concerning permafrost and the promotion of cooperation between persons and organisations engaged in scientific investigations and engineering work on permafrost. Twenty-three national/multinational organisations form the basis of the membership, although individual membership is possible if no national body exists. Ten working and three task groups covering a range of topics undertake scientific work for the Association; many of these are involved in collaborative work with a very wide

range of international bodies, including IUSS, IPA, IGU, the International Commission on Snow and Ice and with bodies within IGOS (GCOS/GTOS). The Association publishes *Frozen Ground* and contributed special issues to several other journals. In commemoration the 125th anniversary of the International Polar Year the group has continued developing "Thermal State of Permafrost" (TSP) which proposes to obtain a "snapshot" of permafrost temperatures throughout Planet Earth during the period 2007–2008. The post-IPY and Planet Earth "Legacy" goal for the TSP project is to establish a permanent International Network of Permafrost Observatories (INPO). Several relevant working groups are considering ways to input to the themes of the International Year of Planet Earth (including soils, hazards, climate). IPA is an Associate Partner in the International Year of Planet Earth. A major project is: "Thermal State of Permafrost" (TSP), which together with WMO Global Terrestrial Network for Permafrost (GTN-P) will support IUGS Geoindicators Initiative, and will result in the establishment of a permanent International Network of Permafrost Observatories (INPO). IPA is also an affiliated member of the IGU. Co-operation in different programmes sponsored by ICSU (IGBP, SCAR, SCOPE), WMO, IGU, IUGG, INQUA, ICO, IASC, IUSS, IUBS, IUMS, places IPA at the crossroads of important scientific research projects on climate related subjects.

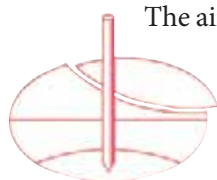
International Society for Rock Mechanics (ISRM)

The ISRM (<http://www.isrm.net/>) operates in the field of physical and mechanical behaviour of rocks and rock masses and the applications of this knowledge for the better understanding of geological processes and in the fields of Engineering. In 2004, ISRM held its International Symposium (Kyoto); various regional symposia (Austria



and China) and annual meeting in Kyoto (Board, Council and Commissions). In addition the Rocha Medal was awarded, two issues of the ISRM News Journal were published and six new Commissions were appointed. Its website, which they plan to expand, provides information about the association, its national groups, commissions and meetings. The group continues close co-operation with the Sister Societies IAEG and ISSMGE. Its chief products include publishing of the proceedings of the 10th ISRM International Congress and its regional symposium. The Society envisages planning and undertaking certain scientific activities with IUGS, such as the study of geological problems.

International Society of Soil Mechanics & Geotechnical Engineering (ISSMGE)



The aim of the Society (<http://www.issmge.org/home/>) is to promote international co-operation amongst engineers and scientists for the advancement and dissemination of knowledge in the field of geotechnics, and its engineering and environmental applications. The ISSMGE is composed of 75 national societies and over 17,000 individual members. In 2004, it held one board meeting in Auckland, New Zealand (February) and another in San José, Costa Rica (July). With its sister societies ISRM and IAEG, ISSMG has established a Joint Task Force that has proposed the establishment a Federation of International Geo-engineering Societies (FIGS), which would function as an umbrella for the three groups. The Board decided to re-launch the ISSMGE newsletter in electronic format and which was circulated in October 2004. The content would be primarily reports on touring lectures, recent publications, and important events in the various regions and a calendar. The ISSMGE

Board has considered the possibility of publishing (and/or making available via the website) lecture material, Technical Committee reports, State-of-the-Art reports, keynote lectures and workshop material as part of the educational responsibility of the ISSMGE. It has several Task Forces, notably on Information Technology, Professional Practice, Industrial Liaison, Education, as well as the possible Federation of International Geoengineering Societies.

International Union for Quaternary Research (INQUA)



The Union (<http://www.inqua.tcd.ie/>) seeks to improve understanding of environmental change during the glacial ages through interdisciplinary research. INQUA's main focus is interdisciplinary studies of the Quaternary era with geology as one item. The Union, which has 44 National and geographic members, mostly in Europe, conducts its scientific activities through five scientific Commissions: Coastal and marine processes (CMP); Palaeoclimate (PALCOM); Paleoecology and Human Evolution (PAHE); Stratigraphy and Chronology (SACCOM) and Terrestrial Processes, Deposits and History (TERPRO). Two issues of Quaternary Perspectives have been published. Ten issues of Quaternary International (the official journal of INQUA) have been distributed in 2004, as have a number of special issues and other publications of the Commissions. INQUA interfaces with many IGCP projects, as well as with the IGBP initiatives on Global Change. INQUA has during many years interfaced with IUGS through CLIP and PAGES. Several of the INQUA meetings have been joint meetings with IUGS, and INQUA and IUGS have also cooperated on a project proposal to ICSU that was successfully approved (Dark Nature).

The Meteoritical Society (MS)



The Society (<http://www.meteoriticalsociety.org/>), founded in 1933, promotes research and education in planetary sciences, with an emphasis on studies of meteorites and other extraterrestrial materials that further the understanding of the origin of the solar system. The society has around 950 members in 37 countries. The Society publishes its own journal, *Meteorites and Planetary Sciences* and also the *Meteoritical Bulletin*. Members donated ten subscriptions of the former journal to libraries in countries where the journal is unavailable. Some 1899 new meteorites, mostly from Antarctica were described. The Society also publishes *Geochimica et Cosmochimica Acta*, together with the Geochemical Society.

Society of Economic Geologists (SEG)



This Society is an international body that is committed to excellence in science, discovery, documentation, interpretation, evaluation and responsible development of mineral resources and the professional development of its members. In 2004, SEG membership in all categories totalled 3,569, about 1% higher than the total of 3,527 at the end of 2003. Members are currently distributed through 82 countries worldwide. SEG cosponsored or sponsored several events throughout the year including: International Symposium on Eastern Mediterranean in Geology (Greece); a workshop on VMS deposits in Asmara (Eritrea); CODES 24 carat Gold Workshop (Tasmania) and Geoscience Africa meeting (South Africa)

and the UNESCO-SEG Course on Metallogeny (Argentina). They also organized a major conference entitled the "Predictive Mineral Discovery under Cover" (Australia). The Society supports its members by publishing several journals, including *Reviews in Economic Geology*, and a Special Publications series (including N° 10 *Volcanic, Geothermal and Ore-Forming Fluids: Rulers and Witnesses of Processes within the Earth*) and videotape (N°13) was produced. Finally, SEG awarded US \$82,600 in grants to student research, mostly to assist in laboratory and field expenses. SEG is an Associate Partner in the International Year of Planet Earth. SEG is a leading international society in its field, and its relevance for important societal issues is indicated by having cosponsored meetings with many national and international organizations, including UNESCO and CSIRO.

Society for Geology Applied to Mineral Deposits (SGA)



The Society (<http://www.sga2005.com/index.html>) aims to advance the application of scientific knowledge to the study and development of mineral resources and their environment, to promote the profession and to improve and maintain professional standards. The Society has been growing quickly, especially since 1995 from about 450 members to about 730 members in more than 70 countries in 2004. At the 32nd IGC, the SGA Executive Secretary took part in a meeting of IYPE, an IUGS initiative that the Society fully supports. Hence, the SGA Executive Committee decided to announce the 8th SGA Biennial Meeting (August 18-21, 2005 Beijing, China) as a contribution to IYPE (a logo of IYPE was placed at prominent site of Conference materials). SGA is an Associate Partner in the

International Year of Planet Earth. The SGA Young Scientist Award is granted biannually to a scientist 37 or under who has contributed significantly to understanding of mineral deposits. The Society publishes the journal *Mineralium Deposita* and SGA news. The SCI factor of their journal has increased from 0.630 in 1997 through 1.390 in 2001 to 1.969 in 2003 and the journal is confirmed to be number one amongst Mineral Deposits Journals worldwide. SGA has a joint project with other societies (SEG, IAGOD) to produce an educational DVD movie entitled “Promoting Responsible Mineral Resource Management for the Planet Earth.

Society for Sedimentary Geology (SEPM)

SEPM (<http://www.sepm.org/>) is an international not-for-profit Society dedicated to the dissemination of scientific information on sedimentology, stratigraphy, palaeontology, environmental sciences, marine geology, hydrogeology, and many additional related specialties. The Society supports two major scientific journals, the *Journal of Sedimentary Research* (JSR) and *PALAIOS*, in addition to producing technical conferenc-

es, short courses, and Special Publications.

In 2004, SEPM held a five-day research conference titled, “Recent Advances in Shoreline-Shelf Stratigraphy” in Colorado USA where over fifty academic, government and industry professionals and students participated. The organizing group is planning a special publication based on many of the presentations. The SEPM Foundation, Inc. continues to award student grants to those pursuing research in sedimentary geology. To date over \$230,000 has been dispensed from the foundation. In 2004, the foundation supported 15 student presenters with travel grants to the Annual Meeting as well as several graduate student research grants. The foundation is also playing a key role in supporting the digitization of the past issues of *PALAIOS*. SEPM is an Associate Partner in the International Year of Planet Earth. Excellent papers have been published in the *Journal of Sedimentary Research*, not to mention a special publication (4 special issues) and several research conferences.



- *Executive Committee Officers of IUGS*
 - *Permanent Secretariat*
- *Executive Committee and Bureau Meetings*
- *IUGS Adhering Organizations with their Membership Category and Status*
 - *IUGS Financial Situation and Statement*
- *Commissions/New Initiatives/Task Groups/Committees for 2004*
 - *IUGS Affiliated Organisations*
- *ICS- IUGS Ratified Global Boundary Stratotype Sections and Points (GSSP)*
 - *Summary of the Geoindicator Checklist*
- *IGCP Projects – 20004 (IUGS-UNESCO Co-Sponsored)*
 - *Acronyms Used by IUGS*

IUGS – Executive Members and Meetings

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EXECUTIVE COMMITTEE OFFICERS OF THE IUGS IN 2004

President*	Prof. Z. Hongren	Aug. 2004 – Aug. 2008	zhang.iugs@gmail.com
President	Prof. E.F.J. de Mulder	Aug. 2000 – Aug. 2004	e.demulder@planet.nl
Secretary General*	Prof. P.T. Bobrowsky	Aug. 2004 – Aug. 2008	pbobrows@nrcan.gc.ca
Secretary General	Dr. W.R. Janoschek	Feb. 2002 – Aug. 2004	janwer@pdg.at
Treasurer*	Prof. A. Brambati	Jan. 2003 – Jan. 2008	brambati@univ.trieste.it
Vice President*	Prof. S. Haldorsen	Aug. 2004 – Aug. 2008	sylvi.haldorsen@umb.no
Vice President*	Dr. E. Moores	Aug. 2004 – Aug. 2008	Moores@geology.ucdavis.edu
Past President	Prof. R. Brett	Aug. 2000 – Aug. 2004	rbrett@usgs.gov
Vice President	Prof. P.T. Bobrowsky	Aug. 2000 – Aug. 2004	pbobrows@nrcan.gc.ca
Vice President	Prof. T. Sato	Aug. 2000 – Aug. 2004	sato-tad@fgi.or.jp
Councillor*	Dr. R. Matsumoto	Aug. 2004 – Aug. 2008	ryo@eps.s.u-tokyo.ac.jp
Councillor*	Dr. G. Schneider	Aug. 2004 – Aug. 2008	gschneider@mme.gov.na
Councillor*	Prof. A.C. Riccardi	Aug. 2002 – Aug. 2006	riccardi@fcnym.unlp.edu.ar
Councillor*	Prof. J.P. Cadet	Aug. 2002 – Aug. 2006	jean-paul.cadet@lgs.jussieu.fr
Councillor	Prof. J. Plant	Aug. 2000 – Aug. 2004	j.plant@bgs.ac.uk
Councillor	Prof. H.K. Gupta	Aug. 2000 – Aug. 2004	dodsec@dod.dehli.nic.in

* Indicates Officer active in Executive Committee 2004-2005

PERMANENT SECRETARIAT

Head of Secretariat	Ms. H. Refsdal	iugs.secretariat@ngu.no
Assistant	Ms. A. Liinamaa-Dehls	Anne.Dehls@ngu.no

EXECUTIVE COMMITTEE AND BUREAU MEETINGS, MARCH 2004 - OCTOBER 2004

52nd Executive Committee Meeting:	Oslo, Norway	March 15 - 19
53rd Executive Committee Meeting:	Bologna, Italy	August 19
54th Executive Committee Meeting:	Florence, Italy	August 27
Bureau, Paris, France		February 4
Bureau, Bran, Romania		May 9 - 10
Bureau, Rome, Italy		October 20- 21

IUGS Adhering Members

WITH THEIR MEMBERSHIP CATEGORY AND STATUS

A – active; I - inactive

Country	Cat.	Stat.	Country	Cat.	Stat.	Country	Cat.	Stat.
Albania	1	A	Guatemala	1	I	Peru	1	A
Algeria	1	I	Guyana	1	A	Philippines	1	I
Angola	1	A	Hungary	3	A	Poland	2	A
Argentina	3	A	Iceland	1	A	Portugal	2	A
Australia	6	A	India	5	A	Romania	3	A
Austria	3	A	Indonesia	1	A	Russia	8	A
Azerbaijan	1	A	Iran	3	A	Saudi Arabia	4	A
Bangladesh	1	A	Iraq	2	I	Senegal	1	I
Belarus	1	I	Ireland	2	A	Serbia - Montenegro	1	A
Belgium	3	A	Israel	2	A	Slovak Republic	2	A
Belize	1	I	Italy	7	A	Slovenia	1	A
Bolivia	1	I	Ivory Coast	1	I	Somalia	1	I
Bosnia - Herzegovina	1	A	Jamaica	1	I	South Africa	4	A
Botswana	2	A	Japan	8	A	Spain	4	A
Brazil	4	A	Jordan	1	I	Sri Lanka	1	A
Bulgaria	2	I	Kazakhstan	3	A	Sudan	1	A
Burkina Faso	1	I	Kenya	1	A	Surinam	1	A
Burundi	1	I	Korea North (PDR)	1	I	Swaziland	1	I
Cameroon	1	I	Korea South (ROK)	2	A	Sweden	3	A
Canada	5	A	Lebanon	1	I	Switzerland	4	A
Chile	1	A	Libya	1	A	Syria	1	A
China, P. R.	7	A	Lithuania	1	A	Taiwan (Taipeh)	3	A
Colombia	1	A	Luxembourg	1	A	Tanzania	1	A
Congo	1	I	Madagascar	1	I	Thailand	1	A
Costa Rica	1	I	Malawi	1	A	Tunisia	1	I
Croatia	1	A	Malaysia	1	A	Turkey	3	A
Cuba	1	I	Mexico	2	A	Uganda	1	A
Cyprus	1	A	Mongolia	1	I	Ukraine	3	I
Czech Republic	2	A	Morocco	2	A	United Kingdom	7	A
Denmark	3	A	Namibia	1	A	Uruguay	1	A
Ecuador	1	I	Netherlands	4	A	USA	8	A
Egypt	2	A	New Zealand	3	A	Uzbekistan	2	A
Estonia	1	A	Nicaragua	1	I	Venezuela	1	I
Finland	3	A	Niger	1	I	Vietnam	1	A
France	7	A	Nigeria	1	A	Yemen	1	A
Gambia, Rep. of	1	I	Norway	3	A	Zambia	1	A
Georgia.	1	I	Pakistan	2	I			
Germany	7	A	Panama	1	I			
Ghana	1	I	Papua New Guinea	1	A			
Greece	2	I	Paraguay	1	I			
						116 Adhering Orgs.		

Categories of IUGS Membership

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AND MEMBERSHIP FEE

Categories of Membership for 2003

Category	1	2	3	4	5	6	7	8
Units	1	2	4	7	12	20	35	70
Value in US \$	450	900	1800	3150	5400	8990	15730	31460

Categories of Membership for 2004

Category	1	2	3	4	5	6	7	8
Units	1	2	4	7	12	20	35	70
Value in US \$	460	920	1840	3220	5520	9200	16100	32200

Categories of Membership for 2005

Category	1	2	3	4	5	6	7	8
Units	1	2	4	7	12	20	35	70
Value in US \$	469	938	1876	3283	5628	9380	16415	32830

IUGS Financial Situation and Statement

INCOME / EXPENSES IN 2004 (US DOLLARS)

		RECEIVED			TOTAL
INCOME	for due < 2004	for 2004	for due > 2004		
Membership dues	72,222.52	227,207.73	7,173.00		306,603.25
Member countries	72,222.52	225,863.73	7,173.00		
Associates		1,344.00			
IGCP Program	15,920.00	154,500.00			170,420.00
UNESCO	15,920.00	79,500.00			
US Contribution		75,000.00			
UNESCO Other Programs	6,500.00				6,500.00
Episodes	5,000.00				
IYPE	1,500.00	100,000.00			
ICSU Programmes		100,000.00			100,000.00
UNESCO					
Interests					12,887.80
INCOME					596, 411.05

	PAID			TOTAL
	for due < 2004	for 2004	for due > 2004	
EXPENSES				
IGCP Projects		173,700.00		173,700.00
UNESCO		88,500.00		
US Contribution		72,000.00		
IUGS		13,200.00		
Joint Programmes	7000.00	124,000.00		131,000.00
GARS-Remote sensing	7,000.00	7,000.00		
ILP		17,000.00		
ICSU for Dark Nature		100,000.00		
IUGS Commissions, Task Groups, Initiatives, Committees and Other		128,121.62		128,121.62
Commissions		72,930.00		
Task Groups		8,662.00		
Initiatives		30,000.00		
Committees		9,529.62		
GEOSEE		7,000.00		
Affiliated Organisations		16,500.00		16,500.00
IUGS Grants		0.00		0.00
International Year of Planet Earth		22,500.00		22,500.00
Hutchison Fund Awards		9,600.00		9,600.00
Contributions		32,957.80		32,957.80
Contribution ICSU		9,297.00		
Office expenses		2,000.00		
Contribution GEOHOST 32nd IGC Florence		21,660.80		
Other expenses	22,897.27	130,298.57		153,195.84
Routine meetings	7,179.27	91,522.28		
Representing Scientific Meetings		11,741.60		
Exhibition		5,423.00		
Annual report, brochure	15,718.00	7,455.00		
Bank charges		14,156.69		
Episodes		37,400.00		37,400.00
Contribution China		23,000.00		
Reserves		11,400.00		
Episodes: Dissemin. Devel. Countries		3,000.00		
Contingency		10,045.80		10,045.80
Compasses		5,113.00		
Other		4,932.80		
EXPENSES				715, 021.06
	Excess of Expenses over Income (DEFECIT)			118, 610.01
	ACCUMULATED BALANCE			
	On 31 December 2003			771, 517.51
	On 31 December 2004			707, 485.99

IUGS Allocations in 2004

COMMISSIONS		75,430.00
GEM (COGEOENVIRONMENT)	10,000.00	
CGI	5,000.00	
CSP	3,430.00	
ICS	50,000.00	
INHIGEO	4,000.00	
GSGP (CGSG)	3,000.00	
TASK GROUPS		11,662.00
Fossil Fuels	5,000.00	
Geochemical Baselines	1,500.00	
TECTASK	5,162.00	
JOINT PROGRAMMES		24,000.00
GARS	7,000.00	
ILP	17,000.00	
COMMITTEES (ICSU, etc.)	10,000.00	10,000.00
INITIATIVES		30,000.00
Ge indicators	15,000.00	
Medical Geology	15,000.00	
OTHER		7,000.00
GEOSEE	7,000.00	
AFFILIATED ORGANISATIONS		21,500.00
AGA	2,000.00	
AGID	500.00	
CGMW	4,000.00	
GSaf	5,000.00	
ICL	2,000.00	
IFPS	1,000.00	
IGEO	5,000.00	
IPA	2,000.00	

ICS – IUGS Ratified (June 2004)

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GLOBAL BOUNDARY STRATOTYPE SECTIONS AND POINTS (GSSP)

St – stage; Se – series; Ss – sub System; Sy – system; E – Eon

Stage (base of)	Stratotype Section	Episodes Volume		
PHANEROZOIC				
Neogene				
1. Calabrian St, Pleistocene Se	Vrica, Calabria, Italy	8	(2)	1985
2. Gelasian St, U. Pliocene	Monte San Nicola, Sicily, Italy	21	(2)	1998
3. Piacenzian St, M. Pliocene	Punta Piccola, Sicily, Italy	21	(2)	1998
4. Zanclean St, Pliocene Se	Eraclea Minoa, Sicily, Italy	23	(3)	2000
5. Messinian	Oued Akrech, Morocco	23	(3)	2000
6. Aquitanian St, Miocene Se, Neogene Sy	Lemme-Carrosio, Italy	20	(1)	1997
Paleogene				
7. Rupelian St, Oligocene Se	Massignano, NE Italy	16	(3)	1993
8. Ypresian St, Eocene Se	Luxor, Egypt	Ratified		2003
9. Danian St, Paleogene Sy, Cainozoic	El Kef, Tunisia	Ratified		1999
Cretaceous				
10. Maastrichtian St	Tercis, Landes France	24	(4)	2001
11. Coniacian St	Hannover, Germany	Anticipated		2004
12. Turonian St	Pueblo, Colorado, USA	28	(2)	2005
13. Cenomanian St	Mont Risou, France	Ratified		2002
Jurassic				
14. Bajocian St	Cabo Mondego, Portugal	20	(1)	1997
15. Aalenian St	Fuentelsalz, Spain	24	(3)	2001
16. Sinemurian St	Quantox Head, Somerset, U.K.	25	(1)	2002
Triassic				
17. Induan St, Triassic Sy, Mesozoic	Meishan, Zhejiang, China	24	(2)	2001
Permian				
18. Capitanian St	Stratotype Canyon, Texas, USA	Ratified		2001
19. Wordian St	Stratotype Canyon, Texas, USA	Ratified		2001
20. Roadian St, Guadalupian Se, M. Permian	Stratotype Canyon, Texas, USA	Ratified		2001
21. Asselian St, Cisuralian Se, Permian Sy	Aidaralash Creek, Kazakhstan	21	(1)	1998
Carboniferous				
22. Bashkirian St, Pennsylvanian Ss, U. Carboniferous	Arrow Canyon, Nevada, USA	22	(4)	1999
23. Tournasian St, Mississippian Ss, Carboniferous Sy	La Serre, France	14	(4)	1991

St – stage; Se – series; Ss – sub System; Sy – system; E – Eon

Stage (base of)	Stratotype Section	<i>Episodes</i>		Volume
Devonian				
24. Famennian St	Coumiac, France	8	(2)	1985
25. Frasnian St, U. Devonian Se	Col du Puech, France	14	(2)	1991
26. Givetian St	Irdane, Morocco	18	(3)	1995
27. Eifelian St, M. Devonian Se	Wetteldorf, Germany	8	(2)	1985
28. Emsian St	Zinzilban Gorge, Uzbekistan	20	(4)	1997
29. Pragian St	Praha Holyne, Czech Rep.	12	(2)	1989
30. Lochkovian St, L. Devonian Se, Devonian Sy	Klonk, Barrandean, Czech Rep.	Ratified		1972
Silurian				
31. Pridoli Se	Pozary, Barrandean, Czech Rep.	8	(2)	1985
32. Ludfordian St,	Sunnyhill, Wales	8	(2)	1985
33. Gorstian St, Ludlow Se	Pitch Coppice, Wales	8	(2)	1985
34. Homerian St,	Whitwell Coppice, Wales	Ratified		1980
35. Sheinwoodian St, Wenlock Se	Hughley Brook, Wales	Ratified		1980
36. Telychian St,	Cefn Cerig, Wales	8	(2)	1985
37. Aeronian St,	Trefawr forestry road, Wales	8	(2)	1985
38. Rhuddanian St, Llandovery Se, Silurian Sy	Dob's Linn, Moffat, Scotland	8	(2)	1985
PHANEROZOIC				
Ordovician				
39. Base 5th stage (Still not yet named)	Fågelsång, Scane, S. Sweden	Ratified		2002
40. Darriwillian St, M. Ordovician	Huangnitang, China	19	(3)	1997
41. Base 2nd stage (Still not yet named)	Diabasbrottet, Västerg., S. Sweden	Ratified		2002
42. Tremadocian St, Ordovician Sy	Green Point, Newfoundland, Canada	24	(1)	2001
Cambrian				
43. Paibian St, Furongian Se	Paibi, NW Hunan, China	Ratified		2003
44. Nemaakitian-Daldynian St, Cambrian Sy, Palaeozoic E.	Fortune Head, Canada	17	(2)	1994
		19	(3)	1996
PROTEROZOIC				
45. Ediacaran Sy	Enorama Creek, Flinders Ra., Aust.	Ratified		2004
46. Proterozoic is divided by absolute ages into 3 Eras, with 10 Systems		14	(2)	1991
ARCHAEAN				
47. Divided by absolute ages into 4 Eras		15	(2)	1992

IGCP Projects – 2004

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| 1 | 433 | Caribbean Plate Tectonics
M.A. Iturralde-Vinent (Cuba), E.G. Lidiak (United States)
2000-2004 |
| 2 | 434 | Land-Ocean Interactions during the Cretaceous in Asia
H. Hirano (Japan)
1999-2003 (OET) |
| 3 | 436 | Pacific Gondwana Margin
R.J. Pankhurst, (United Kingdom), J.D. Bradshaw (New Zealand), L. Spalletti (Argentina)
1999-2003 (OET) |
| 4 | 440 | Rodinia Assembly and Breakup
S. Bogdanova (Sweden), H. Kampunza (Botswana), L Spalletti (Argentina)
1999-2002 (OET) |
| 5 | 447 | Proterozoic Molar-tooth Carbonates
X. Meng (China), D.G.F. Long (Canada), R. Bourrouilh (France)
2001-2005 |
| 6 | 448 | World Correlation on Karst Ecosystems
Yuan Daoxian (China), C. Groves (United States), G, Messina (Italy)
2000-2004 |
| 7 | 449 | Global Correlation of Late Cenozoic Fluvial Deposits
D. Bridgland (United Kingdom)
2000-2004 |
| 8 | 450 | Proterozoic Sediment-Hosted Base Metal Deposits of Western Gondwana
S.S. Iyer (Canada), A.F. Kamona (Namibia), A. Misi (Brazil), J. Cailteux (DR Congo)
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| 9 | 453 | Modern and Ancient Orogens
J.B. Murphy (Canada), J.D. Keppie (Mexico)
2000-2004 |
| 10 | 454 | Medical Geology
O. Selinus (Sweden), P. Bobrowsky (Canada)
2000-2004 |

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| 11 | 455 | Basement Volcanoes Interplay and Human Activities
A. Tibaldi (Italy), M. Garcia (Spain), A.M. Lagmay (Philippines), V.V. Ponomareva (Russia)
2001-2005 |
| 12 | 457 | Seismic Hazard and Risk Assessment in North Africa
D. Benouar (Algeria), G. Panza (Italy), A. El-Sayed Attia (Egypt), T. Benaissa (Morocco), M. Chadi (Tunisia), S. Abdennur (Libya)
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| 13 | 458 | Triassic/Jurassic Boundary Events
J. Pálffy (Hungary), S.P. Hesselbo (United Kingdom), C. McRoberts (United States)
2001-2005 |
| 14 | 459 | Terrestrial Carbon Cycle
J.-L. Probst (France), L. François (Belgium), P.J. Depetris (Argentina), J. Mortatti (Brazil)
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C. Wang (China), M. Sarti (Italy), R.W. Scott (United States), L.F. Jansa (Canada)
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F.L. Chiocci (Italy), A.R. Chivas (Australia)
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M. J. Orchard (Canada), L. Krystyn (Austria), J. Tong (China), S. Lucas (United States), H. Campbell (New Zealand), F. Hirsch (Japan), K. Ishida (Japan), Y. Zacharov (Russia)
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C. J. Cleal (United Kingdom), S. Oluštil (Czech Republic), Y. Tenchov (Bulgaria), E. Zoderow (Canada)
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F. Toteu (Cameroon)
2002-2006 |
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C.O. Limarino (Argentina), L.A. Buatois (Argentina)
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- 21 473 **GIS Metallogeny of Central Asia**
R. Seltnann (United Kingdom), 5 young scientists
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- 22 474 **Depth Images of the Earth's Crust**
B.J. Drummond (Australia), L.D. Brown (United States), F.A. Cook (Canada),
O. Oncken (Germany), G.S. Fuis (United States), R.W. Hobbs (United Kingdom),
Songlin Li (China), D.M. Finlayson (Australia)
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S. Goodbred, Jr. (United States), Y. Saito (Japan)
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R. Tada (Japan)
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C. Gaucher (Uruguay), D. Poiré (Argentina), P. C. Boggiani (Brazil), A. Braun
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J. E. Mungall (Canada), M. Iljina (Finland), C. Ferreira-Filho (Brazil)
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Implications for Continental Growth and Intracontinental Deformation**
B. Natal'in (Turkey), A. Yin (United States), A. M. C. Sengör (Turkey), M. Kuzmin
(Russia)
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S.B. Kroonenberg (Netherlands), S. Leroy (United Kingdom)
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- 29/30 482/489 **Geodynamics of the East African Rift System / Geophysical Characteristics and
Evolution of the South-western Branch of the East African Rift System**
G. Mulugeta (Sweden)/ A. Atekwana (United States), M.P. Modisi (Botswana), M.N.
Sebagenzi (D.R. Congo), J.J. Tiercelin (France)
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- 31 485 **The Boundaries of the West African Craton**
N. Ennih (Morocco); J-P. Liégeois (Belgium)
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N. J. Cook (Norway), K. Kojonen (Finland)
2003-2007 |
| 33 | 487 | Seismic microzoning of Latin America cities by realistic modelling of seismic ground motion
J. L. Alvarez Gómez (Cuba), A. Giesecke (Peru), G. F. Panza (Italy)
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S. Leroy (United Kingdom), I. Stewart (United Kingdom)
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M. Zhu (P.R. China), G. Young (Australia)
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M. Fedonkin (Russia), P. Vickers-Rich (Australia), J. Gehling (Australia)
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Xiumian Hu (P.R. China), K. Bak (Poland), J. Wendler (Germany), N. Tur (Russia)
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A. Long (United Kingdom), S. Islam (Bangladesh)
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U. Linnemann (Germany), R. D. Nance (United States), M. de Wit (South Africa), E. Bozkurt (Turkey), P. Kraft (Czech Republic), F. Pereira (Portugal), R. A. Strachan (United Kingdom)
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D. Thomas (United Kingdom)
2004-2008 |

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 F. J. A. S. Barriga (Portugal), W. S. Fyfe (Canada), O. Leonardos (Brazil), Shengrong Li (China)
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 R.Allen (Sweden), F. Tornos (Spain), J. Peter (Canada), N. Çagatay (Turkey)
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 T. Servais (France), D.A.T. Harper (Denmark), J. Li (China), A. Munnecke (Germany), W. Owen (United Kingdom), P.M. Sheehan (United States)
 2004-2008

41 Funded projects
 3 On extended term

 44 Total

Summary of the Geoindicator Checklist

NAME:	Applied to individual geoindicators
BRIEF DESCRIPTION:	What is the geoindicator, and how does it express geological processes and phenomena?
SIGNIFICANCE:	Why is it important to monitor this geoindicator? How are changes in it liable to affect human settlements, agriculture, forestry, environmental health, and other economic and societal sectors?
HUMAN OR NATURAL CAUSE:	Can this geoindicator be used to distinguish natural from anthropogenic change, and if so how?
ENVIRONMENT WHERE APPLICABLE:	In what general landscape settings would this geoindicator be used?
TYPES OF MONITORING SITES:	Where specifically should this geoindicator be measured?
SPATIAL SCALE:	At what scale would this geoindicator normally be monitored in the field, and to which larger scale, in general terms, can it be readily aggregated?
METHOD OF MEASUREMENT:	How is this indicator measured in the field?
FREQUENCY OF MEASUREMENT:	How often should this geoindicator be monitored in the field, so as to establish a proper time series and baseline trend?
LIMITATIONS OF DATA AND MONITORING:	What important difficulties are there in measuring field or laboratory data on and applying this indicator?
APPLICATIONS TO PAST AND FUTURE:	How can this geoindicator be applied to paleoenvironmental analysis, and what predictive potential has it?
POSSIBLE THRESHOLDS:	What thresholds or limits are there across which drastic environmental change or threats to human health and biodiversity may occur?
KEY REFERENCES:	Listed here for further reference are a few, readily obtainable, practical manuals, or citations to key scientific/technical publications on this geoindicator.
OTHER SOURCES OF INFORMATION:	National agencies, scientific programs and projects or specific international organizations from which further information, data sets and expertise may be available.
RELATED ENVIRONMENTAL AND GEOLOGICAL ISSUES:	Importance for environmental monitoring and sustainability.

Acronyms Used by IUGS

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AAPG	American Association of Petroleum Geologists http://www.aapg.org
AEG	Association of Exploration Geochemists http://www.aeg.org
AEGS	Association of European Geological Societies http://www.uni-essen.de/geologie/aegs.htm
AGA	Arab Geologists Association
AGI	American Geological Institute http://www.agiweb.org
AGID	Association of Geoscientists for International Development http://agid.igc.usp.br
AGU	American Geophysical Union http://agu.org
AIPEA	Association Internationale Pour l'Etude des Argiles http://www.agr.kuleuven.ac.be/intorg/aiepa/aiepa.htm
BGR	Bundesanstalt für Geowissenschaften und Rohstoffe http://www.bgr.de/
BGS	British Geological Survey http://www.bgs.ac.uk/
BRGM	Bureau de recherches géologiques et minières http://www.brgm.fr/
CCOP	Committee for Coastal and Offshore Geoscience Programmes in E & SE Asia
CEI	Central European Initiative http://www.ceinet.org/
CGI	Commission on the Management and Application of Geoscience Information http://www.bgs.ac.uk/cgi_web/welcome.html
CGMW	Commission for the Geological Map of the World http://ccgm.free.fr/index_gb.html
CHRONOS	Interactive Chronostratigraphy and Stratigraphic Databases http://www.chronos.org
CIFEG	International Centre for Training and Exchanges in the Geosciences http://www.cifeg.org
COGEOENVIRONMENT	Commission on Geological Sciences for Environmental Planning http://www.sgu.se/hotell/cogeo/
COGEOETT	Commission for Education, Training and Technology Transfer
COGEOINFO	old acronym for CGI
COILS	Committee on Interdisciplinary Lithosphere Surveys http://www.sclilp.org/projects/pro_cc8.htm
COMTEC	Commission for Tectonics (currently being reformulated as TGTSG)
COPCSE	Commission on the Physics and Chemistry of the Solid Earth
CPCEMR	Circum-Pacific Council for Energy and Mineral Resources http://www.circum-pacificcouncil.org/

CRD	Committee for Research Directions
CSP	Commission on Systematics in Petrology http://www.unifreiberg.de/minpet/IUGS-CSP.html
DIVERSITAS	International Programme on Biodiversity Science http://www.diversitas-international.org/
DIVERSITAS	International Programme on Biodiversity Science http://www.diversitas-international.org/
DMP	Deposit Modelling Programme (now called MRSP)
EASE	European Association of Science Editors http://www.ease.org
ECROFI	European Current Research on Fluid Inclusions
EGN	European Geoparks Network http://www.europeangeoparks.org/
EGS	European Geophysical Society (now part of EGU) http://www.copernicus.org/EGS/EGS.html
EGU	European Geosciences Union http://www.copernicus.org/EGU/
EITI	Extractive Industry Transparency Initiative
EMPG	European Mineralogy, Petrology & Geochemistry Symposia
EMU	European Mineralogical Union http://www.univie.ac.at/Mineralogie/EMU/
Episodes	Episodes – IUGS' journal http://www.episodes.org
esfs	Earth Sciences for Society (International Year of Planet Earth tag-line) http://www.esfs.org/
	European Commission on the Geological Sciences for Environmental Planning http://europa.eu.int/comm/environment/index_en.htm
EUG	European Union of Geosciences (now part of EGU)
FOREGS	Forum of the European Geological Survey Directors http://www.eurogeosurveys.org/foregs/
GARS	Geological Applications of Remote Sensing
GCOS	Global Climate Observing System (part of IGOS)
GEM	Commission of Geology for Environmental Management
GEOIN	International Working Group on Environmental Geoindicators http://www.geoindicators.org
GIS-UDRIL	GIS Upstream Digital Reference Information Library (from AAPG)
GS	Geochemical Society http://gs.wustl.edu/
GSA	Geological Society of America http://www.geosociety.org

GSAf	Geological Society of Africa http://www.elsevier.nl/locate/gsa
GSL	Geological Society of London http://www.geolsoc.org.uk/template.cfm?name=geohome
GSSP	Global Boundary Stratotype Section and Point
GTOS	Global Terrestrial Observing System (part of IGOS)
GV	Geologische Vereinigung http://www.g-v.de/
IAEG	International Association of Engineering Geology and the Environment http://www.civil.ntua.gr/IAEG.html
IAG	International Association of Geomorphologists http://www.geomorph.org
IAGC	International Association of Geochemistry and Cosmochemistry http://www.cevl.msu.edu/~long/IAGC/
IAGOD	International Association on the Genesis of Ore Deposits http://www.geology.cz/host/iagod/htm/
IAH	International Association of Hydrogeologists http://www.iah.org/
IAMG	International Association of Mathematical Geologists http://www.iamg.org/
IAS	International Association of Sedimentologists http://www.iasnet.org/
ICESA	International Commission for the Earth Sciences in Africa http://www.iaspei.org/commissions/ICESA.html
ICL	International Consortium on Landslides http://icl.dpri.kyoto-u.ac.jp/
ICS	International Commission on Stratigraphy http://www.stratigraphy.org
ICSU	International Council for Science http://www.icsu.org
IFPS	International Federation of Palynological Societies http://www.geo.arizona.edu/palynology/ifps.html
IGBP	International Geosphere-Biosphere Programme http://www.icsu.org
IGCP	International Geoscience Programme (formerly Int. Geol. Correlation Prog.) http://www.unesco.org/science/earthsciences/igcp/index.htm
IGEO	International Geoscience Education Organization http://www.cosm.sc.edu/cse/igeo.html
IGES	International Geochemical Exploration Symposia
IGOS	Integrated Global Observation System http://ioc.unesco.org/igospartners/index.htm

IGU	International Geographical Union http://www.igu-net.org/
ILP	International Lithosphere Programme (run by SCL) http://www.sclilp.org
IMA	International Mineralogical Association http://wwwobs.univ-bpclermont.fr/ima/
IMGA	International Medical Geology Association http://www.medicalgeology.org
INHIGEO	International Commission on the History of Geological Sciences http://www.iugs.org/iugs/science/sci-chog.htm
INQUA	International Union for Quaternary Research http://www.isrm.net
IYPE	International Year of Planet Earth http://www.esfs.org/
IPA	International Palaeontological Association http://ipa.geo.ukans.edu/index2.html
IPA	International Permafrost Association http://www.geo.uio.no/IPA/
IPL	International Programme on Landslides http://icl.dpri.kyoto-u.ac.jp/
ISRM	International Society for Rock Mechanics http://www.isrm.net
ISSMGE	International Society of Soil Mechanics and Geotechnical Engineering http://www.issmge.org
IUGG	International Union of Geodesy & Geophysics http://www.agu.org/iugg/internat.html
IUGS	International Union of Geological Sciences http://www.iugs.org
IUHPS	International Union for the History and Philosophy of Science http://www.smhct.org/Noticias/iuhps-dhs.htm
JNCC	Joint Nature Conservancy Council (UK) http://www.jncc.gov.uk/
LEGENDS	Lithospheric Evolution of Gondwana East from Interdisciplinary Deep Surveys http://www.sclilp.org/projects/pro_cc8a.htm
MAEGS	Meeting of the Association of European Geological Societies
MetSoc	Meteoritical Society http://www.isrm.net
MRSP	Mineral Resources Sustainability Programme (formerly DMP) http://www.unesco.org/science/earthsciences/dmp/
MTG	Multi-lingual Thesaurus for the Geosciences
NGO	Non-governmental organisation

NPS	New Publications Series (of IUGS; now wound-up)
NSF	IUGS' National Science Foundation (of the USA)
PANGIS	Pan-African Network for a Geological Information System http://www.cifeg.org/web_server/Enrub_pangis.htm
ProGeo	European Association for the Conservation of the Geological Heritage http://www.sgu.se/hotell/progeo/
SANGIS	South East Asian Network for a Geological Information System
SAP	Strategic Action Plan
	Science for Health and Wellbeing http://www.iubs.org/test/functions/fun-oth%20Health%20exec%20sum.htm
SCL	Scientific Committee on the Lithosphere (organising committee of ILP) http://www.sclilp.org
SCOPE	Scientific Committee on Problems in the Environment http://www.icsu-scope.org/
SDBP	Sub-commission on Databases in Petrology
SEG	Society of Economic Geologists http://www.segweb.org
SEPM	Society for Sedimentary Geologists http://www.sepm.org/
SGA	Society for Geology Applied to Mineral Deposits http://www.e-sga.org/sga.html
SIS	Stratigraphic Information Systems
SPC	Strategic Planning Committee
SSIR	Sub-commission on the Systematics of Igneous Rocks
SSMR	Sub-commission on the Systematics of Metamorphic Rocks
TGFF	Task Group on Fossil Fuels http://www.geointelligence.org/
TGGDC	Task Group on Geochronological Decay Constants
TGGGB	Task Group on Global Geochemical Baselines http://www.bgs.ac.uk/iugs/home.html
TGPA	Task Group on Public Affairs http://www.agiweb.org/gap/iug
TGTSG	Task Group Tectonics and Structural Geology
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation http://www.unesco.org
UNESCO	Geoparks http://www.worldgeopark.org
USGS	United States Geological Survey http://www.usgs.gov/

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