

INTERNATIONAL UNION OF GEOLOGICAL SCIENCES



ANNUAL REPORT 2003

Contents

<i>Foreword</i>	3
<i>International Year of Planet Earth</i>	4
<i>Reports from the Executive Committee</i>	5
- <i>The International Council for Science (ICSU)</i>	5
- <i>The Proposed Merger of IUGS and IGC</i>	5
- <i>Funding of Bureau Positions within IUGS</i>	6
- <i>Changing the Image of IUGS - A New Outreach Approach</i>	7
- <i>IGCP Expansion to Cover the World's growing Water Problems</i>	8
- <i>The IUGS Grants Proposal Programme</i>	9
- <i>The IUGS Mid-Term Vision and Strategic Action Plan</i>	10
<i>Publications from IUGS now on a Firmer Footing</i>	11
<i>IUGS - role, structure, membership</i>	12
<i>IUGS Committees</i>	15
<i>IUGS Scientific Activities</i>	17
<i>GEOPARKS Approach</i>	23
<i>Geo-Union Cooperation in ICSU</i>	24
<i>Organisations Affiliated with IUGS</i>	25
<i>Appendices</i>	37

Please cite the report as:

"IUGS 2004. Annual Report of the International Union of Geological Sciences for 2003"

Please note that a list of all the 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

3

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

This third Annual Report of IUGS covers the time between the 51st and the 52nd Executive Committee meetings, held in Windhoek (Namibia, February 2003) and Oslo (Norway, March 2004), respectively. Over that period, the Union has grown in membership, in number of Affiliated Organisations, in public outreach, in significance within the International Council of Science (ICSU) through its relation with other ICSU geo-unions, in its flagship programme IGCP and also in its ability to generate financial support for international science projects. Details of these are given elsewhere in this Annual Report. I am both happy and proud that so many positive developments can be reported. These are the results of hard work by the entire Executive Committee, its supporters and the Permanent Secretariat.

IUGS welcomes Bosnia-Herzegovina as its 116th Adhering Organisation and the Committee for Coastal and Offshore Geoscience Programmes in East and Southeast Asia (CCOP) as the 39th Affiliated Organisation, pending a minor change in the Statutes. This makes IUGS geographically the most widely represented member of ICSU. In 2003, significant first steps in tightening our links with other ICSU Unions were set in place, by hosting a meeting with the International Union of Geodesy & Geophysics (IUGG), the International Geographical Union (IGU) and the International Union of Soil Sciences (IUSS). This move complies fully with IUGS' mid-term vision on our future global position, as expressed in a booklet, Mid-Term Vision and Strategic Action Plan for the International Union of Geological Sciences IUGS, published in November 2003.

The same booklet gave information about the progress made with the Strategic Action Plan (SAP), developed following a review of the Union in 1999. The only major part of the SAP remaining unfinished is the merger of the International Geological Congress (IGC) and IUGS Councils, planned for the very first day of the IGC in Florence, during August 2004. This logical step is the sincere wish of both IUGS and IGC and will bring about a greater and deeply needed unity and clarity to the international Earth sciences.

*Since taking office at the Rio de Janeiro Congress in 2000, the Executive Committee has not only seen the Union grow in significance but has also noted an increasing optimism in the Earth sciences in general, on a global scale. The Executive Committee senses a new *esprit* in the geosciences community and a belief that we have climbed out one of the deepest depressions in the Earth sciences for many decades. This new confidence was felt at the many international conferences attended by members of the Executive Committee and also during the meetings held with representatives of more than 80 national committees, during contacts with our commissions, task groups, initiatives and affiliated organisations and most certainly during preparations for the International Year of Planet Earth.*

I strongly believe that a revival of the Earth sciences is approaching, although there is still a long way to go. However, we will only succeed if all Earth science bodies, many of which belong to the IUGS family, find ways to cooperate. The International Year of Planet Earth may provide such a vehicle.

The International Year of Planet Earth



by **Eduardo de Mulder**
(IUGS President) and **Henk Schalke** (photo)
(Co-ordinator, International Year of Planet Earth)

Major progress has been made in the preparations for the International Year of Planet Earth (2005-2007), which is an IUGS initiative, immediately endorsed by UNESCO. The Year's subtitle 'Earth Sciences for Society' reflects the prominent role of geology in this endeavour, which is primarily geared at raising awareness both in the general public and in politicians concerning the increasing importance of the Earth sciences in creating a healthier, safer and more prosperous society. In 2003, much effort was put towards developing and selecting a science programme. Early in 2003, some 20 leading geoscientists from all over the world generated a list, with supporting texts, of 22 science topics with a demonstrable societal importance. That list was then reduced to eight major themes: Groundwater, Health, Megacities, Hazards, Resources, Climate, Deep Earth and Oceans. Formulating key questions for each of these themes, which will be addressed by geoscientists

over the three-year period of the International Year, was essentially finished by the end of June, 2004.

For the outreach component of the International Year of Planet Earth, a brochure, *Planet Earth in Our Hands*, was printed in November, 2003. About 3,500 copies were disseminated to all 116 IUGS Adhering Organisations and to national delegations of the 190 UNESCO member countries. This was meant to ignite the process of collecting political support for the International Year, which will culminate in the proclamation of the Year for 2006, by the UN General Assembly. To that end, in late 2003, preparations were made for a high-level information meeting at UNESCO, very successfully held in early 2004, with Koichiro Matsuura, the Director-General of UNESCO, giving the opening address to an audience of 58 Permanent Delegations to UNESCO and representatives of many IUGS National Committees and of several international geoscientific organisations.

In 2003, our ICSU sister organisations, the International Union of Geodesy and Geophysics (IUGG) and the International Geographical Union (IGU) agreed to become full partners in the initiative. Subsequently, the International Lithosphere Programme (SCL-ILP) and, early in 2004, the International Union of Soil Sciences (IUSS) decided to join. This support has provided a solid professional base for the International Year of Planet Earth, now on its way to proclamation by the United Nations. Over the past few preparatory years, this initiative has contributed very significantly to IUGS' visibility and profile.



*Sulphurous, boiling mud vent,
near Reykjavik, Iceland.
Photo: Hanne Refsdal*

THE INTERNATIONAL COUNCIL FOR SCIENCE (ICSU)



by Robin Brett
(Past-President of IUGS
and Member of the ICSU
Executive Board)

The International Council for Science (<http://www.icsu.org>), formerly known as the International Council of Scientific Unions, 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 which are commonly the National Academy of Sciences for a given country.



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 the polar regions, the oceans, and the environment. Large international interdisciplinary programmes launched by ICSU include the International Geosphere-Biosphere Programme (IGBP; <http://www.icsu.org>) and DIVERSITAS (<http://www.diversitas-international.org/>).
- 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.
- 4) 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.

- 5) 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. Such grants usually involve several unions and/or scientific committees, and the topics chosen are of societal importance.
- 6) 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 two years ago. These large meetings show the decision-makers and the press the increasing relevance science has to today's problems.

ICSU, after an uncertain period, 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.

THE PROPOSED MERGER OF IUGS AND IGC



by Werner Janoschek
(IUGS Secretary-General)
and Tadashi Sato (photo)
(IUGS Vice-President)

The world's Earth sciences community is currently served by two separate international organizations: the International Union of Geological Sciences and the

International Geological Congress. Although separate, there is clearly much overlap in interests and IUGS holds its Council meeting during the quadrennial IGC meetings. Further, IUGS is the main scientific sponsor of the IGC. Following the recommendations of the IUGS Strategic Planning Committee report in 2000, the IUGS Executive Committee suggested to the IGC Steering Committee that the two bodies develop a much closer relationship. This proposal was taken up by the Steering Committee and, after lengthy consultations, a proposal for a closer integration was basically agreed on, late in 2002, although this has to be discussed and ratified by the Councils of the two bodies at the Congress in Florence, in August 2004.



The most significant aspects of the proposed integration are:

- IGC will become the major scientific forum of IUGS, a relationship similar to that seen in many other scientific unions. The new body will have an enhanced visibility, appealing more to not only the geological community but also to the public and to governmental authorities.
- The Councils of IUGS and of the Strategic Planning Committee (SPC). shall be fully merged into one body. This will simplify the administration for the Union, IGC and the Adhering Organizations.
- The General Assembly of the IGC shall be abolished.

To preserve the prestige of IGC, one of the world's oldest international scientific gatherings, the following precautions were taken in the proposed merger:

- The name The International Geological Congress will be retained, and the numbering of the meetings will continue in sequence with previous meetings; the congress after Florence will be the 33rd IGC.
- The organizational and operational autonomy of a congress is assured. Each congress will be planned by an Organizing Committee, nominated by the appropriate authority of the host country or group of countries, for a period of one session, as practiced until now.
- A permanent IGC Committee will be created as the liaison between the IUGS Executive Committee and the IGC.

However, there are differences of opinion on a few points. In particular, the position of the IGC Committee within the Union is not yet decided on. The IUGS Executive Committee believes that it should be placed under the Executive Committee, whilst the IGC Steering Committee thinks it should be at the same level as the Executive Committee, directly under the Council. These differences will be resolved at the forthcoming IGC.

At the IGC in Florence, both IUGS and IGC will have their own, independent Council meetings, at which the proposal of integration will be on the agenda. The final integration will be achieved only after ratification by the IUGS Council and both the Council and General Assembly of IGC.

If the integration is approved by the Councils and General Assembly, the existing IUGS statutes will have to be amended. A draft version of the new statutes, embodying the integration, was prepared by an ad hoc Statutes Committee, established by the IUGS Executive

Committee, in which there was an IGC Steering Committee representative. This draft has already been circulated to the Adhering Organizations and IUGS Affiliated Organizations for comments. The proposed new statutes will be put up for adoption at the IUGS Council meeting in Florence, if the integration is approved. The IGC Steering Committee has also prepared new statutes for IGC, for ratification in its Council.

The IUGS sincerely hopes that the world's geoscientific community will be able to contribute more easily and effectively to the future welfare of human society through the new, but simple and coherent body.

FUNDING OF BUREAU POSITIONS WITHIN IUGS

by Antonio Brambati
(IUGS Treasurer)



During its term, the current Executive Committee has become increasingly aware of the lack of representation of several geoscientific communities within IUGS' framework. In an attempt to rectify this situation, the

Executive Committee started discussions about establishing a committee to cover the special needs of the developing world, young scientists and women within the Earth sciences; this also follows the recommendations of the SPC. At the same time, the Executive Committee realised that representation within the Bureau positions (President, Secretary General and Treasurer) is restricted to scientists from nations capable of financially supporting them; the Secretary General's costs are particularly high, as an assistant is required. In confirmation of this, the Nominating Committee has stated that it is getting more difficult to obtain suitable nominations for Bureau positions. A position paper, drafted by the President and presented to the Executive Committee at its meeting in Windhoek, suggested that some or all of the costs of the Bureau positions might be provided from IUGS' funds, as is the case in many other ICSU unions. In the subsequent discussion, the Executive Committee agreed that the system must be changed, but an alternative mechanism of funding remained uncertain.

However, although discussions started with the concern that the developing world was not properly rep-

resented in the Bureau, it soon became apparent that, since only a very few countries could support Bureau positions, and even these countries are suffering from cut-backs, alternative means for funding these positions for all persons elected was required, irrespective of the country of origin. In the light of this, a second position paper was submitted by the Treasurer to the Bureau, at its meeting in Utrecht, 2003. In this, three alternatives for funding were laid out (1) IUGS pays all the costs of the Bureau positions; (2) IUGS pays ~65% of the costs or perhaps just the travel costs to meetings. The rest would have to be paid by the officer's own country or by sponsors; (3) IUGS pays a fixed sum, with the officer's country or sponsors paying any further sum required. The matter was then further discussed at the last Executive Committee meeting, in Oslo, 2004, where it was both decided that IUGS could not pay the full costs of the entire Bureau and agreed that the problem should be brought to the attention of the Council at the IGC in Florence, 2004. The current Executive Committee strongly advises that this matter be taken further by the next Executive Committee.

CHANGING THE IMAGE OF IUGS – A NEW OUTREACH APPROACH



by Peter Bobrowsky
(IUGS Vice-President)

During the past decade, the geosciences have fared poorly in a number of important aspects, from reduced university research funding to a minimal public and political appreciation of its relevance when compared to other disciplines,

such as astronomy and biology. The causes for this negative trend range from changing global economic priorities and increasing demands on budgets, to a poor visibility in the eyes of politicians and the public. Shortly after the 31st IGC in Rio de Janeiro, a task group was created by the Executive Committee to assess this problem and to provide recommendations for a response by the Union. Recognizing that IUGS can positively influence how the geosciences are perceived, a number of parallel efforts to promote and to increase the awareness of the Earth sciences were undertaken.

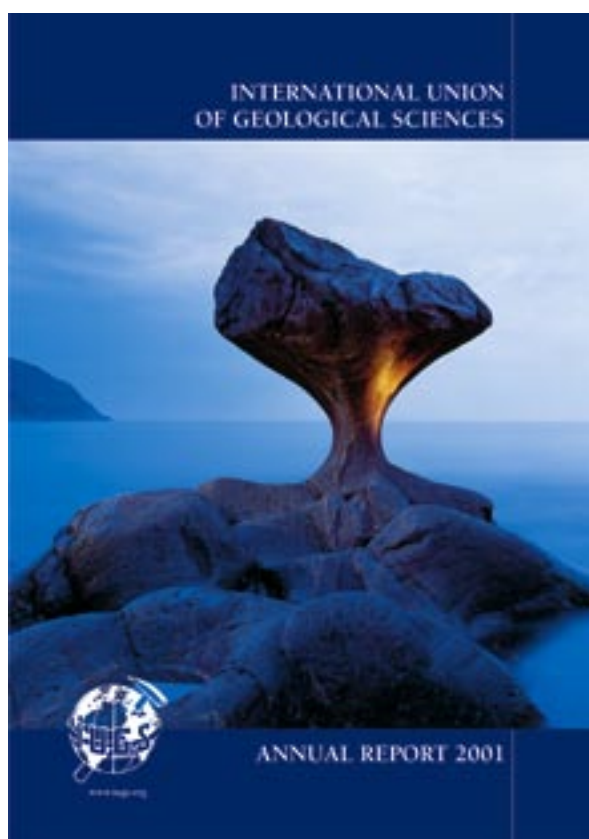
First, it was realized that enhancing the visibility of

IUGS within the geosciences community itself was a high priority. To meet this objective, the Executive Committee took several bold steps, including replacing the old hammer logo, an image that appeared to single out rocks and exploration activities, with a more encompassing and diverse image of the geosciences. The new IUGS logo, which has been formally adopted, represents a person shouldering the Earth; essentially, accepting responsibility for the Earth. In another action, designed specifically for technical society meetings, the Union produced a large full-colour panel display, highlighting IUGS' journal, Episodes, and the many activities and Affiliated Organisations in IUGS. The panel has accompanied Executive Committee members to several professional venues, including meetings of the Geological Society of America (GSA), the European Geoscience Union (EGU) and the International Geoscience Education Organisation (IGEO). 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. A colour wall poster, showing the outcrop used for the cover of the Annual Reports, was also printed for general distribution. Similarly, several smaller promotional items bearing the new IUGS logo have been donated or purchased and distributed (silk ties, compasses, leather business card holders). However, one of our 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.

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



Second, IUGS focused on the educational importance of the geosciences. The International Geoscience Education Organization (IGEO) joined IUGS as an Affiliated Organisation in 2003 and, as a result, IUGS sponsored their international congress in Calgary, Canada, in 2003. At this, the Union was well advertised amongst geoscience educators and a Commission on Education, Teaching and Technology Transfer was initiated within the Union.



Third, the Executive Committee recognized that a “corporate accountability” must be developed in a manner akin to other major institutions. To this end, an Annual Report is now written. The first, published as a hard copy for the year 2001, was welcomed by government politicians and bureaucrats, non-geological organizations and societies, etc. This formal document created a more professional and structured image to non-geologists. The Annual Report for 2002 was recently completed and has been released as a digital file on the IUGS homepage.

Fourth, the Union has aggressively moved to facilitate cooperation amongst individuals, organizations and groups involved in the promotion and preservation of our

geological heritage. A coordinating meeting, organised in partnership with IGU, was held with representatives of several concerned organisations, at which it was decided that an independent consortium should be established. This is described in more detail later in this report.

Fifth, IUGS has started to release an electronic Bulletin to its Adhering Organisations, scientific bodies and Affiliated Organisations. These short, informal “news bites” try to 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 e-Bulletin is sent out some six times a year, to over 2,000 addresses, by the IUGS Permanent Secretariat.

Finally, IUGS is being credited with the launching of an International Year of Planet Earth (2005-2007), described in detail elsewhere in this Annual Report.

Collectively, the accomplishments and efforts summarized above indicate that the Executive Committee has been proactive and strived to meet the demands and needs expressed by the members. Great strides 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 EXPANSION TO COVER THE WORLD'S GROWING WATER PROBLEMS

by Jean-Paul Cadet
(IUGS Councillor)



The International Geological Correlation Programme, which is the 30 year old flagship scientific programme of IUGS and UNESCO's Earth Sciences Division, was renamed the International Geoscience Programme in 2003. The new name takes into account the full range of geosciences and better reflects the current nature and role of the programme, at the start of the twenty-first century. A further indication of the broadening of the scope of IGCP is its expansion to include a fifth working group, specifically to cover hydrogeological and groundwater-related issues; this has rapidly become a major area of concern at all levels of society, with growing populations

and ongoing desertification significantly stressing the world's supply of fresh water for agricultural, industrial and domestic use. The new working group is being supported by UNESCO's Water Division, in coordination with the International Hydrological Programme and the International Association of Hydrogeologists. This enlargement complies with the recommendations of the Strategic Planning Committee. It also complies with the desire of UNESCO's Member States to focus more on projects dealing with water, this being one of the main priorities of UNESCO's mid-term strategy.

The roles of the new working group (WG 5) on hydrogeology are: to facilitate interdisciplinary projects that integrate geological and hydrological processes and knowledge, developing the interfaces between the geological community at large and the hydrogeologists; foster networks of experts in various scientific topics related to groundwater and hydrogeology: encouraging projects aimed at improving methodological guidelines, working standards and best practice case studies in various groundwater related fields.

Further information can be found at <http://www.unesco.org/science/earthsciences/igcp/index.htm>.

THE IUGS GRANTS PROPOSAL PROGRAMME



by Alberto Riccardi
(IUGS Councillor)

The funding of IUGS Commissions, Task Groups and Initiatives has traditionally been based on the submission to the Executive Committee of a work proposal, together with a budget request, for the forthcoming year. This request

has then been discussed by the Executive Committee at its Annual Meeting and, depending on the work plan and taking into account the performance of the body in previous years and IUGS' overall financial position, funding has been allocated to those bodies that had requested support. Such support lies between US \$ 2,000 and US \$ 35,000.

However, the Strategic Action Plan recommended that IUGS' scientific bodies should also fund projects on

new scientific directions and research topics. To implement this proposal, the Executive Committee set up a task group on developing an IUGS Grants Policy, chaired by Robin Brett (the Past-President), to look at ways and means of attaining this end.

The result of these discussions was the creation of the IUGS Grants Proposals scheme. Under this, IUGS' scientific bodies can apply in a competitive manner for larger sums of money to work either on a topic suggested by the Executive Committee, from ideas proposed by the Committee for Research Directions (CRD; so-called top-down projects), or on a topic of their own choice (bottom-up projects). Preference will be given to proposals that are global or regional in scope, multidisciplinary, of societal importance and to those involving more than one of the IUGS entities and multi-national groups, including people from developing countries. IUGS' Affiliated Organisations can also apply for such funding, so long as it is done in collaboration with one of IUGS' own scientific bodies.

Proposals for the IUGS Grant Policy Programme must be submitted by 31 October each year, as one page Expressions of Interest, which are then reviewed by a committee comprising members of the Executive Committee and IUGS' CRD. The results of this review are then sent to the Executive Committee, which decides which, if any, of the Expressions of Interest should be expanded to a full project proposal. The Bureau then decides which project(s) should be funded.

Each year, the Executive Committee sets aside US \$ 50,000 to support the scheme, with funds unused in one year rolled over to increase the funds available for future years. Neither the Executive Committee nor the Bureau is obliged by the rules of the scheme to fund a project every year. Further, projects must submit an annual report of their activities in order to ensure that funding continues.

The scheme was first put into operation in 2003 and eight Expressions of Interest were submitted. The project finally chosen for support (US \$ 44,000, over three years, 2004-2006) was The Application of Geosciences for Sustainable Development of Cross-Boarder Areas, a bottom-up project submitted by a group comprising M. Graniczny, J. Lazauskiene and R. J. Shlemon.

Further details of the scheme, including application forms, can be obtained from the IUGS homepage.

THE IUGS MID-TERM VISION AND STRATEGIC ACTION PLAN



by Harsh Gupta
(IUGS Councillor)

In its report “International Earth Sciences in the 21st Century”, the Strategic Planning Committee (SPC) proposed that IUGS should aim to unite the global geological community in “promoting the development of the geosciences through the support of broad-based scientific studies relevant to the entire Earth system” and in “applying the results of these and other studies to preserve the Earth’s natural environment, using all natural resources wisely, and to improve the prosperity of the nations and the quality of human life”.

The SPC’s new goals for IUGS, consistent with this mission and with a demonstrable relevance to society, include, but are not limited to: Reducing the vulner-

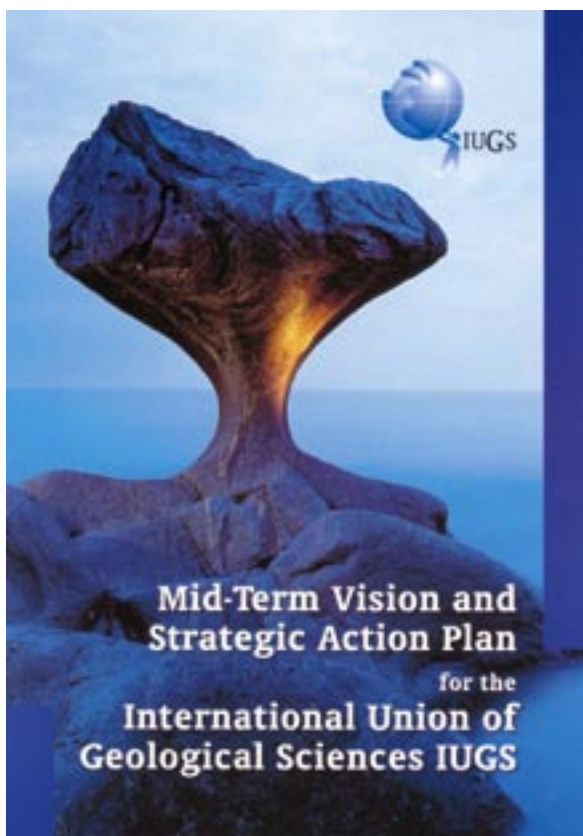
ability of communities to natural hazards; Mitigating the effects of waste and pollution; Understanding global environmental change; Understanding biodiversity; Managing resources and sustaining the environment and Understanding the relationship between geology and health.

As IUGS approaches its 50th anniversary in 2011, a mid-term vision was developed to help achieve these goals, several of which exceed the 4-years term of an Executive Committee in scope. This vision, presented in the booklet Mid-Term Vision and Strategic Action Plan for the International Union of Geological Sciences IUGS, states that: “The IUGS is widely acknowledged as the most prestigious international geo-scientific organization, uniting the world’s geoscientists and supporting the development of the geosciences for the sustainable development and management of all parts of Planet Earth”.

As a consequence of the blurring of the distinctions between geology and geophysics, it is important that all Earth and ocean related geological and geophysical unions in the International Council of Sciences work in tandem, with a consortium approach for addressing global issues. The other relevant bodies are the International Union of Geodesy and Geophysics (IUGG), the International Geographical Union (IGU) and the International Union of Soil Sciences (IUSS). This consortium approach, described more fully elsewhere in this report, will provide a powerful voice to the public and policy makers about geo-scientific issues.

With the growth of the world’s population, urbanization is concentrating people into smaller parts of the Earth’s surface, such that a sustainable use of resources and underground space has become an important issue. Hence IUGS considers it important to also address the following societal issues: Groundwater - availability and access to fresh water by the entire human population; Cities – the subsurface region is an increasingly important issue for urban development. Underground processes are not yet well understood. By 2011, IUGS will be working on the sustainable use of the urban subsurface. Oceans - dependence of humankind on the oceans is increasing with the passage of time. IUGS should become involved in geo-scientific research on the sustainable use of oceans and the ocean floors.

The Strategic Action Plan and the Mid-term Vision touched on several other important issues, such as outreach, and publications. These have been covered in other parts of this report and are not detailed here.



PUBLICATIONS FROM IUGS NOW ON A FIRMER FOOTING



by Antony Berger
(Chairman, IUGS
Publications Committee)

Two major developments on the publishing front took place in 2003. A new Policy for IUGS Publications document was approved by the Executive Committee, and a formal agreement was reached

with the Geological Society of London concerning the publication of books arising from the scientific work of the Union.

In the past 25 years or so, IUGS has encountered many difficulties in publishing monographs, charts and books. Some were published in a numbered New publication Series (NPS) by the Union alone and some as joint works with various publishing houses. There was little consistency in the arrangements for the latter, and several important books arising from the work of the Commissions, such as the International Stratigraphic Guide and the Nomenclature of Igneous Rocks were not part of the NPS. Moreover, certain titles in the NPS did not go through IUGS and were never available from the Union. Neither was IUGS equipped to promote, sell and otherwise distribute those works that it did self-publish. Recognizing these problems, the new publication policy drawn up by the Publications Committee brought a formal end to the NPS, and to the Union's own publishing programme.

The policy document, available from the IUGS website, sets out guidelines to be followed in the production of any new book-length scientific work. These specify that the Union's contribution must be prominently stated, with the IUGS logo on the title page or other front matter. Royalties on sales are to be expected and will be returned wherever possible to the originating scientific body. Copyright is to be negotiated for each new book. For its part, IUGS will assist in promoting the sale and distribution of such new books, through Episodes and other outreach activities of the Union. Efforts are to be made to keep sales prices at reasonable levels, especially vis-à-vis developing countries. IUGS funding to its various bodies will now be contingent on compliance with these guidelines.

An agreement for "out-sourcing" was reached in April, 2003, with the Geological Society of London (GSL). According to this agreement, all proposed books and monographs arising from IUGS bodies must be submitted first to GSL, which will select those titles that the Society wishes to publish as part of its own book series. GSL will handle all sales and promotion and will pay a royalty to be determined on a case by case issue, but averaging about 5%. Copyright will be held by GSL. Authors and editors of books declined by GSL are free to seek other arrangements, so long as the guidelines in the Policy for IUGS Publications, as outlined above, are followed.

The first title under the IUGS-GSL arrangement has now been accepted. This is *Environmental Catastrophes and Recovery in the Holocene*; several other proposals are going through the GSL internal review process. These include a number of titles coming from IGCP and from symposia to be held during the 2004 IGC, in Florence.



The
Geological
Society



*Andy Fleet and
Ed de Mulder signing
the agreement with the
Geological Society of London,
at the EGS-AGU-EUG Joint
meeting, Nice, 2003.*

IUGS – role, structure, membership

THE ROLE OF IUGS

The International Union of Geological Sciences, which is a member of the International Council of Science (ICSU; <http://www.icsu.org>) 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.

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 the Union is involved in.

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 32nd IGC meeting, in Florence, Italy, in August 2004, but, as proposed in the Strategic Planning Committee, the two Councillors appointed in 2002 will remain in office until mid-way through the next term, thus providing the Executive Committee with much needed continuity.

The Executive Committee is currently preparing to launch 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. The postal address is given at the start of the report.

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,

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





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 2003

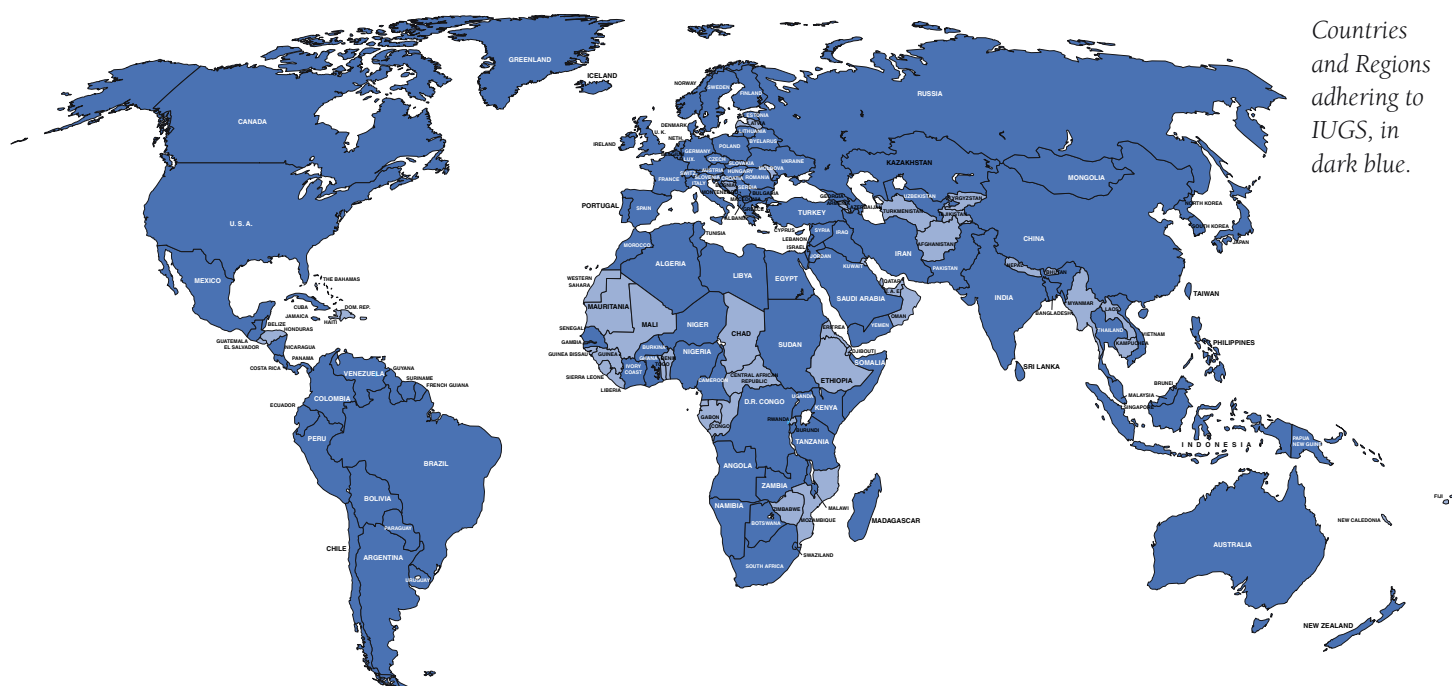
The 52nd Executive Committee meeting was held at Windhoek, Namibia, between February 24 and 28. The meeting and associated field trip were superbly organised and hosted by the Geological Survey of Namibia, under Gabi Schneider. A full list of Executive Committee and Bureau meetings held in 2003 is given in Appendix 1.

MEMBERSHIP OF IUGS

The 116 Adhering Organisations of IUGS cover the majority of the world; most have an active status. Appendix 2, gives a full list of the Adhering Organisations, together with their membership category and status. Inactive Adhering Organisations must pay the Membership Fees for the previous two years as well as the currently outstanding year (i.e. 2002-2004) in order to regain an active status. The Fees for 2002-2004 are given in Appendix 3. Only those Adhering Organisations with an active status can vote on IUGS matters; inactive Adhering Organisations can participate as observers.

Executive Committee meeting in Windhoek, Namibia in 2003.

Photo: Peter Bobrowsky



Countries and Regions adhering to IUGS, in dark blue.

Wind Erosion
Deflation
of roots of
“false ebony”
trees possibly
100-200 years
old, Daberas,
Orange River,
Namibia.

Such evidence
is used in the
geoindicators
approach to
assess rapid
environmental
changes (see
the section on
the Geoindica-
tors Initiative).

Photo:
Hanne Refsdal



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). In 2002, this unit was linked to the inflation rate of the USA, giving a basic unit of US \$ 450 in 2003.

There are only three Adhering Organisations in Category 8 (Japan, Russia and the USA), and relatively few countries in Category 7. Most Adhering Organisations (66), and also most inactive Adhering Organisations, lie within Category 1, with fewer members in the higher categories.

The King Abdulaziz City for Science and Technology, Saudi Arabia is an Associate Member of IUGS.

TREASURER'S REPORT

During the early part of 2003, Werner Janoschek continued as acting-Treasurer, until Antonio Brambati took on the responsibilities after the Executive Committee meeting in Windhoek, in February, 2003. The IUGS' bank accounts were transferred from Austria to Italy in March, 2003. The total income for 2003 was principally from the annual Membership Fees paid by the Adhering Organisations and from contributions to the scientific programmes, such as the US and UNESCO contributions to IGCP.

Financial support from IUGS funds was allocated to IUGS' Commissions, Task Groups, Initiatives and Committees, as well as to several Affiliated Organisations and other collaborative projects. IUGS' funds were also used to partially cover the preparation costs of the International Year of Planet Earth, to start up new activities in the geo-tourism field (see GEOSEE, later in this report) and to cover the costs of ad hoc Review Committee meetings.

Although funding for travel to the Executive Committee meetings by Executive Committee members is also provided for by IUGS, travel costs for the President, the Secretary-General (and his assistant), the Treasurer and the Permanent Secretariat are all covered by their national governments or other national organizations and do not impose any financial burden on the Union. Further, Namibia, the host country of the 52nd Executive Committee meeting in 2003, provided a considerable amount of indirect financial assistance, for which IUGS is very grateful. Development of the many new initiatives in 2003 caused some erosion of the IUGS finances, and expenditures exceeded income for the first time during this term. However, over the period 2000-2004, IUGS' total assets rose by some 10%. A detailed financial statement is given in Appendices 4 & 5 and more information can be obtained from the financial report published in Episodes, volume 28.

THE JAMES HARRISON OUTSTANDING ACHIEVEMENT AWARD

During 2003, the President noted that IUGS had no mechanism for officially thanking those who had made major contributions to the success of the Union. After discussions in the Bureau, it was proposed to the Executive Committee that an award be instituted, to be given at each IGC, to someone whose contribution to IUGS had been exceptional. The Executive Committee suggested that the award be called the James Harrison Outstanding Achievement Award, after the first President of IUGS, who was greatly respected as a man, as a scientist and as a leader of IUGS. The award will be presented for the first time at the IGC in Florence.

Committee for Research Directions

IUGS aims to make important and lasting contributions to new areas of the geosciences as they open up, as a result of the changing needs of society. To keep track of these changes, and thus to give advice to the Executive Committee on what new trends are developing in the Earth sciences, IUGS established the Committee for Research Directions (CRD). The Committee normally meets each year, in February, and submits its recommendations to the Executive Committee, which discusses them and, if thought to be suitable, acts on them. In February 2003, the Committee comprised Edward Derbyshire (Chairman), Gerhard Wörner (Vice-Chairman), Ian Dalziel, Max Deynoux, James Teller, Victor Ramos, Christian Chopin, Albrecht Hoffmann and as observers Henri Kampunzu (SPC–International Year of Planet Earth), Sylvi Haldorsen (INQUA) and Jean-Paul Cadet (CGMW). The President and Secretary General of IUGS are ex-officio members.

Publications Committee

The Publications Committee comprises Antony Berger (Chairman), Fred Spilhaus, Godfrey Nowlan, Victor Mocanu, Kaigal Subbarao and two members of the Executive Committee, Werner Janoschek and Peter Bobrowsky, together with two ex officio observers, the Webmaster, John Aaron, and the Editor-in-Chief of Episodes, Zhang Hongren. The committee is charged with overseeing the material published directly or indirectly by IUGS.

During 2003, the Committee sought ways of improving the image of IUGS' New Publications Series, as recommended by the Publications Committee meeting

in 2002. The results of this investigation are given in some detail earlier in the report. The Committee also discussed the plans for a new ICS-IUGS Stratigraphic Chart with Felix Gradstein (Chairman ICS), to be ready for the 2004 IGC meeting. It was decided to print a copy of the new chart as a centrefold in Episodes, together with a four page introduction, to be distributed free at the IGC.

The Committee keeps in close contact with the Chinese office publishing Episodes, IUGS' journal. In 2003, the formal Memorandum of Agreement (MOU) with China governing the publication of Episodes up to the end of 2004, was signed by Shou Jiahua, Vice-Minister of the Chinese Ministry of Land and Resources, and the IUGS President. During the period covered by this report, the publication of Episodes continued with its customary efficiency, led by the Editor-in-Chief, Zhang Hongren. The SCI for the journal has risen from 0.19 in 1992 to 0.94 in 2002, which is remarkably high for such a mixed newsletter and scientific journal. As a new procedure, copyright of articles published in Episodes is now transferred to the journal. The prospects for continued cooperation with China are very promising, but before arrangements for 2005 and beyond are finalized, the terms of the MOU require a review of the journal over the past four years to be undertaken. Plans for this were made by the Publications and Executive Committees in 2003. To assist further in the review, the

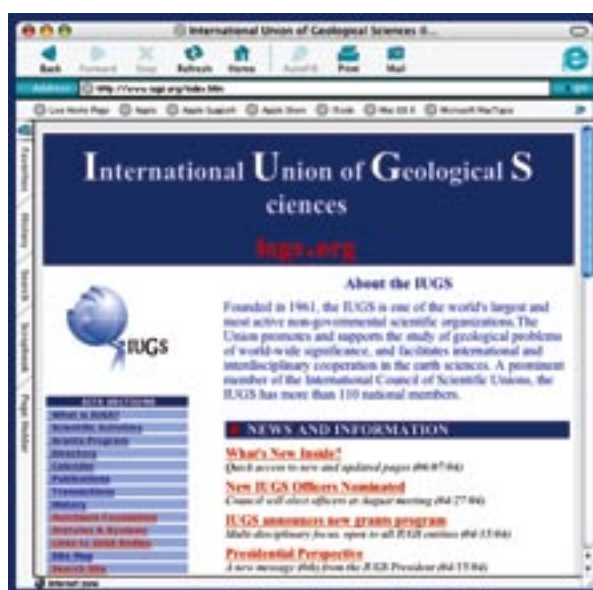


*Zhang Hongren
(Editor-in-Chief
of Episodes).*



Publications Committee compiled a questionnaire for a Reader Survey, printed by Episodes in early 2004 and also available on-line at the IUGS website.

A special issue of Episodes, concentrating on the work of Italian geologists, was published in 2003, in advance of the IGC in 2004, in Florence. The extra cost of this volume, which was somewhat larger than usual, was borne by the IGC.



The Committee also keeps in close contact with John Aaron, webmaster of IUGS' homepage, which is rapidly increasing in both the number of hits received (average 70,903 page hits per month) and the geographic range from which the hits come (average 89 countries per month). During 2003, the

site was completely re-organised, to incorporate the new IUGS logo and to improve the services. All geoscientists are advised to check the website regularly and to contribute to the Calendar of forthcoming events whenever the opportunity arises.

Nominating Committee

The Nominating Committee, which is responsible for making nominations for the positions on the Executive Committee, comprises Robin Brett (Chairman), Wissam Al-Hashimi, Glenn Caldwell, Marta Mantovani,

Isabelle Niang-Diop, Michael Schmidt-Thomé and Zhang Hongren. During the period of this report, the Committee began the process of collecting nominations for the members of the next Executive Committee, to be elected at the IUGS Council meeting at the IGC in Florence.

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 2003, ad-hoc reviews were made of the International Commission on the History of Geology (INHIGEO; Dublin, July) and the Commission on Global Sedimentary Geology (CGSG; Utrecht, November). The results of the review on INHIGEO were very positive. The review of CGSG decided that a complete reorganisation of the commission was required, with a new leadership and new, better defined aims.

Statutes Committee

This Committee is charged with the responsibility of ensuring that the Statutes of IUGS conform to the decisions ratified by Council, either at an IGC meeting, or, in the process developed during the term of this Executive Committee, by electronic voting. Suggestions for improving or extending the Statutes are made by the Executive Committee, as the Union grows and develops. The Statutes Committee comprises Peadar McArdle, Michael Schmidt-Thomé, Jean-Paul Cadet and Isaac Nyambok.

During 2003, the Statutes Committee was particularly active, since the proposed merger of IUGS and IGC required substantial modifications to the Statutes. In 2002, Werner Janoschek visited Tadashi Sato in Japan to discuss this and together they prepared a draft revised Statutes. These were then discussed at a meeting with the Chairman of the Statutes Committee in July, 2003, in Dublin, together with Attilio Boriani, President-Elect of IGC. The draft new Statutes were then sent to the Statutes Committee, the IUGS Executive Committee and to the IGC Steering Committee to be checked. The proposed new Statutes were distributed to the National Committees to consider, before being voted on at the upcoming IGC.

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

The main scientific work of the Union is undertaken by its Commissions. Normally, a Commission lasts for two to three terms of the Executive Committee, after which it should either regroup as a new Commission or be terminated.

Commission on Geological Sciences for Environmental Planning (COGEOENVIRONMENT)

COGEOENVIRONMENT (<http://www.sgu.se/hotell/co-geo/>) aims to increase public awareness of the importance of the Earth sciences in all management and planning decisions concerning the environment. Increasing both the understanding of planners and decision makers regarding the value of the geosciences and the interest of geoscientists in taking part in such activities, are aims of the Commission. Forecasting potential ecological and human disasters forms a critical part of the Commissions work. The Commission is led by Colin Simpson (simpsons@webone.com.au), with Imasiku Nyambe (inyambe@mines.unta.zm) as Vice-President and Joy Pereira (joy@pkrisc.cc.ukm.my) as Secretary General. The Commission has a team of 10 other officers and over 200 Corresponding Members from 82 countries, with several Supporting Members and Corporate Members.

Towards the latter part of 2003, COGEOENVIRONMENT decided that it needed to find a new direction and thus proposed reforming itself as a Commission of Geosciences for Environmental Management (GEM), with Joy Pereira as the Chairwoman. These decisions were warmly welcomed and approved by the Executive Committee at its annual meeting in Oslo, March, 2004.

Existing working groups within COGEOENVIRONMENT will be fully supported by the new Commission, although new working groups will be directed more

to the aims of the new Commission. The existing working groups comprise an International Working Group on Urban Geology, led by Brian Marker (brian.marker@odpm.gsi.gov.uk), covering natural disasters in urban areas, and an International Working Group on Geology and Ecosystems led by Igor Zekster (zekster@aquas.laser.ru). Working Groups on Geoscience for Land Use and on International Borders – Geoenvironmental Concerns are under development.

Commission on Global Sedimentary Geology (CGSG)

This Commission was reviewed in 2003 by an ad hoc Review Committee comprising Antonio Brambati, Jean-Paul Cadet, Francois Guillocheau, Stephen Hesselbo, Daniele Masetti and Aymon Baud. The ARC discussed the principle difficulties of the existing Commission, particularly its lack of visibility in the geosciences community and made some recommendations for the future. These included forging effective working partnerships with other ICSU unions, with greater emphasis on multi-disciplinary studies and with links to IUGS' Affiliated Organisations. If continued, the body should be renamed the Commission on Sedimentary Geology (CSG), which would provide the appropriate breadth for the work proposed. In the long run, the publications generated by the body should enable it to become self-sufficient. A considerable broadening of the membership was also suggested, along with regular meetings on new multidisciplinary projects. These recommendations are being discussed further by the ARC, which is currently seeking members for the new body.

International Commission on the History of Geological Sciences (INHIGEO)

This body (<http://www.iugs.org/iugs/science/sci-chog.htm>), which 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. The Commission is led by Manuel Pinto (mpinto@geo.ua.pt), with David Oldroyd (d.oldroyd@unsw.edu.au) as Secretary. The Commission's main activity in 2003 was the holding of a conference at Trinity College, Dublin, on the theme of Geological Travellers, organised most efficiently by Patrick Wyse-Jackson, Curator of the Museum of the College's Geology Department. Publication of selected

papers by Pober Publishing House, New York, is expected for 2004, with Patrick Wyse-Jackson acting as editor. Following the meeting in Dublin, a week-long round-island tour of Ireland was made, visiting sites of geological, geohistorical, and historical interest.

Following the request of IUGS for INHIGEO to write a series of articles on successive International Geological Congresses, authors for 21 of the Congresses held so far have been found and four manuscripts have been received; Episodes has already started to publish these as an ongoing series.

During 2003, INHIGEO was assessed by an ad hoc Review Committee, comprising Werner Janoschek, Tadashi Sato and the President and Secretary General of INHIGEO. The ad hoc Review Committee expressed great satisfaction at the work undertaken by the Commission and complimented the officers on their work. The main suggestions of the Review Committee, such as developing a web-site and writing a history of the IGCs, have already been put into effect.

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. In the past year, the base of the Ediacaran System, in the Neoproterozoic Era and the base of the Wuchiapingian Stage, in the upper Permian have been ratified. The former, which marks a major break though for Precambrian geology, is of particular importance, being the first new System defined for nearly fifty years. Of the 96 Stages in the Phanerozoic, some 46 have been ratified; it is hoped that the rest will be finished by 2008. A complete list of ratified GSSPs, together with the reference to their official published description is given in Appendix 6. An updated, downloadable version of the new ICS Stratigraphic chart is available as a .pdf file at the IUGS website. The latest version of the chart will be published in Episodes and will be distributed free at the IGC, in Florence.

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.

Commission on Systematics in Petrology (CSP)

This Commission (<http://www.unifreiberg.de/min-pet/IUGS-CSP.html>), which is 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. An overview of the Commission's work was published in Episodes in 2003.

In 2003, the Sub-commission on the Systematics of Igneous rocks began looking at the application of the Total Alkalis-Silica diagram to plutonic rocks. The Sub-commission on the Systematics of Metamorphic Rocks held a meeting in Prague, September 2003; the

The "Ediacaran" Period has been assigned by IUGS to the last interval of the Precambrian. The GSSP that defines the base of the Ediacaran is in the Flinders Ranges National Park of South Australia (left foot of Jim Gehling on the level), and was ratified by IUGS in 2004.
Photo: James Gehling



focus was to agree on actions and a schedule to bring the Sub-commission's work to full publication. The eight papers which had been posted on the website as Provisional Recommendations were considered in the light of received comments and were accepted as Recommendations, subject to agreed minor changes. The four remaining papers were presented by their senior authors and actions agreed on to finalise these papers as Recommendations by late 2004. The Glossary was scheduled for completion by summer 2004 and a format for publication was agreed on, with chapters based on the current papers. Efforts to re-invigorate the Sub-commission on the Systematics of Sedimentary Rocks continued.

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. The Commission is led by Kristine Asch (Kristine.Asch@bgr.de), Ian Jackson (Secretary; ij@bgs.ac.uk) and Max Fernandez (Treasurer; mfernandez@africamuseum.be). During the past year, the first after being reformulated, the Commission has been setting up its structure and working practices. However, links with a number of other bodies, including the Commission for the Geological Map of the World (CGMW), IAMG, FOREGS (<http://www.eurogeosurveys.org/foregs/>) and the Committee for Coastal and Offshore Geoscience Programmes in East and Southeast Asia (CCOP) have also been forged, and also with the North American Data Model Group and the Canadian Geoscience Knowledge Network. Work on a Multi-lingual Thesaurus for the Geosciences (MTG) was initiated in October, at the first meeting of the designated working group. In the future, the Commission will be organising Outreach Workshops.

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

Spurred by the 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 newly affili-

ated International Geoscience Education Organisation (IGEO), which supported this initiative and Gary Lewis, Education and Outreach Director of the Geological Society of America, another organisation affiliated to IUGS, has agreed to chair the new Commission. GSA will host the Commission's inaugural meeting in autumn 2004, in the USA.

IUGS INITIATIVES

Geoindicators Initiative (GEOIN)

This Initiative (<http://www.geoindicators.org>) was a part of COGEOENVIRONMENT until 2002. The group is led by Antony Berger (aberger@uvic.ca) and Jonas Satkunas (Jonas.Satkunas.lgt.lt), together with David Liverman (Geol Surv. Newfoundland) and John Ridgeway (BGS). The Initiative's overall objective is to track and assess rapid geological change using the geoindicators approach. 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 2003, the Initiative ran two successful workshops – in Assiut, Egypt and in Canberra, Australia. Both led to the development of on-going networks tracking environmental change. The Initiative is collaborating in the ICSU funded Dark Nature – Rapid Natural Change and Human Responses programme, which held a meeting in Mauritania, early in 2004. A master CD of pictures

showing rapid geological changes is almost complete and will be placed on the website when finished. The US National Parks service is using the geoindicators approach and the Canadian National Parks are looking at the possibility of using it.

International Working Group on Medical Geology (IWGMG)

This Initiative (<http://www.medicalgeology.org>), which also 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), a pathologist, 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. 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. During 2003, the Initiative was represented at 15 events, by either individual presentations, or sessions at congresses or specialist meetings. Short courses on Metals, Health and the Environment – Medical Geology were held in 5 countries and a newsletter has been developed, and will be published twice per year. There are proposals for a Medical Geology Journal and also for a virtual journal. Links with the European Commission are also being developed and the Initiative is active in the ICSU initiative Science for Health and Wellbeing (<http://www.iubs.org/test/functions/fun-oth%20Health%20exec%20sum.htm>).

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. The Task Group is led by David Applegate, with representatives from 18 countries or organisations. In 2003, the Task

Group responded to two pleas for help from national geological surveys that were threatened with elimination (Colombia and Portugal). An article, outlining the Task Group's role and achievements, was published in *Episodes* in 2002. The Executive Committee agreed to review the Task Group later in 2004.

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. The Task Group is led by Jane Plant (japl@bgs.ac.uk) and David Smith (dsmith@usgs.org). In 2003, sampling in southern India made significant progress, with about one-tenth of the country now sampled. Plans for sampling in East Africa (Kenya, Tanzania and Uganda) have been submitted and a field course is planned in 2004, in Tanzania. CCOP has approved a geochemical mapping programme and an inventory of data in the region is nearing completion, in China. In Europe, FOREGS has continued to work 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 ready in January 2004. Plans to expand the project to Iceland are being discussed.

Task Group on Fossil Fuels (TGFF)

This Task Group (<http://www.geointelligence.org/>) 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 concerning existing and potential deposits is breaking out. 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. A workshop on governance and hydrocarbon resources was convened in November 2003, to promote the use of geo-intelligence and regional cooperation for sustainable resource management

and mitigation of potential conflict risk in countries with similar geopolitical situations. TGFF also supports and complements the Extractive Industry Transparency Initiative (EITI), which aims to bring transparency to the economies of the many developing countries which under perform economically despite having very large oil-revenues. The Task Group is led by Richard Sinding-Larsen (richard.sinding-larsen@geo.ntnu.no); expansion of the Task Group into a Commission is under way.

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 (Steiger & Jäger, 1977). However, recent analytical improvements have exposed potential problems with the 1977 recommendations. The nuclides considered initially are the same as those studied by Steiger & Jäger, plus ^{147}Sm , ^{176}Lu , and ^{187}Re , which only recently have gained wide application. Once this first goal has been achieved, other nuclides may be considered. Critical to the success of the work of the Task Group is that its members are viewed by the entire scientific community as accomplished, recognized practitioners, rather than consumers, of radioisotope geochemistry and geochronology. The new values will be presented at the IGC in Florence, 2004 and subsequently published in *Episodes*. An ad hoc review of the Task Group was held in March, 2004.

Task Group on Tectonics and Structural Geology (TASKTECT)

This group, which is still in a developmental stage, is intended to replace the Commission on Tectonics as IUGS' voice in the structural geology and tectonics field. The Task Group, provisionally led by Cees Passchier, will develop and promote standards on the rheology of materials used in structural modelling, develop databases about structural/tectonic issues and create a website containing teaching material and detailing research programmes, conferences and workshops available. The Task Group will also be active in promoting structural geology in the developing world, through field courses and workshops.

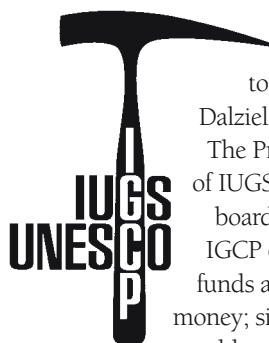
IUGS COLLABORATIVE PROJECTS

International Geoscience Programme (IGCP)

In 1972, IUGS and UNESCO jointly initiated the International Geological Correlation Programme (<http://www.unesco.org/science/earthsciences/igcp/index.htm> and <http://www.iugs.org/iugs/news/igcp04.htm>), the aim of which is to provide funding for promoting 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 2003, the programme was renamed the International Geoscience Programme.

Proposals submitted to IGCP are reviewed by a Scientific Board, consisting of four working groups, each covering different aspects of geology. In 2003, IUGS and UNESCO created a fifth working group, covering hydrogeology, in recognition of the rapidly increasing importance of this field for human welfare and environmental stability.

- 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 the Chairman, Ian Dalziel, comprise the selection panel.

The President and Secretary General of IUGS are ex-officio members of the board. In 2003, the total budget for IGCP comprised US \$ 175,160. The funds allocated to projects act as seed money; since, however, the IGCP status enables projects to more readily obtain funding from other sources, the total sum expended altogether within IGCP is many times greater than the seed money.

Projects accepted by the new working group (5) will be supported by the Water Division of UNESCO, which is

expected to expand the total budget available for IGCP projects significantly.

A complete list of projects supported in 2003 is given in Appendix 7. Currently, 12 of the 42 projects funded are funded through UNESCO's regional offices. A further five projects are running without funding on 'extended term', after the projects have technically finished; the IGCP status helps such projects to attract external funding that is often used to develop a successor IGCP project. 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 has been an important contributor to the development of the Integrated Global Observing Strategy for Geohazards, in 2003 (<http://dup.esrin.esa.it/igos-geohazards/> and <http://ioc.unesco.org/igospartners/Geohazards.htm>). This position was approved by the IGOS Partners in 2003, such that GARS now greatly enhances the visibility of the Earth sciences in the space agencies, intergovernmental UN organisations and world research programmes. Links between the scientific and decision making communities have been established, demonstrating the role that both the Earth sciences and Earth observation should play in socio-economic issues.

GARS is a joint operation of IUGS and UNESCO and now involves 40 institutes and individuals from 28 countries, most from the developing world. At the start of 2003, GARS was led by Dietrich Bannert, but, following his retirement, Stuart Marsh (shm@bgs.ac.uk) took on the leadership. 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.

Mineral Resources Sustainability Programme (MRSP)

This is a joint UNESCO-IUGS programme (<http://www.unesco.org/science/earthsciences/dmp/>) which aims to advance 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. In 2002 and 2003, the programme underwent a major restructuring, following the recommendations made by the Executive Committee at its meeting in Lower Hutt, New Zealand, in 2002. As a result, the programme is developing a more international profile and environmental and sustainability aspects have been included within the programme. In 2003, following acceptance of the new concept by the Executive Committee, a meeting was held to determine in detail how they should be implemented. MRSP is collaborating with the USGS and the US Forest Service to establish criteria and indicators for global mineral resource sustainability.

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

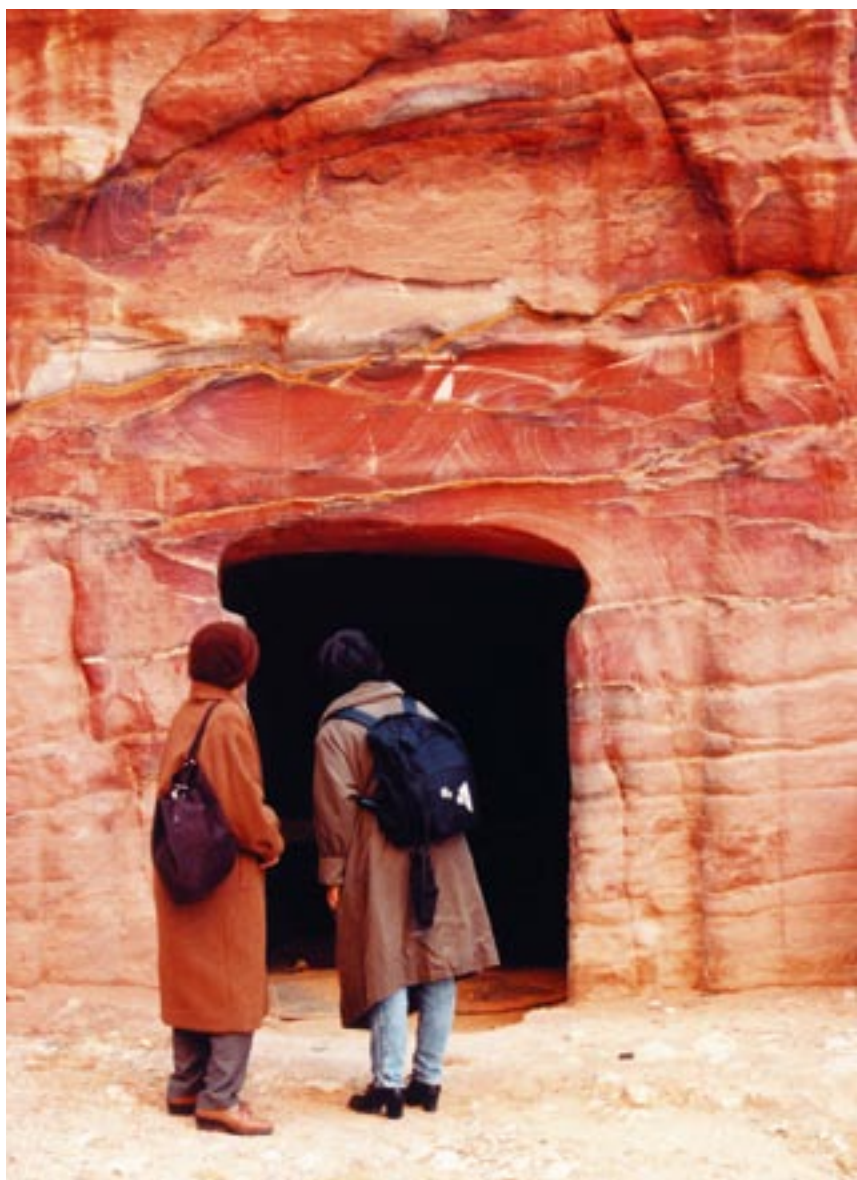
This programme (<http://www.sclilp.org>), which is a joint venture of IUGS, IUGG and ICSU, seeks to elucidate the nature, dynamics, origin and evolution of the lithosphere, through international, interdisciplinary collaboration. The Programme, which involves several hundred scientists from over 60 countries, was led by Asahiko Taira, up to his resignation in late 2003, with Kaye Shedlock (kshedloc@nsf.gov) as Secretary General. In 2003, nominations were requested for a new president, as a result of which Sierd Cloetingh (cloetingh@geo.vu.nl) was appointed as ILP President, early in 2004. Current projects include; Global Impact Studies; Processes and Dynamics in the Formation and Exhumation of Ultrahigh-pressure Metamorphic Terrains; Global Earthquake Potential; Methane Hydrate - Global Distribution and Geological Processes. Six Coordinating Committees are also active; Cooperative Earth Sciences in the Andes and the Himalayas; Europrobe; Continental Drilling; International Commission for the Earth Sciences in Africa (ICESA); Committee on Interdisciplinary Lithosphere Surveys (COILS) and Lithospheric Evolution of Gondwana East from Interdisciplinary Deep Surveys (LEGENDS).

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

During the term of the current EC, increasing the visibility of the geosciences to both the public and the politicians has been seen as a priority activity. Following the closure of the Task Group on Geosites, the Executive Committee looked for ways in which the Union could become more active in this sphere, but on a broader basis, and with a greater appeal to the non-geoscientific community. At the same time, the development of geotourism and geoparks in the last few years reflects the growing interest the public has in the world under their feet and this was seen as an avenue for IUGS to pursue in promoting the Earth sciences.

To this end, in late 2003 IUGS hosted a meeting in Utrecht, The Netherlands, to which many of those with an interest in bringing geology to the people were invited. Present at the meeting were representatives from IGU, the European Geoparks Network (EGN; <http://www.europeangeoparks.org/>), UNESCO, 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 the UK Joint Nature Conservancy Council (<http://www.jncc.gov.uk/>), together with representatives from Austria, China, Namibia, Malaysia, Germany, Canada and The Netherlands. Close contacts have also been made with the European Council, concerning the protection of the geological heritage in Europe.

At this first meeting, it was decided that an independent consortium, acting as a formal umbrella group should be established. A second meeting was held, in Paris, in February 2004, at which Terms of Reference were written and discussed. A further meeting, in China, in June 2004 is planned, coincident with a Chinese meeting on geoparks. In early 2004, EGN invited IUGS to have a representative on EGN Advisory Board; this was an important step forward, since the rules EGN use to define a geopark have been adopted by UNESCO as the defining criteria of a UNESCO Geopark (<http://www.worldgeopark.org>).



*Sediments in Petra, a World Heritage site.
Photo: Hanne Refsdal*

Geo-Union Cooperation in ICSU

To further IUGS' views on international scientific co-operation, as expressed in the Mid-term Vision and Strategic Action Plan booklet, the Union invited the leaders of the three other geoscientific unions in ICSU – the International Union of Geodesy and Geophysics (IUGG), the International Geographical Union (IGU) and the International Union of Soil Scientists (IUSS) – to attend a joint meeting. This was held in Paris, where, in a very positive mood, the four Unions expressed for the first time their genuine interest in cooperation, in both scientific and operational matters.

Five scientific fields of mutual interest were identified: Groundwater, (catastrophic) Hazards, (mega) Cities, Desertification and Health. For each of these topics, a working group comprising a representative of each Union was created. These groups will present position papers on the topics by mid-August, 2004. In addition, cooperation and mutual support was established on major events, such as the International Year of Planet Earth and the commemoration of the 50th Anniversary of the International Geophysical Year, in 2007 and 2008. As this meeting took place directly before ICSU's biannual all-Union meeting in February 2004, the results were immediately transferred to ICSU's Executive Board. These were well received and the meeting applauded as a model for other unions to follow.



*Hortonolite dunite pipe,
Bushveld Complex.
The first locality in South Africa
where the Platinum was discovered.
Photo: Hanne Refsdal*

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 initiate and participate in the activities.

Organisations Affiliated with IUGS

American Association of Petroleum Geologists (AAPG)



AAPG (<http://www.aapg.org>) has 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. In 2003, AAPG added to its digital archive aggregate by adding the publications of a number of other affiliated and associated societies (e.g. Canadian Society of Petroleum Geologists, Lafayette Geological Society). 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, the publications aggregate now investigating the feasibility of publishing all key geoscience journals electronically. Ethics became a critical issue business and professional issue during 2003; AAPG focused on setting standards and instituted a Distinguished Lecture Committee to develop a tour on this issue; an ethics booklet is in preparation. The AAPG International Meeting in Cairo was a success, with 1,650 attendees from 45 countries, despite political activities that caused it to be delayed; this was also sponsored by several other organisations. The AAPG Annual Meeting was held in Salt Lake City, Utah, with over 4,000 attendees. AAPG held its 22nd Annual Leadership Course in Tulsa. AAPG publishes Explorer, which continues to improve and the AAPG Bulletin, in which turnaround time has been significantly reduced in recent years. 17 Special Publications and four new CDs were also produced. The e-magazine Search and Discovery also grew in scope. The Education Committee is redesigning the education programme, building a curriculum for all levels, conducting short courses and customizing training companies. New course include Basic Petroleum Geology for Non-geologists. AAPG is working with AGI and the Bureau of Economic Geology to develop online carbonate courses.

American Geological Institute (AGI)



The American Geological Institute (<http://www.agi-web.org>) is a non-profit federation of 42 geoscientific and professional associations representing over 100,000 members. AGI,

which was founded in 1948, serves as a voice of shared interests for the geological profession, plays a major role in strengthening geoscience education, and strives to increase public awareness of the vital role the geosciences play in society's use of resources and interaction with the environment. In 2003, the sixth Earth Sciences week was held, with the theme Eyes on Planet Earth: Monitoring our Changing World (<http://www.earthsciweek.org/>). The event gave both students and the public an opportunity to find out more about the Earth sciences and to encourage stewardship of the Earth. In September, AGI signed a co-operative agreement that will make the USGS Global GIS database readily available to the education sector and the general public in the form of a DVD World Atlas. AGI also initiated a coalition to support the US Geological Survey; so far, fifty organisations have joined. The GeoRef database, established by AGI in 1966, is the most comprehensive database in the geosciences. This now contains over 2.4 million references. Some 41% of citations now have abstracts attached; references come from over 113 countries, in 43 languages. AGI also runs the Earth Science World Imagebank, which contains a very wide range of photographic images available for educational use. Plans are underway to produce a television series on the changes in the Earth over the last 700 Ma.

American Geophysical Union (AGU)



The Union (<http://AGU.org>) is a world-wide scientific community that advances the understanding of essentially all physical aspects the Earth and space for the benefit of humanity. AGU aims to integrate all aspects of the geophysical and related sciences in ways that enhance our understanding of the Earth and space and the use of that information in the service of society, to ensure AGU's services are of high quality and to foster a planet wide network of societies and individuals in the geophysical sciences that cooperate in research. AGU has over 41,000 members in the Earth and space sciences, in a range of sections including atmospheric sciences, biogeology, hydrology, seismology, space physics, petrology and tectonics. AGU held its Annual Fall Meeting in San Francisco, with over 10,000 attendees; a similar number attended the EGS-AGU-EUG Joint Meeting, in Nice, France. In 2003, the transitional electronic publication problems of 2002 were resolved and AGU published science faster than before. However, the take up

by libraries of the electronic versions is now a major challenge for AGU. The Journal of Geophysical Research and Water Resources Research, as well as seven other journals are published in both print and electronic form by AGU, and also one electronic only journal is published. The weekly newspaper Eos (also on-line) and several books were published in 2003. AGU also distributes two Russian and one Chinese journals.

Arab Geologists Association (AGA)

The Arab Geologists Association (AGA), which has a membership of approximately 25,000, through either individual or organisational/society membership, promotes the study of geology and the welfare of geologists in the Arab world. The Association, a non-governmental organization covering 11 Arabic countries from northern Africa and the Middle East, represents the Arab world in International Commissions and supports conferences and commissions of Arab interest. AGA continues to promote IUGS' image in Arab countries and is strongly publicizing the 32nd IGC throughout the Arab world. The Association supported the 15th Geological Conference on the Middle East, in Cairo. Plans for the 6th International Conference on Gypcrete had to be abandoned due to the invasion of Iraq.

Association Internationale Pour l'Etude des Argiles (AIPEA)



aipea

The aim of AIPEA (<http://www.agr.kuleuven.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 Geological Societies (AEGS)

The Association (<http://www.uni-essen.de/geologie/aegs.htm>) aims is to strengthen the links between geological societies in Europe through its biannual meetings,

held since 1975 (MAEGS – Meeting of the Association of Geological Societies), although the Executive Committee of the Association meets every year. Currently, there are 30 members, from 29 countries



(two societies from the UK), including Russia and many eastern European countries. The last MAEGS was held in 2003, in Hanover Germany, with a theme of Geosciences and the European Water Framework Directive, from which a volume of abstracts was published. The Executive Committee was strengthened with new members from Germany, Greece and Italy and, since 2000, a major reorganisation of the Association has been undertaken.

Association of Exploration Geochemists (AEG)



This Association (<http://www.aeg.org>) 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 Association sponsored the 21st International Geochemical Exploration Symposium (IGES) in Dublin during August, 2003, in conjunction with the 3rd North Atlantic Minerals Symposium. Both field trips and short courses were organised in conjunction with the meeting. In September, it was a co-sponsor of the 6th International Symposium in Environmental Geochemistry, at Edinburgh. The Association sponsors the publication of the journal GEOCHEMISTRY: Exploration, Environment, Analysis, and a monthly a newsletter, EXPLORE. The Association also produces, with Elsevier, the Handbook of Exploration Geochemistry, a series of volumes offered to members at substantially discounted rates.

Association of Geoscientists for International Development (AGID)

The Association (<http://agid.igc.usp.br>) encourages communication between all individuals, societies, agencies and corporations with an interest in the application of geosciences to sustainable development and further encourages and promotes activities in geoscientific fields which are related to the needs of developing countries.

In the past few years, the growth of the geosciences in the developing world, together with the rising number of NGOs has raised the question of whether AGID has essentially fulfilled its role. This stimulated much debate in 2002-2003, with two views coming to the fore. One opines that AGID has indeed fulfilled its role in exemplary fashion, and should now wind itself up. The other suggests that AGID can continue to contribute if it decentralises itself and extends its role into as yet still neglected areas; essentially reform and reorient itself. A postal ballot of all life members has been held to determine the preferred option. This will be discussed and finally decided at the Florence IGC, in August 2004. In 2003, the AGID office moved from S. America to the offices of the Bangladesh Geological Survey. Networking activities included distribution of an issue of the AGID journal *Geoscience and Development* and the production of the next issue. Two editions of AGID's newsletter were produced, and also placed on the website. A large number of books were distributed in 2003; the aim is to terminate the service in 2004, following two decades of activity, after clearing the backlog of material. AGID collaborated in organising a conference in Bangladesh on the Role of Natural Resources and the Environment in Sustainable Development in South and Southeast Asia.



Carpathian-Balkan Geologists Association (CGBA)

The Association promotes fundamental and applied geological research in the Carpathian-Balkan realm of eastern Europe, much of which is done in association with IGCP and partly also with the Geology Section of the Central European Initiative (CEI; <http://www.ceinet.org/>). The Association publishes a number of journals, including *Geologica Carpatica*, and organizes a biannual Congress; the most recent was held in Bratislava, in 2002. The next meeting is scheduled for 2004.

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

The CPCEMR (<http://www.circum-pacificcouncil.org/>) is a non-profit making body that promotes the investigation, assessment and sustainable utilization of Earth resources in the Pacific region. The Annual Meeting in 2003 was held in Hawaii, in May, with several new di-

rectors joining the council.

The Council, which is run by an international board of representatives from Pacific Rim countries, encourages collaboration amongst the Earth science community and disseminates information through maps, publications, workshops and symposia. In 2003, the Asian workshop for RIM SIM was held at Bangkok, in November, in collaboration with CCOP. A course at Stanford University on Understanding Energy was completed successfully in June; due to demand, this will be repeated in 2004. The Council has recently completed a DVD on Perspectives on Energy: Today & Tomorrow.



Commission for the Geological Map of the World (CGMW)

This Commission (http://ccgm.free.fr/index_gb.html), which was founded in 1881, aims to promote, coordinate, publish and disseminate Earth science maps at a small scale (1:5 million or smaller scales) and covering entire continents or oceanic regions. The Commission is supported by 44 Geological Surveys, by allocations from UNESCO and IUGS and by BRGM, which covers the costs of the Secretary General and employer contributions. Recently, income from sales has become an important revenue source, as a result of a new marketing policy aimed at educational products. In 2003, the Commission published new maps entitled Seismotectonic Map of the World adapted to a 1:50 M scale for education, a digital version of the new Geological Map of S. America (1:5 M) and a Geological Map of the Land and Sea Areas of North Europe (1:4 M; published by the Norwegian Geological Survey, under the aegis of CGMW). CGMW also published a book *Faces of the Earth*, together with UNESCO, outlining the break-up of Pangaea, with 11 maps, and *Visages des Alpes. Structure et Evolution Géodynamique*.

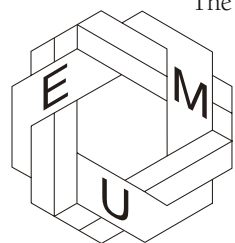
European Association of Science Editors (EASE)

This is a non-governmental and non-profit international organisation (<http://www.ease.org>) operated for scientific and educational purposes open to European and non-European persons. The Association promotes improved communication in science by providing effi-



cient means for cooperation among editors of all disciplines of science and assists in the efficient operation in the publication of science. The Association held its General Assembly in 2003 in Bath, England; the next will be in 2006, in Kraków, Poland. EASE publishes the journal *European Science Editing* and a book *Science Editors' Handbook* was published in 2003.

European Mineralogical Union (EMU)



The Union (<http://www.univie.ac.at/Mineralogie/EMU/>), in which members are national scientific societies from European countries, including Russia, with only one member per country allowed, is dedicated to furthering European cooperation in the mineralogical sciences (mineralogy, petrology and geochemistry), supports conferences within Europe of a high scientific standing and of an international character. In particular, it supports the Experimental Mineralogy, Petrology and Geochemistry Conference (EMPG) and the European Geoscience Union (EGU) meetings. In 2004, EMU organised the 4th and 5th schools in mineralogy, specialising on Energy Modelling in Mineralogy and on Ultra-high Pressure Metamorphism, the latter leading to the 5th volume of the *Notes in Mineralogy*. 56 institutional libraries, mostly in E. Europe and Latin America were assisted by receiving free copies of the *European Journal of Mineralogy*, in which EMU plays a role in publishing.

Geochemical Society (GS)



The Society (<http://gs.wustl.edu/>) is a private non-profit making organisation founded to encourage the application of chemistry to the solution of geological and cosmological problems. Membership (~2,000 individuals from over 45 countries) is international and diverse in background, encompassing such fields as organic geochemistry, high- and low-temperature geochemistry, petrology, meteoritics, fluid-rock interaction, and isotope geochemistry. The Society jointly sponsors

the annual Goldschmidt Conference (with the European Association of Geochemistry), the last being the 13th, in Kurashiki, Japan. The Society publishes a Special Publications Series and also the *Reviews in Mineralogy and Geochemistry*, together with the Mineralogical Society of America. It also publishes *Geochemica et Cosmochimica Acta*, with the Meteoritical Society, and a quarterly newsletter *The Geochemical News*. The on-line journal *G3 Geochemistry, Geophysics, Geosystems* is published together with AGU.

Geological Society of Africa (GSAF)



The Geological Society of Africa (<http://www.elsevier.nl/locate/gsa>) promotes understanding and quality research in the Earth sciences in Africa, assists African states to develop their human resources, including women, in the pursuit of their careers, promotes the sustainable development of mineral, energy and water resource in the continent and cares for the protection of its environment. Each of the five regions into which Africa is divided has a Vice-President and a Councillor; altogether these form the Council, in combination with a President, Secretary General, Assistant Secretary General and a Treasurer. Financial support comes from IUGS, as well as from several non-African geological surveys and mining companies. Further, assistance for conferences and other events has been obtained from several international agencies. The Society is currently planning its 20th Colloquium of African Geology, to be held in Orleans, France in June 2004. In 2003, the Society sponsored the Abuja Geocongress and the 3rd International Conference on the Geology of Africa, in Assiut.

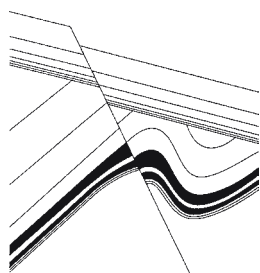
Geological Society of America (GSA)

The Society (<http://www.geosociety.org>) is a broad, unifying scientific body, fostering the human quest for understanding 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. Established in 1888, the Society provides



access to elements that are essential to the professional growth of Earth scientists at all levels of expertise and from all sectors: academic, government, business, and industry. Membership stands at 17,514, a record high. During 2003, the Society was reorganized, becoming more cost efficient. Work on the proposed publications aggregate (with other major non-profit geoscience publishers), continued; this will be an electronic research and journal resource that will deliver on-line the aggregate content of the initial founding organizations and will eventually include other, similar publishers. The proposed system will include maps, books, and digital data. This should be up and running by the end of 2004. The Society is also investigating the possibility of developing an on-line only journal. Further, the Society launched a digital map series. In 2003, the Society has been worked to develop a better relationship with the considerable number of members who are active within the applied sciences. Similarly, a new Geology and Society Division has been inaugurated, aiming to develop a better understanding of the Earth sciences in a range of society related issues. The GSA held its Annual Meeting in Seattle, in October. Fourteen new books were published in 2003, with a turnaround time down to only eight months. The Society also publishes the Bulletin of the Geological Society of America and Geology.

Geologische Vereinigung (GV)



The Society (<http://www.g-v.de/>), which became an Affiliated Organisation in 2003, is a non-profit scientific organisation promoting 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. The Annual Meeting for 2003 (Earth Sciences in the 3rd Millennium) was held at Bochum, in September 2003, together with the German Mineralogical and the German Geophysical Societies. The Society provides grants for students and young scientists to attend the meetings and publishes the International Journal of Earth Sciences (Geologische Rundschau). Plans to start publishing a new book series, together with the Société géologique

de France is being discussed, as are plans to hold joint international meetings.

International Association of Engineering Geology and the Environment (IAEG)

The Association (<http://www.civil.ntua.gr/IAEG.html>)



is devoted to the investigation, study and solution of the engineering and environmental problems that arise as a result of the interaction between ge-

ology and the works and activities of man, as well as to the prediction and the development of measures for the prevention or remediation of geological hazards. IAEG is a worldwide scientific society with more than 5,500 members, through either membership of one of the 66 National Groups or through individual memberships. The Association runs nine commissions and cooperates with a number of other international bodies (IAH, ISRM, ISSMGE and COGEOENVIRONMENT) on projects such as Landslides and also on Professional Tasks, Responsibilities and Cooperation in Ground Engineering. The Association publishes The Bulletin of Engineering Geology and the Environment and distributes a newsletter. In 2003, the Association organised six major conferences on a range of engineering geology topics; the Annual Meeting was held at Istanbul, Turkey.

International Association of Geomorphologists (IAG)

The Association (<http://www.geomorph.org>), which was



founded to promote and develop collaboration between nations in geomorphology, is steered by an Executive Committee,

elected every four years, with a membership comprising national adhering bodies. In 2003, new national groups were established in Vietnam and Macedonia, giving a total of 58 such bodies. IAG runs a number of working groups and task forces, such as those on Arid Regions, on Geoarchaeology, on Large Rivers and on Volcanoes. The Association also sponsors conferences and publishes scientific material. In 2003, it published volumes

on Glaciation and Periglaciation in High Mountains and on Karst in a Changing World, as well as two issues of its newsletter. The Association organised training courses on the Geomorphology and Quaternary Geology of Tierra del Fuego and a mapping course in Vorarlberg (Austria), an intensive course on Geomorphic hazards: towards the prevention of disasters and a Research Design Short Course, for which grants to two PhD students were offered.

International Association of Geochemistry and Cosmochemistry (IAGC)

The Association (<http://www.cevl.msu.edu/~long/IAGC/>) is one of the pre-eminent international geochemical and cosmochemical organizations. The principal objective of the association 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. The Association publishes Applied Geochemistry, which now has at least 12 issues per year, and a newsletter. In 2003, the Association organised the 6th International Symposium on Environmental Geochemistry (Edinburgh, Scotland), a conference on Natural Science and Public Health – Prescription for a better Environment, at Reston, USA, and an ICP Training Programme at Goa, India.



International Association of Hydrogeologists (IAH)

This is a scientific and educational organisation (<http://www.iah.org/>) whose aims are to advance public education and promote research in, and disseminate the results of studies and knowledge of hydrological science. This is undertaken through publishing books, journals and newsletters for the benefit of the members and the public, promoting international cooperation in the field, sponsoring meetings and an Annual Meeting, cooperation with like-minded bodies and encouraging world-wide application of hydrogeological skills through education and technology transfer. The Burdon Fund was established

by IAH to promote hydrogeology in developing nations. IAH has over 3,700 members in 140 countries, many organised into National Chapters. In 2003, IAH was the principal convenor of the Groundwater Theme at the 3rd World Water Forum, at Kyoto, Japan. The results of the two day session were transmitted to the closing Ministerial Conference. IAH is collaborating in the production of the Hydrological Map of the World (with the BGR) and in the Internationally Shared Aquifer Resource Management programme. The 2003 Annual Meeting was held in Bled Slovenia, preceded by a specialist meeting on Hard Rock Aquifers, in Prague, Czech Republic.

International Association of Mathematical Geologists (IAMG)

This specialist Association (<http://www.iamg.org/>), with 539 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. The Association also runs 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; US \$ 5,000 was divided between the four award winners in 2003. The Association publishes Computers & Geosciences (now on-line), Mathematical Geology and Natural Resources Research. In 2003, IAMG co-sponsored the 8th South African Geophysical Association meeting, in Pilanesburg, a Compositional Data Analysis workshop in Girona, Spain and a workshop entitled Analogue and numerical forward modelling of sedimentary systems; from understanding to prediction at Utrecht, The Netherlands. IAMG also organise the session Recent Statistical Advances in Geological and Environmental Applications at the 54th Session of the International Statistical Institute, in Berlin, Germany. In 2003, membership of the Association was decoupled from journal subscription, allowing the dues to drop. Dr Frederik Agterberg, of Canada, was the IAMG 2003 Distinguished Lecturer. The Annual Meeting was held in Portsmouth, UK, with over 120 attendees from 49 countries.



International Association of Sedimentologists (IAS)

The International Association of Sedimentologists (<http://www.ias-net.org/>) promotes the study of sedimentology by publications, discussions and comparison of research results, by encouraging the interchange of research through international collaboration and by favouring integration with other disciplines. Currently, there are 2,200 members from 97 countries. In 2003, the Association held the 22nd IAS Meeting of Sedimentology in Opatija, Croatia, with eight associated field trips. Further, a lecture tour developed by Roger Walker was run in Japan and Korea. The IAS published six issues of its journal *Sedimentology* and an accompanying newsletter. The IAS runs a Friendship scheme, offering free membership to students in less developed countries; 165 individuals and 36 libraries benefited from the scheme in 2003. A new grant scheme awarded US \$ 1,000 to 20 young researchers in developing countries.

International Association on the Genesis of Ore Deposits (IAGOD)

The Association (<http://www.geology.cz/host/iagod/htm/>) promotes international cooperation in the field of the genesis of ore deposits and participates closely with other international bodies in number of projects, including several IGCP projects. Presently there are 750 members, from 68 countries. IAGOD runs several commissions, including those on the Tectonics of Ore Deposits, on Ore-forming Fluids in Inclusions and on Placer Deposits, as well as several working groups. In 2003, IAGOD worked with IGCP-473 to organise a field symposium on Palaeozoic Geodynamic Processes and Metallogeny in the Chinese Altay and Tainshan, the results of which were published in the IAGOD series. IAGOD also sponsored or helped to organise conferences in Uzbekistan and in Ulaanbaatar and Oyu Tolgoi, Mongolia. It also participated in the 7th SGA meeting in Athens. Three maps in the IAGOD series were updated and a new volume in IAGOD's Guidebook series is available – Geodynamics and Metallogeny in Mongolia. In April, IAGOD adopted the Elsevier journal *Ore Geology Reviews* as the official association journal and is now largely responsible for its editing. The grant received from IUGS was used to subsidise membership dues from several countries.



International Centre for Training and Exchanges in the Geosciences (CIFEG)

The Centre International pour la Formation et les Echanges en Géosciences (<http://www.cifeg.org>) promotes the exchange of geosciences between northern and southern hemisphere countries through supporting training and research programmes; essentially it aims to promote bilateral knowledge sharing. The group runs two main projects; PANGIS – Pan-African Network for a Geological Information System and SANGIS – South East Asian Network for a Geological Information System. During 2003, CIFEG participated in conferences in Daejeon (Korea), Windhoek (Namibia) and Kuala Lumpur (Malaysia).

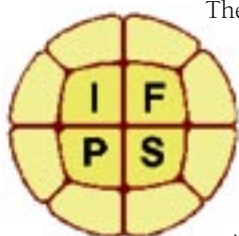


International Consortium on Landslides (ICL)

The Consortium (<http://icl.dpri.kyoto-u.ac.jp/>) is an international non-governmental and non-profit scientific organization, which is supported by UNESCO, the World Meteorological Organization, the Food and Agriculture Organization of the United Nations, the United Nations International Strategy for Disaster Reduction, and intergovernmental programmes such as the International Hydrological Programme of UNESCO and other governmental bodies. The objectives of the Consortium, which became an Affiliated Organisation of IUGS in 2003, are to promote landslide research for the benefit of society and the environment and capacity building, especially in developing countries; to integrate geosciences and technology for evaluating landslide risk in all environments; to coordinate international expertise in the field of landslides risk assessment and mitigation and to promote international multidisciplinary research on landslides. ICL organised its 3rd Board of Representatives meeting in Bratislava, Slovakia, in October 2003 and held a Steering Committee Meeting at the United Nations International Strategy for Disaster Reduction, in May. ICL, together with the new Research Centre on Landslides based at Kyoto University, will enhance and contribute to the International Programme on

Landslides (IPL). In September, 2003, an International Joint Investigation began an assessment of the landslide risk at Macchu Pichu, Peru, coordinated by the IPL C-101 Expert Team. The first issue of the new journal, Landslides, was published early in 2004.

International Federation of Palynological Societies (IFPS)



The Federation (<http://www.geo.arizona.edu/palynology/ifps.html>) advances knowledge in palynology and related subjects by promoting and co-ordinating international co-operation and meetings between scientists of all regions and countries.

Nineteen palynological organisations form the membership and pay a subscription based on the number of members in each society. The IFPS newsletter, PALYNOS is published twice a year, in June and December; this is now electronically distributed, making a considerable saving to the Federation. The money saved has been used to work on an updated version of the World Directory of Palynologists and to provide travel money for disadvantaged researchers to attend the 11th IPC, in 2004. The homepage contains an on-line world list of palynologists.



International Geoscience Education Organization (IGEO)

The Organisation (<http://www.cosm.sc.edu/cse/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. In 2003, the Organization successfully held the 4th IGEO Conference in Calgary, Canada, completed its questionnaire of the membership to assess the state of geoscience education around the world, launched its website and formed a committee to investigate the possibility of holding an International Earth Sciences Olympiad. Three IGEO newsletters were produced

in 2003 and distributed by email. The Organization is currently working with IUGS in establishing a new IUGS Commission on Geoscience Education, Training and Technology Transfer.

International Mineralogical Association (IMA)

The Association (<http://www.obs.univ-bpclermont.fr/ima/>) comprises 38 mineralogical societies or groups (one per country) together with a limited number of individual memberships. The Association promotes intercourse among mineralogists of all nations by organising meetings and excursions, by sponsoring or publishing relevant literature and by organising conferences. The Association participates in activities with other international mineralogical groups and maintains a number of commissions, committees and working groups that report on specified subjects. In 2003, IMA sponsored sessions at the EGS-AGU-EUG Joint Meeting in Nice. IMA also participated in European Current Research on Fluid Inclusions (ECROFI) symposia, EMU schools and in the International Gemmological Conference. Three commissions and working groups of IMA, on Applied Mineralogy, Ore Mineralogy and on Mineral Inclusions, organised workshops and short courses, whilst several other IMA bodies provided books, special issues of journals and mineral classifications. Currently, the Association is participating in the development of a new journal, the International Magazine of Mineralogy, Geochemistry and Petrology.

International Palaeontological Association (IPA)



The Association (<http://ipa.geokans.edu/index2.html>), with ~1,200 members and 19 corporate member organisations, aims to promote and coordinate international cooperation in palaeontology and to encourage the integration and synthesis of all palaeontological knowledge. In 2003, the Association sponsored the Bioevents meeting in Carvac, Spain and a session on Environmental and Biological Impact of the end Ordovician Glaciation at the EGS-AGU-EUG Joint Meeting in Nice, France. The Association publishes the specialist journal *Lethaia*. The new homepage contains a link to fossil collections of the world, to a very popular

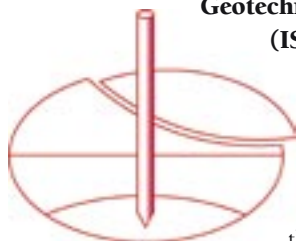
Directory of Palaeontologists and to a PalaeoLink database.

International Permafrost Association (IPA)



The Association (<http://www.geo.uio.no/IPA/>) has as its objectives 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. The Association supports conferences and prepares maps, glossaries and bibliographies. The 8th International Conference on Permafrost met in Zürich, Switzerland, in July, and sessions were organised at the 4th International Conference on Arctic Margins (Halifax) and at the Study of Environmental Change (Seattle). Six 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.

International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE)



The aim of the Society (<http://www.issmge.org>) 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. Membership is held through the 75 member societies. The Society has a number of task forces which cover the functioning of the society and some 25 technical committees which address a wide range of geotechnical problems, including the environment, heritage, offshore problems and landslides, as well as more theoretic-

cal subjects. The Task Force on Information Technology was launched in 2003 and an agreement was signed to provide access to the International Geotechnical Service Directory. The Technical Committee on Landslides is a joint venture with ISRM and IAEG. The Society is making strong efforts to expand its sphere of interest in the Arabic and Asian parts of the world.

International Society for Rock Mechanics (ISRM)



The aims of the Society (<http://www.isrm.net>) are to encourage international collaboration and exchange of ideas in rock mechanics, to encourage teaching, research and the advancement of knowledge of rock mechanics and to promote high professional standards, so that civil, mining and petroleum engineering all become safer, more economical and less disruptive to the environment. This is done through encouraging the development and activities of national groups, holding international congresses, sponsoring symposia at congresses, collaborating with similar organisations and running commissions to study and report on matters of concern to the society. The Society maintains close links with IAEG and ISSMGE. In 2003, the society held the 10th ISRM International Congress, in Sandton, S. Africa, together with its board and council meetings, and held regional meetings in Norway, Sweden and France. The Society also published two issues of its news journal.

International Union for Quaternary Research (INQUA)



The Union (<http://www.isrm.net>) 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 runs one committee and 12 commissions, including those investigating Glaciation, Global Continental Palaeohydrology, Sea Level Changes and Terrestrial Carbon. INQUA is cur-

rently undertaking a major review of its future structure. The Union comprises 44 national as well as regional members, combining many thousands of scientists, mostly from Europe. The Union publishes *Quaternary Perspectives* and the journal *Quaternary International*. In 2003, INQUA held the XVI INQUA Congress in Reno, with a main theme of Frontiers in Quaternary Research.

Meteoritical Society (MetSoc)



The Society (<http://www.isrm.net>), which was founded in 1933, promotes research and education in planetary sciences, with an emphasis on

studies of meteorites and other extraterrestrial materials that further our understanding of the origin of the solar system. The society, which has ~950 members in 37 countries, publishes its own journal, *Meteorites and Planetary Sciences* and also the *Meteoritical Bulletin*. Ten subscriptions of the former journal were donated by members to libraries in countries where the journal is not available. 1,899 new meteorites, mostly from Antarctica, were described. The Society also publishes *Geochimica et Cosmochimica Acta*, together with the *Geochemical Society*. In 2003, the Society held its Annual Meeting in Münster, Germany, in July-August; support was given to 44 students to attend the meeting.

Society for Sedimentary Geologists (SEPM)



The Society (<http://www.sepm.org>) is an international non-profit body based in Tulsa, Oklahoma. Through its network of international members, the Society is dedicated to the dissemination of scientific information on sedi-

mentology, stratigraphy, palaeontology, environmental sciences, marine geology, hydrogeology, and many additional related specialties. There are about 3,500 members, from 80 countries, with many student chapters. The Society supports members in their professional objectives by the publication of two major scientific journals, the *Journal of Sedimentary Research (JSR)* and *PALAIOS*, in addition to producing technical

conferences, short courses, and special publications. Through SEPM's Continuing Education, Publications, Meetings, and other programmes, members can both gain and exchange information pertinent to their geological specialties. SEPM held its Annual Meeting in Salt Lake City, Utah, together with AAPG, at which the Societies awards were given. Travel grants from the SEPM Foundation were awarded to 16 students attending the meeting. A series of short course and field trips were held during the meeting, covering a wide range of topics. Four new Special Publications were published in 2003 and a CD-rom was produced reprinting more than a dozen of the most popular, but now out-of-print Special Publications.

Society of Economic Geologists (SEG)



The Society (<http://www.segweb.org/>) is an international body committed to excellence in science, discovery, documentation, interpretation, evaluation and responsible development of mineral resources and the professional development of its members. The Society supports the professional and scientific needs of its members, the mineral resource and related environmental requirements of society and the growth and application of the science of economic geology. The Society has 3,511 members, in 77 countries worldwide, with a 10% student membership. It sponsors and encourages the investigation of mineral deposits and resources as well as the dissemination of the results of such work through field trips, short courses and workshops. In 2003, the Society sponsored activities such as the 3rd International Congress of Prospectors and Explorers (Lima), an environmental geochemistry course in Spain, the International Metallogeny Course in Quito and the South African Student Chapter at the Students Geocongress in Bloemfontein. 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). In 2003, SEG awarded US \$ 66,000 in grants to student research, mostly to assist in laboratory and field expenses.



Society for Geology Applied to Mineral Deposits (SGA)

The Society (<http://www.e-sga.org/sga.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. In 2003, the Society held its 7th Biennial Meeting, titled Mineral Exploration

and Sustainable Development, in Athens, Greece, and co-sponsored the GAC-MAC-SEG joint Annual Meeting at Vancouver, Canada, the VI National Geological Congress, at Lisbon, Portugal, a meeting on World Class Mineral Deposits and Earth Evolution, in Cardiff, Wales, and GEOCHIM 2003, a postgraduate training course, in the Czech Republic. The Society publishes the journal *Mineralium Deposita* and SGA news. The proceedings of the 7th SGA meeting were published, with over 1,200 pages, in two volumes. The Society has over 700 members in some 70 countries.

- *Executive Committee Officers of IUGS*
 - *Permanent Secretariat*
- *Executive Committee and Bureau Meetings*
- *IUGS Adhering Organisations with their Membership Category and Status*
- *Categories of IUGS Membership and Membership Fee*
- *IUGS Financial Situation and Statement*
 - *Commissions/New Initiatives/ Task Groups/Committees for 2002*
 - *IUGS Affiliated Organisations*
- *ICS – IUGS Ratified Global Boundary Stratotype Sections and Points (GSSP)*
- *Summary of the Geoindicator Checklist*
- *IGCP Projects – 2001 (IUGS-UNESCO Co-Sponsored)*
 - *Acronyms Used by IUGS*

IUGS – Executive Members and Meetings

EXECUTIVE COMMITTEE OFFICERS OF THE IUGS IN 2003

President	Prof. E. F. J. de Mulder	Aug. 2000 – Aug. 2004	e.demulder@planet.nl
Secretary General	Dr. W. R. Janoschek	Feb. 2002 – Aug. 2004	wjanoschek@geolba.ac.at
Treasurer	Prof. A. Brambati	Jan. 2003 – Aug. 2004	brambati@univ.trieste.it
Past President	Dr. 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	Prof. J. Plant	Aug. 2000 – Aug. 2004	j.plant@bgs.ac.uk
Councillor	Prof. H. K. Gupta	Aug. 2000 – Aug. 2004	dodsec@dod.delhi.nic.in
Councillor	Prof. J.-P. Cadet	Aug. 2002 – Aug. 2006	jean-paul.cadet@lqs.jussieu.fr
Councillor	Prof. A. C. Riccardi	Aug. 2002 – Aug. 2006	riccardi@museo.fcnym.unlp.edu.ar

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, FEBRUARY 2002-FEBRUARY 2003

51st Executive Committee, Windhoek, Namibia.	February 24 – 28
Bureau, Windhoek, Namibia.	February 27
Bureau, Villefranche-sur-Mer, France.	April 10
Bureau, Paris, France.	May 27
Bureau, Ottawa, Canada.	August 6 – 7
Bureau, Trieste, Italy.	October 13 – 14
Bureau, Utrecht, The Netherlands.	November 27

IUGS Adhering Members

WITH THEIR MEMBERSHIP CATEGORY AND STATUS

a – active; i – inactive.

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

116 Adhering Orgs.

Categories of IUGS Membership

AND MEMBERSHIP FEE

Categories of Membership for 2002

Category	1	2	3	4	5	6	7	8
Units	1	2	4	7	12	20	35	70
Value in US \$	440	880	1,760	3,080	5,280	8,800	15,400	30,800

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	1,800	3,150	5,400	8,990	15,730	31,460

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	1,840	3,220	5,520	9,200	16,100	32,200

IUGS Financial Situation and Statement

INCOME/EXPENSES IN 2003 (US DOLLARS)				
	RECEIVED			TOTAL
	for due <2003	for 2003	for due >2003	
INCOME				
Membership dues	860.00	191,997.08		192,857.08
Adhering Organisations	860.00	185,477.08		
Associate Members		6,520.00		
IGCP Programme		146,100.00		146,100.00
UNESCO		71,100.00		
US Contribution		75,000.00		
Other Programmes		5,500.00		30,700.00
International Year		5,500.00		
Interests		9,096.12		9,096.12
Other Income				
INCOME	860.00	352,693.20		353,553.20
	PAID			TOTAL
	for due <2003	for 2003	for due >2003	
EXPENSES				
IGCP Projects		175,160.00		175,160.00
UNESCO		71,100.00		
US Contribution		75,000.00		
IUGS		29,060.00		
Other UNESCO Programmes		13,000.00		13,000.00
DMP (Deposit Modelling)				
GARS (Remote Sensing)		7,000.00		
Dissemination Episodes		6,000.00		
ICSU Commission on Lithosphere		15,000.00		15,000.00
Affiliates		16,500.00		16,500.00
IUGS Commissions, Task Groups		81,000.00		81,000.00
Committees, New Initiatives				
Commissions		56,000.00		
Task Groups				
Committees		10,000.00		
Initiatives		15,000.00		
International Year of Planet Earth		45,500.00		45,500.00
Contributions		11,297.00		11,297.00
Contributions ICSU		9,297.00		
Office Expenses		2,000.00		
Other Expenses		48,824.46		48,824.46
Routine meetings		18,334.41		
Annual Report/Brochure production		7,853.00		
Visibility		15,473.00		
Bank Rates, Loss on Exchange		3,781.02		
Compasses		3,300.00		
Booklet design & layout		83.03		
IUGS Episodes 2000		23,000.00		23,000.00
Contingency				
EXPENSES		429,281.46		429,281.46
		Excess of Income over Expenses		-75,728.00
		ACCUMULATED BALANCE		
		On 1 st January 2003 (d° 31 December 2002)		832,791.92
		On 31 st December 2003		771,517.51

IUGS Allocations in 2003

IUGS COMMISSIONS/NEW INITIATIVES/TASK GROUPS/COMMITTEES FOR 2003		
COMMISSIONS		56,000.00
COGEOENVIRONMENT	10,000.00	
CGI	5,000.00	
CSP	2,000.00	
ICS	35,000.00	
INHIGEO	4,000.00	
TASK GROUPS		5,000.00
Fossil Fuels	3,500.00	
Geochemical Baselines	1,500.00	
COMMITTEES		00.00
INITIATIVES		15,500.00
Geoindicators	5,000.00	
Medical Geology	10,000.00	
IUGS AFFILIATED ORGANISATIONS		
AFFILIATED ORGANISATIONS		16,500.00
AGID (Ass. of Geoscientists for International Development)	1,000.00	
CGMW (Commission. Geol. Map of World)	2,500.00	
GSAf (Geological Society of Africa)	4,000.00	
IAGOD	1,000.00	
IAMG	1,000.00	
IFPS	1,000.00	
IGEO	5,000.00	
ISRM	1,000.00	

ICS – IUGS Ratified (March 2004)

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		Ratified 2003	
9. Danian St, Paleogene Sy, Cainozoic	El Kef, Tunisia	Ratified 1999	
Cretaceous			
10. Maastrichtian St	Tercis, Landes France	24 (4)	2001
11. Cenomanian St	Mnt. Risou, France	Ratified 2002	
Jurassic			
12. Bajocian St	Cabo Mondego, Portugal	20 (1)	1997
13. Aalenian St	Fuentelsalz, Spain	24 (3)	2001
14. Sinemurian St	Quantox Head, Somerset, U.K.	25 (1)	2002
Triassic			
15. Induan St, Triassic Sy, Mesozoic	Meishan, Zhejiang, China	24 (2)	2001
Permian			
16. Capitanian St	Stratotype Canyon, Texas, USA	Ratified 2001	
17. Wordian St	Stratotype Canyon, Texas, USA	Ratified 2001	
18. Roadian St, Guadalupian Se, M. Permian	Stratotype Canyon, Texas, USA	Ratified 2001	
19. Asselian St, Cisuralian Se, Permian Sy	Aidaralash Creek, Kazakhstan	21 (1)	1998
Carboniferous			
20. Bashkirian St, Pennsylvanian Ss, U. Carboniferous	Arrow Canyon, Nevada, USA	22 (4)	1999
21. Tournasian St, Mississippian Ss, Carboniferous Sy	La Serre, France	14 (4)	1991
Devonian			
22. Famennian St	Coumiac, France	8 (2)	1985
23. Frasnian St, U. Devonian Se	Col du Puech, France	14 (2)	1991
24. Givetian St	Irdane, Morocco	18 (3)	1995
25. Eifelian St, M. Devonian Se	Wetteldorf, Germany	8 (2)	1985
26. Emsian St	Zinzilban Gorge, Uzbekistan	20 (4)	1997
27. Pragian St	Praha Holyne, Czech Rep.	12 (2)	1989
28. Lochkovian St, L. Devonian Se, Devonian Sy	Klonk, Barrandean, Czech Rep.		
Silurian			
29. Pridoli Se	Pozary, Barrandean, Czech Rep.	8 (2)	1985
30. Ludfordian St,	Sunnyhill, Wales	8 (2)	1985
31. Gorstian St, Ludlow Se	Pitch Coppice, Wales	8 (2)	1985
32. Homerian St,	Whitwell Coppice, Wales	3	1982
33. Sheinwoodian St, Wenlock Se	Hughley Brook, Wales	3	1982
34. Telychian St,	Cefn Cerig, Wales	8 (2)	1985
35. Aeronian St,	Trefawr forestry road, Wales	8 (2)	1985
36. Rhuddanian St, Llandovery Se, Silurian Sy	Dob's Linn, Moffat, Scotland	8 (2)	1985

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

Stage (base of)	Stratotype Section	<i>Episodes</i>	Volume
PHANEROZOIC			
Ordovician			
37. Base 5th stage (still not yet named)	Fågelsång, Scane, S. Sweden	Ratified 2002	
38. Darriwillian St, M. Ordovician	Huangnitang, China	19 (3)	1997
39. Base 2nd stage (still not yet named)	Diabasbrottet, Västerg., S. Sweden	Ratified 2002	
40. Tremadocian St, Ordovician Sy	Green Point, Newfoundland, Canada	24 (1)	2001
Cambrian			
41. Paibian St, Furongian Se	Paibi, NW Hunan, China	Ratified 2003	
42. Nemakitian-Daldynian St, Cambrian Sy, Palaeozoic E.	Fortune Head, Canada	17 (2)	1994
		19 (3)	1996
PROTEROZOIC			
43. Ediacaran Sy	Enorama Creek, Flinders Ra., Aust.	Ratified 2004	
44. Proterozoic is divided by absolute ages into 3 Eras, with 10 Systems		14 (2)	1991
ARCHAEAN			
45. Divided by absolute ages into 4 Eras		14 (2)	1991

IGCP Projects – 2003

45

(IUGS-UNESCO CO-SPONSORED)

- 1. IGCP project 430 Mantle Dynamics and Natural Hazards**
 M. F.J. Flower (USA), V. I. Mocanu (Romania), R. M. Russo (USA), Nguyen Trong Yem (Viet Nam)
 1999-2003 (On Hold)
<http://ns.gg.unibuc.ro/igcp430>
- 2. IGCP project 433 Caribbean Plate Tectonics**
 Manuel A. Iturralde-Vinent (Cuba), Edward G. Lidiak (U.S.A.)
 2000-2004
<http://www.ig.utexas.edu/CaribPlate/caribmeetings.html>
- 3. IGCP project 434 Land-Ocean Interactions during the Cretaceous in Asia**
 H. Hirano (Japan)
 1999-2003
- 4. IGCP project 437 Coastal Environmental Change during Sea-Level Highstands**
 C.V. Murray-Wallace (Australia)
 1999-2003
<http://tierra.rediris.es/IGCP/437/international437report2000.htm>
- 5. IGCP project 443 Magnesite and Talc-Geological and Environmental Correlations**
 M. Radvanec (Slovak Republic), W. Prochaska (Austria), A. C. Gondim (Brazil),
 C. Kequin (China)
 2000-2004
<http://www.gssr.sk/igcp443>
- 6. IGCP project 449 Global Correlation of late Cenozoic fluvial deposits**
 D. Bridgeland (U.K.)
 2000-2004
- 7. IGCP project 453 Modern and Ancient Orogens**
 J. B. Murphy (Canada), J. D. Keppie (Mexico)
 2000-2004
<http://www-sst.unil.ch/igcp453/index.html>
- 8. IGCP project 454 Medical Geology**
 O. Selinus (Sweden), P. Bobrowsky (Canada)
 2000-2004
<http://home.swipnet.se/medicalgeology>
- 9. IGCP project 458 Triassic/Jurassic Boundary Events**
 J. Palfy (Hungary); S.P.Hesselbo (U.K); C. McRoberts (U.S.A.)
 2001-2005
<http://www.pal.nhmus.hu/IGCP458/>
- 10. IGCP project 459 Carbon Cycle and Hydrology in the Palaeo-Terrestrial Environments**
 J.L. Probst (France); L. François (Belgium); P.J. Depetris (Argentina); J. Mortatti (Brazil)
 2001-2005
<http://www.omp.obs-mip.fr/omp/umr5563/4equ/hg/IGCP459/second.html>

- 11. IGCP project 463 Upper Cretaceous marine red beds**
 C. Wang (China), M. Sarti (Italy), R.W. Scott (United States), L.F. Jansa (Canada)
 2002-2006
<http://www.igcp463.cdut.edu.cn/>
- 12. IGCP project 464 Continental Shelves during the Last Glacial Cycle: Knowledge and Applications**
 F.L. Chiocci (Italy), A.R. Chivas (Australia)
 2001-2005
<http://tetide.geo.uniroma1.it/igcp464>
- 13. IGCP project 467 Triassic Time**
 M. J. Orchard (Canada)
 2002-2006
- 14. IGCP project 473 GIS Metallogeny of Central Asia**
 R. Seltmann (UK)
 2002-2006
http://www.nhm.ac.uk/mineralogy/cercams/IGCP/project_summary.html
- 15. IGCP project 469 Late Westphalian terrestrial biotas and palaeoenvironments of the Variscan Foreland and adjacent intramontane basins**
 C. J. Cleal (UK), S. Olu-til (Czech Rep.), Y. Tenchov (Bulgaria), E. Zedrow (Canada)
 2003-2007
http://www.geo.tu-freiberg.de/palaeo/workshop/Freiberg2004_firstcircular.doc
- 16. IGCP project 474 Depth Images of the Earth's Crust – 'inner' space, the continents and their margins**
 B. J. Drummond (Australia), L. D. Brown (USA), F. A. Cook (Canada),
 O. Oncken (Germany), G. S. Fuis (USA), R. W. Hobbs (UK), Songlin Li (China),
 D. M. Finlayson (Australia)
 2003-2007
- 17. IGCP project 475 Deltas in the Monsoon Asia-Pacific Region (DeltaMAP): Late Quaternary Development and Recent Changes Due to Natural and Human Influences**
 S. Goodbred Jr (USA) and Y. Saito (Japan)
 2003-2007
http://unit.aist.go.jp/mre/mre-cev/ADP/ADP_en/a_igcp475_en.html
- 18. IGCP project 478 Neoproterozoic to Early Palaeozoic Palaeogeographic, Palaeoclimatic, Palaeobiologic and Tectonomagmatic Events within the Framework of South-West Gondwana**
 C. Gaucher (Uruguay), D. Poiré (Argentina), P. C. Boggiani (Brazil), A. Braun (Germany),
 H. Frimmel (S. Africa) and G. J. B. Germs (S. Africa)
 2003-2007
- 19. IGCP project 479 Sustainable Use of Platinum Group Elements in the 21st century: Risks and Opportunities**
 J. E. Mungall (Canada), M. Iljina (Finland), C. Ferreira-Filho (Brazil)
 2003-2007
<http://www4.geology.utoronto.ca/faculty/mungall/Website/IGCP479Home.htm>

- 20. IGCP project 481 Dating Caspian Sea Level Change**
S. B. Kroonenberg (Netherlands), S. Leroy (UK)
2003-2007
<http://www.caspage.citg.tudelft.nl/>
- 21. IGCP project 486 Au-Ag-telluride-selenide deposits in Europe and in developing countries**
(and new methodologies for their investigation)
N. J. Cook (Norway), K. Kojonen (Finland)
2003-2007
http://www.gsf.fi/domestic/com/igcp486_outline.htm
- 22. IGCP project 490 The Role of Holocene Environmental Catastrophes in Human History**
S. Leroy (UK) and I. Stewart (UK)
2003-2007
<http://www.brunel.ac.uk/depts/geo/igcp490/igcp490home.html>
- 23. IGCP project 491 Early Vertebrate biogeographic data as tests of current palaeogeographic models during the Middle Palaeozoic, and its interaction with atmosphere composition, climate change, and extinction events**
Zhu, M. (China), G Young (Australia)
2003-2007
http://paleoworld.net/igcp491.file/Homepage_2.htm
- 24. IGCP project 493 The Rise and Fall of the Vendian Biota: Palaeoenvironmental, Palaeoclimatic and Plate Tectonic Controls on the Preservation and Biodiversity of the Vendian Biota with a Comparison of Gondwana and Northern Assemblages**
M. Fedonkin (Russia), P. Vickers-Rich (Australia), J. Gehling (Australia)
2003-2007
<http://www.earth.monash.edu.au/PreCSite/>
- 25. IGCP project 494 Young Scientists Project. Dysoxic to Oxidic Change in Ocean Sedimentation During the Middle Cretaceous: A Study of the Tethyan Realm**
Xiumian Hu (P. R. China), K. Bak (Poland), J. Wendler (Germany), N. Tur (Russia)
2003-2007

DECENTRALISED PROJECTS

- 26. IGCP project 436 Pacific Gondwana Margin**
R.J. Pankhurst, (UK), J.D. Bradshaw (New Zealand), L. Spalletti (Argentina)
1999-2003
- 27. IGCP project 440 Rodinia Assembly and Breakup**
S. Bogdanova (Sweden), H. Kampunzu (Botswana)
1999-2003
<http://www.tsrc.uwa.edu.au/>
- 28. IGCP project 447 Proterozoic Molar-tooth Carbonates**
X. Meng (China), D.G.F. Long (Canada); R. Bourrouilh (France)
2001-2005

- 29. IGCP project 448 World Correlation on Karst Ecosystem**
Yuan Daoxian (China)
2000-2004
<http://www.gxnu.edu.cn/KDL/>
- 30. IGCP project 450 Proterozoic Sediment-Hosted Base Metal Deposits of Western Gondwana**
S. S. Iyer (Canada), A. Misi (Brazil), A. F. Kamona (Namibia),
J. Cailteux (Democratic Republic of Congo)
2000-2004
<http://www.ucalgary.ca/~iyer/igcp450/unesco/catalog.htm>
- 31. IGCP project 455 Effects of basement structural and stratigraphic heritages on volcano behaviour and implications for human activities**
A. Tibaldi (Italy), M. Garcia (Spain), A.M. Lagmay (Philippines), V.V. Ponomareva (Russia)
2001-2005
<http://www.geo.unimib.it/IGCP455.htm>
- 32. IGCP project 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)
2001-2005
- 33. IGCP project 470 The 600 Ma Pan-African belt of Central Africa**
F. Toteu (Cameroon)
2002-2006
- 34. IGCP project 471 Evolution of western Gondwana during the Late Palaeozoic**
C.O. Limarino (Argentina), L.A. Buaotois (Argentina)
2002-2006
<http://www.limarino.org/IGCP/Topics.htm>
- 35. IGCP project 476 Monsoon Evolution and Tectonics-Climate Linkage in East Asia and its Marginal Seas During the Late Cenozoic**
R. Tada (Japan)
2003-2007
- 36. IGCP project 482/489 Dynamic Evolution, Resource Potential and Environmental Impact of the East African Rift System / South-Western Branch of the East African Rift System: Geophysical Characteristics, Structural Evolution and Sedimentary Geology: Implications for Modelling Nascent Rifts**
G. Mulugeta (Sweden), E.A. Atekwana (USA), M. P. Modisi (Botswana),
M.N. Sebagenzi, (Congo DR), J.-J. Tiercelin (France)
2003-2007
<http://www1.elsevier.com/homepage/sad/gsal/igcp/489.pdf>
- 37. IGCP project 485 Cratons, metacratons and mobile belts; keys from the West African craton boundaries: Eburnian versus Pan-African signature, magmatic, tectonic and metallogenic implications**
N. Ennih (Morocco), J.-P. Liégeois (Belgium)
2003-2007
<http://www.igcp485-nkc2004.mr/>

PROJECTS ON EXTENDED TERM

- 38. IGCP project 411 Geodynamics of Gondwanaland-derived Terranes in E & S. Asia**
 S. Hada (Japan), I. Metcalfe (Australia), J.H. Kim (Korea), Tran Van Tri (Vietnam),
 Jin Xiouchi (China)
 1998-2002
<http://plaza.snu.ac.kr/~geol/IGCP411/index2.html>
- 39. IGCP project 413 Understanding Future Dryland Changes from Past Dynamics**
 D. Thomas (U.K.), A.K. Singhvi (India)
 1998-2002
<http://www.shef.ac.uk/~igcp413>
- 40. IGCP project 425 Landslide Hazard Assessment and Cultural Heritage**
 K. Sassa (Japan), P. Canuti (Japan), P.Carreno (Peru)
 1998-2002
<http://landslide.dpri.kyoto-u.ac.jp/igcp>
- 41. IGCP Project 426 Granite Systems and Proterozoic Lithospheric Processes**
 J. S. Bettencourt (Brazil), O. T. Rämö (Finland), W. R. van Schmus (U.S.A.)
 1998-2002
- 42. IGCP project 428 Climate and Boreholes**
 V. Cermák (Czech Republic), H. N. Pollack (U.S.A.), C. Clauser (Germany)
 1998-2002
<http://www.ig.cas.cz/heat/PROJECT.htm>

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	
OVERALL ASSESSMENT	Importance for environmental monitoring and sustainability.

Acronyms Used by IUGS

51

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 TASKTECT)
COPCSE	Commission on the Physics and Chemistry of the Solid Earth

CPCMR	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/
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
	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
	International Working Group on Medical Geology http://www.medicalgeology.org
	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
TASKTECT	Task Group Tectonics and Structural Geology
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
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/

IUGS PRESIDENT

Prof. Eduard F. J. de Mulder,
Netherlands Institute
of Applied Geosciences TNO,
P.O. Box 80015,
NL-3508 TA Utrecht
The Netherlands.
(e.demulder@planet.nl)

**IUGS SECRETARY GENERAL**

Dr. Werner R. Janoschek,
Austrian Geological Survey,
Rasumofskygasse 23,
Postfach 127,
A-1031 Vienna,
Austria.
(wjanoschek@geolba.ac.at)

**IUGS TREASURER**

Prof. Antonio Brambati,
Department of Geological,
Environmental and
Marine Sciences (DISGAM),
University of Trieste,
Via E. Weiss 2,
I-34127 Trieste,
Italy.
(brambati@univ.trieste.it)

**IUGS Permanent Secretariat**

Geological Survey of Norway
Leif Erikssons veg 39,
N-7491 Trondheim,
Norway.
Telephone +47 73 904040
Fax +47 73 502230
(iugs.secretariat@ngu.no)