



# INTERNATIONAL UNION OF GEOLOGICAL SCIENCES

FOSTERING A GLOBAL VOICE FOR THE GEOSCIENCES THROUGH  
**120+** MEMBER COUNTRIES **50+** AFFILIATED ORGANIZATIONS  
IN ASSOCIATION WITH ICSU AND UNESCO

## 2011 Annual Report



### ***About the Front Cover***

The Torres del Paine intrusive complex in southern Chile, comprises a well-exposed granitic laccolith and mafic stock fed by dykes intruded at shallow depths (2 to 4 km) during mid-Miocene times some 12 million years before present (BP) into thrust-folded early Tertiary, Cretaceous and older sedimentary sequences. During the Pleistocene Epoch, Patagonian glaciers mirrored the climate structure of Antarctica and were out of phase with ice sheets in the northern hemisphere. Glaciers in the Torres del Paine National Park deeply incised pre-existing bedrock valleys, and reached their maximum extent some 40 km beyond the present ice margin and mountain front between 25,000 and 23,000 years BP. Deglaciation occurred in two stages at 17,500 and 11,500 years BP (equivalent to the middle of the Younger Dryas in the northern hemisphere), with an advance coinciding with the Antarctic Cold Reversal ca. 15,000 to 12,000 years BP. A series of large end moraines east of Lago Nordenskjöld and Lago Sarmiento record the terminal positions of Pleistocene glaciers; smaller moraines in mountain valleys and cirque basins record the retreat of Holocene glaciers.

### ***About the IUGS Logo***

The IUGS logo represents a person accepting the burden of responsibility for the Earth.

# INTERNATIONAL UNION OF GEOLOGICAL SCIENCES

## Annual Report 2011

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Please note that a list of acronyms used in the report is given in Appendix 8 at the end of the document.

# Foreword

The 2011 Annual Report of the International Union of Geological Sciences (IUGS) covers the period between the 62<sup>nd</sup> and 63<sup>rd</sup> Executive Committee meetings, held in Paris, France (2011) and San Sebastian, Spain (2012). In this period the IUGS celebrates its 50<sup>th</sup> Anniversary and the 40<sup>th</sup> Anniversary of its most successful initiative the International Geoscience Programme (IGCP) a joint IUGS-UNESCO endeavour. In 2011, the IUGS continued to unite the global geological community by: (a) Promoting development of the geoscience through the support of broad-based scientific studies relevant to the entire Earth-System; (b) Applying the results of these and other studies towards preserving Earth's natural environment, using all natural resources wisely, and improving the prosperity of nations and the quality of human life; (c) Strengthening public awareness of geology and promoting geoscience education; and d) Increasing financial support to the IGCP. As the leading NGO of the world geological community, IUGS continued to unite geologists from different countries and branches of geology. The Union continues to grow in membership of Adhering and Affiliated Organizations, in public outreach initiatives, in relation to other International Council of Science (ICSU) geo-unions, and in its ability to generate financial support for international science projects. The work of the new Executive Committee builds on the progress of past executive committees, including addressing the Strategic Plan, the Statutes and Bylaws and relationships with the International Geological Congress (IGC).



# IUGS – role, structure, membership

## THE ROLE OF IUGS



The International Union of Geological Sciences (IUGS) is a member of the International Council for Science (ICSU; <http://www.icsu.org>) and has represented all

geological scientists at the highest international level since its formation in 1961. Both fundamental research and applied aspects of the Earth sciences of an international and interdisciplinary nature are supported by the Union, through a number of Commissions, Task Groups and Initiatives, as detailed elsewhere. IUGS collaborates with UNESCO (<http://www.unesco.org>) in supporting the International Geosciences Programme (IGCP), and other initiatives, and also works with its Affiliated Organizations and with ICSU on topics of mutual interest. IUGS keeps a non-political, and thus a non-governmental stance and remains a non-for-profit making Organization.

## 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 to elect a new Executive Committee and on the direction the Union shall take in the subsequent 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 the best interests of the Union at congresses and elsewhere, 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 throughout the year to address the progress of the various matters of concern and interest to the Union.

## IUGS MISSION AND GOALS

The mission of the IUGS is to unite the global geological community in promoting development of the earth sciences through the support of broad-based scientific studies relevant to the entire earth-system and applying the results of these and other studies to preserving Earth's natural environment, using all natural resources wisely, and improving the prosperity of nations and the quality of human life. The goals of the IUGS include the following:

- 1) Serve as an impartial international scientific union addressing global issues that involve the earth sciences.
- 2) Contribute to the advancement of geological research throughout the world, including both fundamental earth science aimed at understanding the global system (a plexus of geological, geophysical, geochemical and biological processes and their myriad interactions), and applied earth sciences that use the cumulative understanding of the earth system to address problems of particular relevance to the global welfare of humans.
- 3) Develop geological conventions and standards and promote its worldwide acceptance.
- 4) Represent the geological sciences in governmental and non-governmental forums to inform, provide advice and influence public policy and decision makers.
- 5) Encourage, in cooperation with other organizations, more interdisciplinary involvement within the broad spectrum of the geosciences in developing solutions to global problems.
- 6) Foster collaboration between more developed and less developed countries in earth science research, capacity building and applications.
- 7) Contribute to earth science education and the advancement of public understanding of the earth sciences and their significance in solving societal problems.
- 8) Encourage the career development of young earth scientists.

- 9) Increase the relevance of IUGS publications to issues of truly global earth science and make these publications more widely available.
- 10) Enhance the visibility of the earth sciences and demonstrate their profound influence in planning for rehabilitation and preservation of future planetary environment by seeking greater involvement in public affairs and by publicizing the critical role that only earth sciences can play.

## MEMBERSHIP OF IUGS

The Adhering Organizations of IUGS cover the majority of geoscientists of the world. Affiliated Organizations (primarily international professional scientific societies) provide a valuable link to a wide cross-section of the world's earth science community. These organizations range in size from less than 100 to more than 250,000 members. Appendix 2, gives a full list of the current Adhering Organizations, together with their membership category and status during 2011.

Inactive Adhering Organizations must pay the Membership Fees for the previous two years as well as the current outstanding year in order to regain in active status. The Categories and Fees for the period 2008 to 2011 are given in Appendix 3. Members are classified as inactive if they have not paid their dues for 3 or more years. Only those Adhering Organizations with an active status can vote on IUGS matters; inactive Adhering Organizations can participate as observers. Each category of membership has been assigned a number of units that acts as a multiplier of the basic unit of the Membership Fee (Appendix 3). The value of the unit follows the inflation rate based on the US Consumer Price Index CPI.

## ACTIVITIES OF IUGS

Activities related to IUGS in the office of the Secretary General during 2011 were similar in breadth to those of preceding years. The IUGS Bureau managed the day-to-day activities of the Union, and met on several occasions. The EC members of IUGS are now working smoothly and efficiently. In 2011, IUGS worked aggressively to keep IGCP alive through issuance of communiqués and special meetings. The focus of all IGCP-related efforts has been to preserve the program, assist in the transition to a new identity and enhance IUGS presence and contribution towards the new IGCP.

IUGS continues to support the educational importance of the geosciences, for example through activities with IGEO, facilitating cooperation amongst individuals, organizations and groups involved in the promotion and preservation of our geological heritage.

A large full-colour panel display highlights IUGS' journal, *EPISODES*, and the many activities and Affiliated Organizations in IUGS.



“Corporate accountability” is maintained through the publication of the Annual Report and Minutes of the Executive Committee Meeting. These formal documents create a more professional and structured image to non-geologists and are welcomed by government politicians and bureaucrats, non-geological Organizations and societies. In 2012, the Annual Report for 2011 was released as a digital file downloadable on the IUGS homepage. Digital and hard copies of the 2011 Annual Report will also be included in delegate packages at the 34<sup>th</sup> International Congress in Brisbane, Australia.

The distribution of electronic Bulletins to its Adhering Organizations, scientific bodies and Affiliated Organizations has been widely lauded. These short, informal “news bites” briefly convey recent activities and accomplishments within the Union and are meant to keep others abreast of changes and events in the community at large. A large full-colour panel display highlights IUGS' journal, *EPISODES*, and the many activities and Affiliated Organizations in IUGS.

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

### **PERMANENT SECRETARIAT**

The Permanent Secretariat, which has been generously funded by the United States Government, is based at the Headquarters of the U.S. Geological Survey, in Reston, Virginia, near Washington, D.C., USA (Appendix 1). The Secretariat is very important for the day-to-day operations of the IUGS, distributing to and collecting/collating documents from the Adhering Organizations and affiliated members. The Permanent Secretariat is also responsible for IUGS archives.



USGS Headquarters, Reston, Virginia

# The IUGS 50<sup>th</sup> Anniversary

On February 21<sup>st</sup> 2011, UNESCO headquarters in Paris was the site of a celebratory programme commemorating the 50<sup>th</sup> anniversary of the International Union of Geological Sciences.

Some 200 people from around the globe joined for the event. The celebration began with a viewing of a new video, especially produced, which vividly demonstrates the role of the geosciences and of the Union in serving society worldwide. After the video, participants were greeted by remarks from the Executive Director of ICSU, Deliang Chen; UNESCO's Assistant Director General for Natural Sciences, Gretchen Kalonji; and IUGS President, Alberto Riccardi. Keynote speaker Iain Stewart, University of Plymouth, UK, discussed how Earth made us. The Opening Ceremony, whose Moderator was IUGS Past Vice President Eldridge Moores, continued with presentations by representatives of: the scientific community of the Host Country (Marie-Lise Chanin, Academy of Sciences, France; Pierre Mauriaud, IUGS National Committee, France); the IUGS Affiliated Organisations (Aberra Mogessie, Geological Society of Africa; Patrick Leahy, American Geological Institute); the International Geological Congress (Ian Lambert, 34<sup>th</sup> International Geological Congress); the ICSU cluster of GeoUnions (Orhan Altan, Intl. Soc. Photogrammetry and Remote Sensing), and the past IUGS Executive Committees (Umberto Cordani, IUGS Past President).

In the afternoon, the meeting featured guest speakers to address past, present and future challenges for IUGS over the years, under the motto "*IUGS looking into the Future*": Ed Derbyshire (Geological Society of London, UK) on *The IGCP: past, present and future*; Ed de Mulder (Planet Earth Institute, Netherlands) on *The IYPE, its origin, development and aftermath*; Arne Bjorlykke (Natural History Museum, University of Oslo, Norway) on *The International Geological Congress and the IUGS*; Attilio Boriani (Università degli Studi di Milano, Italy) on *IUGS Strategic Plan in relation to past, present and future activities*; Stan Finney (California State University at

Long Beach, USA) on *The International Commission on Stratigraphy: 43 years of international collaboration and cooperation and the establishment of global standards*; Kristine Asch (BGR, Germany) on *Geoinformation development and future of the CGI in relation to IUGS past, present and future*; Jesús Martínez Frias (Centro de Astrobiología (CSIC-INTA, Spain) on *IUGS/COGE: The significance of partnership, capacity building and a multidisciplinary approach in geosciences education*; Cees Passchier (Johannes Gutenberg University, Germany) on *TecTask in relation to IUGS past, present and future activities*.

Commemorative medals of the IUGS 50<sup>th</sup> Anniversary were presented to past officers of the Executive Committee (EC) attending the meeting. The commemorative medal was also presented to Robert Missotten (UNESCO) to express IUGS appreciation for the collaboration developed throughout the years in the International Geoscience Programme (IGCP) and other joint IUGS-UNESCO initiatives. Other past members of the EC that could not attend the meeting were presented with the commemorative medal during the year.

To celebrate the IUGS 50<sup>th</sup> Anniversary the IUGS EC hosted a global essay context for early career geoscientists under the age of 35 years to express their views on the future of the geological sciences. The contest was launched through the YES network and other IUGS partners and affiliated organizations. Twenty-nine essays were submitted from 20 countries. The best four essays submitted were honored by publishing in Episodes (vol. 34, No.2) and the winning author, Gemma Venhuizen (The Netherlands) will be provided a travel grant to attend the 34<sup>th</sup> International Geological Congress and receive an IUGS medal for her creative and inspiring article *CoCoA: the future for Geoscientific Research*.

A summary of some historical facts related to the creation and development of the IUGS was published in Episodes, vol. 34 No. 1.



# The 40<sup>th</sup> Anniversary of the IGCP

To celebrate the 40<sup>th</sup> anniversary of the IUGS - UNESCO's International Geoscience Programme (IGCP), a conference was held on February 22<sup>nd</sup> 2012 at UNESCO's Headquarters in Paris, France.

Launched in 1972, the International Geoscience Programme supports international cooperation in geology. It serves as a network for thousands of scientists worldwide, notably in developing countries and focuses on projects relating to present concerns such as georisks, hydrology and climate change and modelization projects based on geological data. Over 335 projects in about 150 countries with contributions of thousands of Earth scientists attest to the scientific and applied quality of the International Geoscience Programme (IGCP) since its inception in 1972.

UNESCO's Director-General, Irina Bokova and the President of the International Union of Geological Sciences (IUGS), Alberto Riccardi opened the 40<sup>th</sup> IGCP anniversary conference. The opening was followed by two presentations on the *"Main results of IGCP's 40 years"*, by V. Vajda, IGCP Chair (Lund University, Sweden), and the *"Importance of Geosciences for Society"*, by I. Stewart, (Plymouth University, UK). The forum brought together numerous experts from different parts of the world and its purpose was to take stock of the achievements and challenges of the International Programme and map the road ahead.

There were a series of talks on the *"Relevance of IGCP"*, with J-P. Cadet (UNESCO, France) as Moderator, beginning with a *"History of IGCP"* by E. Derbyshire (former IGCP Chair, UK), followed by presentations on key results and vision of the different IGCP themes, i.e. *"Earth Resources: Sustaining our Society"*, by R. Seltmann, (Natural History Museum, London, UK); *"Global Change*

*and Evolution of Life: Evidence from the geological record"*, by P. Vickers-Rich (Monash University, Australia); *"Geohazards: Mitigating the risks"*, by M. Sintubin (Leuven University, Belgium); *"Geoscience of the water cycle"*, by C. Zhang (International Research Centre on Karst, China); *"Deep Earth: How it controls our environment"*, by Y. Dilek (Miami University, USA). There were also two panel discussions, one on *"The Geoscience Challenges for the Planet"* with the participation of H. Campbell (New Zealand IGCP NC, Moderator), T. Casadevall (U.S. IUGS & IGCP NC, US Geological Survey, USA), S. Dong (Chinese Academy of Geological Sciences, China), S. Leroy (IGCP Project Leader, Brunel University, UK), G. McBean (President-Elect, ICSU), X. Le Pichon (French Academy of Sciences, France). The second panel discussion was focused on *"IGCP and other Earth Science global programmes"* and had the participation of J. Ludden (British Geological Survey, UK, Moderator), G. Kalonji (Assistant Director General for Natural Sciences, UNESCO), A. Riccardi (President IUGS, Argentina), S. Cloelingh (Chair, International Lithosphere Programme, ILP, The Netherlands), F. Gaetani (Secretariat, Global Earth Observation, GEO, Switzerland), J. Venus (President, Young Earth Scientists Network). A final *"Synthesis and conclusions: A prospective vision for the future of IGCP"* was presented by I. Stewart, Plymouth University, UK.

As part of the celebration of the 40th years of the IGCP an anniversary book entitled *"Tales Set in Stone, 40 Years of the International Geoscience Programme (IGCP)"* was published in English, French and Spanish. The book, profusely illustrated in color, includes a brief history of the IGCP and in 6 main sections and 15 chapters, with selected examples of IGCP projects; it traces the main achievements of this programme of international scientific cooperation to service of society.

# Reports from the Executive Committee

## ICSU UPDATE



**Alberto Riccardi**  
**IUGS President**  
**2008-2012**

The International Council  
for Science

(<http://www.icsu.org>),  
formerly known as the  
International Council of  
Scientific Unions (ICSU),  
was founded in 1931 to be

the umbrella organization for the different unions in each scientific discipline. There are now almost 30 of these, including the eight Earth science related unions (informally called the GeoUnions): the International Union of Geological Sciences (IUGS), the International Union of Geodesy and Geophysics (IUGG), the International Geographical Union (IGU), the International Union of Soil Sciences (IUSS), the International Union for Quaternary Research (INQUA), the International Astronomical Union (IAU), International Union of Radio Science (URSI) and the International Society for Photogrammetry and Remote Sensing (ISPRS). Much of ICSU's funding comes from its national members that are commonly the National Academy of Sciences for a given country.

Together with its' unions, ICSU acts as the main representative and facilitator of international science. ICSU serves the scientific world and the general public in several areas:

- 1) Forming standing scientific committees that cross union disciplinary boundaries in order to encourage research and scholarship in those areas that require a multidisciplinary approach.
- 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 less developed countries are included in projects, made aware that they can contribute.

4) Issuing position statements on topics that are controversial to some, but in which scientists have a firm opinion.

5) ICSU increasingly finds UNESCO as a partner in such activities. These large meetings show the decision-makers and the press the increasing relevance science has in addressing today's problems.

The relationship of IUGS with ICSU is very important. The basis for the international geo-scientific organizations to be affiliated to IUGS is that IUGS can represent them in ICSU. The strength of IUGS as a member of the International Council for Science (ICSU) is its' broad coverage of geoscience fields under one umbrella, and its function as a forum for geoscientists acting to exchange ideas, develop scientific standards, and for the communication of geoscience information. Our links with other ICSU unions complies with the Mid-Term Vision and Strategic Action Plan for the International Union of Geological Sciences (<http://www.iugs.org>). IUGS is uniquely positioned to challenge and promote and organize the world geological community to address the global research problems that require the collaboration of many disciplines as well as many countries. The challenge is to be prompt and organize the global geoscience community and find socially and scientifically relevant and challenging collaborative projects.

In 2011, the IUGS had an important interaction with ICSU on topics covering a broad spectrum of scientific and organizational topics. The main activities were related to the ICSU 30<sup>th</sup> General Assembly (ICSU GA) in Rome in September. Prior to the Assembly, the 8 unions (IUGS, IUGG, IGU, IUSS, INQUA, ISPRS, IAU and URSI), which comprise the informal GeoUnions consortium within ICSU, met to address scientific and geo-political issues which are shared by all of the Unions. During ICSU GA, a number of important decisions were adopted that will influence the directions and conduct of international science in the coming years. Decisions endorsed by the IUGS Bureau were: a) establishment of an Earth System Sustainability Initiative (ESSI), an Urban Health and Well-being Initiative, and adoption of the Principle of Universality of Science; b) to work with the global observing systems and GEOSS in relation to the Grand Challenges and Earth System Sustainability Initiative; c) commitment to ICSU being involved in the Rio+20 Conference and its follow-up to actively promote science education initiatives; d) to consolidate and expand the ICSU World Data System; e) approval of ICSU's Strategic Plan 2012-2017; f) election

of new Officers of the ICSU Executive Board; g) approval of the outline budgets for 2013-2015; h) and approval of weighted voting on financial issues. A resolution for the Integrated Research and Disaster Risk (IRDR) Program, together with other existing relevant institutions, to start a negotiation to set up a process to assess and synthesize policy-relevant results to enhance the knowledge of disaster risk at global, regional and local levels and the awareness of the people living with risk was also approved. During the GA the IUGS President presented a short oral poster on IUGS activities.

The IUGS participated in two projects supported by ICSU's Grant Programme in 2011: 1) The project entitled "An international workshop to initiate the circumpolar integration of permafrost microbiological studies" (MicroPerm) on behalf of the International Permafrost Association (IPA), International Union of Geodesy and Geophysics (IUGG), the International Union for Quaternary Research (INQUA), the International Arctic Science Committee (IASC), and the Scientific Committee on Antarctic Research (SCAR), and the Alfred Wegener Institute for Polar and Marine Research (AWI). 2) The project entitled "Extreme Natural Hazards and Societal Implications (ENHANS)", lead by the International Union of Geodesy and Geophysics (IUGG), in partnership with IUGS, the International Geographical Union (IGU), the International Society for Photogrammetry and Remote Sensing (ISPRS), the International Union of Theoretical and Applied Mechanics (IUTAM), the Integrated Research on Disaster Risk (IRDR), the American Geophysical Union (AGU) and the UNESCO bodies the Global Ocean Observing System (GOOS) and the Intergovernmental Oceanographic Commission (IOC), together with the ICSU Science Plan for Integrated Research on Disaster Risk (IRDR), and the ICSU Regional Offices for Asia & Pacific (ROAP), Latin America and the Caribbean (ROLAC).

The International Year of Global Understanding (IYGU), an initiative of the International Geographical Union (IGU) was endorsed by decision of the IUGS EC in December 2011. The IYGU aims to yield deep, but actionable insights into the ways all peoples can live together more sustainable. The focus will be on developing strategies for targeted local projects with global reach. Three elements will be included: research, education, and information. Research will bring social and natural scientists together to understand the global impacts of everyday local activities. Teaching will use research results in classrooms worldwide, at all levels. The IYGU will provide information to increase public awareness using, for example, publications, computer games, and TV programmes.

In July 2011, the IUGS was present at the International Union of Geodesy and Geophysics (IUGG) Council Meeting in Melbourne, Australia. Issues of interest were: a) Water: the International Association of Hydrological Sciences (IAHS) - a member of IUGG - has a close collaboration with the International Association of Hydrogeologists (IAH) - an IUGS affiliate member and the UNESCO International Hydrological Programme; b) Climate: a member of IUGG, the International Association of Meteorology and Atmospheric Sciences (IAMAS) proposed to establish a new IUGG Commission on Climate Change (UCCC) to address a variety of issues including impacts of climate change, such as increased natural hazards, and recommendations for preparing for the climate change impacts; c) Oceans: a member of IUGG, the International Association for the Physical Sciences of the Oceans (IAPSO) is primarily involved with the interactions taking place at the sea floor, coastal and atmospheric boundaries, and it does have some involvement with (superficial) geology of the deep ocean floors; d) Geodata: there was much discussion in the sessions about Geodata and ICSU, and the report of the new IUGG Commission on Data and Information (UCDI) commented favorably on the collaboration being developed with IUGS/CGI).

## IGCP UPDATE



**Peter Bobrowsky**  
**(IUGS Secretary**  
**General)**

During the period 2011-2012, the International Geoscience Programme continued to operate under the recently defined focus of five thematic funding targets: 1) Earth Resources:

Sustaining our Society; 2) Global Change: evidence from the geological record; 3) Geohazards: mitigating the risks; 4) Hydrogeology: Geoscience of the water cycle; and 5) Deep Earth: How it controls our environment.

Existing and new research proposals were assessed and evaluated in 2011 by five teams consisting of 6 to 9 virtual specialists, including a "theme leader". The Scientific Board of the International Geoscience Programme (IGCP) held its 40<sup>th</sup> Session, February 2012 where a total of 29 projects received continued support and 5 new proposals were accepted. Seven projects received financial support from the Swedish International Development Cooperation Agency (SIDA) through UNESCO (see Appendix 7).

## TREASURER'S REPORT



**William Cavazza**  
(IUGS Treasurer)

The main income of IUGS consists of the annual fees of the Adhering Members and of earmarked contributions to the main scientific programmes, such as the IGCP and the GARS, which come from UNESCO. Other sources of income during 2011 have

included the Geological Society of London (publication royalties) and bank and investment interests. The biggest expenses are dedicated to the IGCP and to the Committees, Commissions, Task Groups and Initiatives of IUGS. A few of the IUGS Affiliated Organisations are supported with some seed money, particularly to enhance international cooperation and involvement of participants from developing countries. Financial details can be seen in Appendix 4. Further information can be obtained from the more comprehensive financial report regularly published in *EPISODES*. The most recent, for the year 2011, was printed in *EPISODES*, Vol. 34/2.

IUGS expenditures often do not reflect the real costs. For example, the IUGS Secretariat is parity sponsored by IUGS and graciously hosted by the United States Geological Survey in Reston (Virginia, USA). The same holds true for *EPISODES* as our annual contribution for editing, lay-out, printing, and distribution, covers only a part of the actual costs incurred by the Geological Society of India which hosts the journal. The costs related to IUGS meetings are covered, at least in part, by the countries hosting such meetings and for a very substantial part by the parent organisations of the Bureau members (President, Secretary-General, and Treasurer

and their supporting staff) which cover salary and all or part of their travel costs. These forms of support save IUGS a considerable amount per year. IUGS is grateful to the Argentinian, Canadian, Indian, Italian, and U.S.A. governments for their generous support that enables the Union to invest significantly more in science development than would be otherwise possible.

### IUGS Adhering Organizations

There are a total of 121 Adhering Organizations: 86 active (8 pending), 35 inactive. In 2011, three Category 1 countries, Chile, Jordan and Vietnam, were reinstated into Active Status. Iraq (Category 2) was reinstated into Active Status. Iran, Ukraine (Category 3) and Lesotho (Category 1) became Inactive.

#### 2004-2011 Membership Trends

ACTIVE	INACTIVE	TOTAL
86 in 2011	35 in 2011	121 in 2011
87 in 2010	34 in 2010	121 in 2010
94 in 2009	27 in 2009	121 in 2009
94 in 2008	25 in 2008	119 in 2008
88 in 2007	30 in 2007	118 in 2007
83 in 2006	35 in 2006	118 in 2006
77 in 2005	40 in 2005	117 in 2005
79 in 2004	37 in 2004	116 in 2004



# 34<sup>th</sup> International Geological Congress

## 34<sup>th</sup> IGC UPDATE



### **President**

#### **Dr. Neil Williams PSM**

*Former Chief Executive  
Officer of Geoscience  
Australia*

The 34<sup>th</sup> International Geological Congress will be held at the world-class Brisbane Convention and Exhibition Centre from

August 5<sup>th</sup> to 10<sup>th</sup>, 2012. It will be the shortest modern IGC.

The 3<sup>rd</sup> IGC 2012 Circular was published in October 2011, setting out the general schedule for the 34<sup>th</sup> IGC, Registration Fees, an update of the Scientific Program, outlines of Field Trips, professional development courses, and training workshops for developing nation delegates. The 4<sup>th</sup> Circular, which was distributed in early February 2012, provided further information on the scientific program, details of the field trips and workshops.

The first Joint Council meeting of the IUGS and IGC will be held on Sunday, August 5<sup>th</sup>, with the second on Thursday, August 9<sup>th</sup>. The revised IGC and IUGS Statutes and consideration of bids for the 36<sup>th</sup> IGC will be scheduled for the second Council meeting. It is also proposed that no individual member of Council be permitted to carry more than 5 proxies from countries who are not represented at the Council meetings.

The IGC opening ceremony will be the first session on Monday, August 6<sup>th</sup>, lasting about 1.5 hours. The closing ceremony will be in the last session Friday, August 10<sup>th</sup>. Most business meetings will be held during the evenings. Several general assemblies will be held concurrently with the scientific program. The 34<sup>th</sup> IGC will incorporate the second Young Earth Scientists congress, the Australian Earth Sciences Convention and other major geoscience events to be held in 2012.

Funded Training Workshops will be a key means of bringing young and developing country delegates to the Congress. The three Training Workshops are: TW1) Sustainable mining in Africa, funded by AusAID's Australia-Africa Partnerships Facility, delivery by UQ's Sustainable Mining Institute and others; TW2)

Geological sequestration of carbon dioxide, funded by the Global Carbon Capture and Storage Institute, delivery by GA; and TW3) Capacity building in risk modelling for natural hazards in the Asia-Pacific, funded by AusAID, delivery by GA. Approximately 30 Professional Development Workshops/Short Courses are being offered. Further information can be accessed at [www.34igc.org](http://www.34igc.org)

A detailed Scientific Program including 38 Themes, more than 200 Symposia and the details for the responsible international scientists was drawn together by Scientific Subcommittee. The 34<sup>th</sup> IGC Scientific Program will feature a daily Plenary Session in the main auditorium in which distinguished speakers will give invited presentations on major contemporary themes in the geosciences: 1) Resourcing Tomorrow: Meeting the needs of a growing population; 2) The Earth and Man: Living with a Restless Earth; 3) What does the geological record tell us about past climates in relation to projected climate change; 4) Energy in a carbon-constrained world; and 5) Digital Earth - The information explosion. These plenary will be videoed for streaming via [www.34igc.org](http://www.34igc.org) after the Congress.

A special 34<sup>th</sup> IGC Edition of *EPISODES* is on track to be published by March 2012. All papers have been peer reviewed and submitted to the Editor of *EPISODES*. Supported by Geoscience Australia, this publication will include overview papers and articles on the geological setting of the regions where the IGC field trips are to be held. Geoscience Australia authors are working with the organisation's graphics and published specialists to finalise design of the IGC Book. This high quality, coffee table-style book is on track for publication in mid 2012.



### **Secretary General**

#### **Dr. Ian Lambert**

# IUGS Publications and Outreach

The IUGS Publications Committee (PC) reviews the publication policy of the Union and of its Commissions, giving particular attention to the IUGS journal *EPISODES*. The PC examines all applications to the Executive Committee for funds involving publication, and advises on publication standards, methods and techniques in the presentation of geological results.

## E-Bulletin

The IUGS Bulletin is issued monthly and reaches 12,000 people worldwide. IUGS publishes in the E-bulletin on behalf of affiliate members and is compiled by IUGS Councilor Colin Simpson.

## Episodes

*EPISODES* is the official quarterly journal of the International Union of Geological Sciences (IUGS). It covers developments in wide range of topics in Earth sciences of regional and global importance. Apart from themes of classical geology, special emphasis is given to topics involving application of geological knowledge to address major global issues of climate change, water, food and energy security, geological hazards, land use planning, urban development, waste disposal, geological education/training/outreach programs in the developing countries. As an official communication media of IUGS, *EPISODES* also invites reports on scientific activities of IGCP projects, conferences, book reviews, and other contributions to geoscience. Volume 34 (four issues) of *EPISODES* was published in 2011, and the Journal now has an impact factor greater than 2. Visit the website at:

[www.episodes.co.in](http://www.episodes.co.in).



The  
Geological  
Society

## Special Publications

The Geological Society of London (GSL) publishes books produced by IUGS. Books are published with both GSL and IUGS logos.

## IUGS Website

The IUGS Website (<http://www.iugs.org/>) is populated and updated on a daily basis. The website is a vehicle to reaching many nations in 88 different languages and 50 percent was English. The website remains IUGS' most critical modern link to the outside world. The website is managed by the IUGS Secretary General Peter Bobrowsky.



**Fred Spilhaus**  
(Chair, IUGS Publications  
Committee)



**Mulappa Jayananda**  
(*EPISODES* Editor)



# Scientific Activities of IUGS

The Union is scientifically active through a series of Committees, Commissions, Task Groups and Initiatives. IUGS is also active with UNESCO, through IGCP and in the Geological Applications of Remote Sensing (GARS) and the Global Geoparks Network. IUGS also collaborates with the IUGG in the International Lithosphere Programme (ILP). In these programmes, IUGS provides both financial support and/or 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 Committees*

### ***Ad hoc* Review Committee (ARC)**

Following the recommendation of the Strategic Planning Committee, the Executive Committee has made strenuous attempts to institute reviews of as many of the Commissions and scientific bodies run by the Union as possible, during their term of office. In 2011, there were *Ad hoc* reviews of the commission on the Geoscience Education (COGE), International Commission on the History of geological Sciences (INHIGEO) and the International Lithosphere Program (ILP) with the help of the IUGG.

### **Finance Committee (FC)**

The FC is tasked with identifying outside funding and proposing ways to improve IUGS financial operations, including the allocation of funds in relation to the strategic priorities and missions adopted by the EC, auditing IUGS finances and presenting reports to the IUGS Council before the election of a new EC at the 34<sup>th</sup> IGC in Brisbane. The current members of the Finance Committee are Antonio Brambati (Chair), Pat Leahy and Zdenek Johan (Members).

### **Nominating Committee (NC)**

The Nominating Committee is responsible for making nominations for the positions on the Executive Committee. Following the Statutes and Byelaws of IUGS, a new Nominating Committee was appointed at the last IUGS Council Meeting in Oslo. The Committee is to recommend a slate of candidates for officers of the Union for the next term of IUGS Executive Committee at the 34<sup>th</sup> IGC in Brisbane, August 2012.

The members of the Committee are Zhang Hongren, (Chairman, China), Ryo Matsumoto (Japan), Centeno-

Garcia Elena (Mexico), Peadar Mc Ardle (Ireland), Jonas Satkunas (Lithuania), Aberra Mogessie (Austria) and Marita Bradshaw (Australia). The Nominating Committee started its work mainly in the first half of 2011.

### **Publications Committee (PC)**

The committee now consists of the following members: Fred Spilhaus (Chair, USA), Susana Damborenea (Museo de La Plata in La Plata, Argentina), Jayananda Mudlappa (*EPISODES* Editor, Delhi, India), Zhenyu Yang (Chinese Academy of Sciences) and Michael Thomson (UK).

### **Strategic Planning Committee (SPC)**

The SPC was appointed in 2009, began work at the beginning of 2010 and was active in 2011. The Strategic Plan will be available in time to send out to council members well in advance of 34<sup>th</sup> IGC in August 2012. The plan was presented at the 63<sup>rd</sup> EC meeting in February 2012. The members of the Strategic Planning Committee are Attilio Boriani (Chair), Kristine Asch, Jacques Charvet, Peter Cook, Stan Finney, Ochir Gerel, Gary Lewis, Kevin Telmer and Umberto Cordani (Members).

## *IUGS Commissions*

Commissions undertake the main scientific work of the IUGS. Normally, a Commission lasts for two to three terms (4 years per term), after which it either regroups as a new Commission or is terminated.

### **Commission for Geological Education, Training and Technology Transfer (COGE)**

Spurred by the Executive Council's decision to develop a Commission on Education, Training and Technology Transfer, much effort was spent in developing such a body. COGE began assisting the International Geoscience Education Organization (IGEO) in undertaking a worldwide survey of the state of earth science education in schools and outreach education.

In 2011, COGE partnered with IGEO, AGID, and International Earth Science Olympiad (IESO). COGE and IGEO advertised and supported the International Earth Science Olympiad (IESO) that has run successfully since 2007 and enters its fifth year in Italy. In partnership

with AGID, COGE is developing the final edition of the International Declaration on Geoethics. COGE established new contacts with AGID, GSaf, CIFEG, UNESCO and other institutions (e.g. NSF-ESLI, UNCSTD, AGN, AAWG), mainly focused on the launch of an initiative related with geoscience education in Africa to establish a Geoscience Education Roadmap for Africa. The Commission established new contacts with IAGD, especially related to students and professionals with disabilities worldwide regarding geoscience education, training and technology transfer. A new website has been operational since February 2011 ([www.iugscoge.com](http://www.iugscoge.com)).

For 2012, COGE will continue to accomplish recommended IUGS ARC actions items, while collaborating with IGEO, and with AGID on Geoethics and Geoscience Education. The Commission will begin the Initiative “GEO Education Roadmap for Africa” (GEO-ERA); and a new IAGD/COGE project, developing an instructional workshop related to students and professionals with disabilities. COGE participated in the IUGS EC Meeting in San Sebastian, Spain 2012. At the 34<sup>th</sup> IGC in Brisbane, COGE will run the Symposium Geoscience Education: Geoscience for Society, hold its business meeting during Congress. The Commission will also participate in the Earth Science Education Event during the 40th Anniversary IGCP in Paris.

### **Commission for Geoscience in Environmental Management (GEM)**

GEM is the primary commission in the IUGS dealing with environmental issues. GEM aims to provide guidance to geoscientists on how best to integrate geoscience into environmental policy and to communicate the concepts to potential interest groups such as policy makers, politicians, environmental Organizations, scientists from other disciplines, and the general public. GEM builds on the excellent work of the former Commission on Geological Sciences for Environmental Planning (COGEOENVIRONMENT) that completed its full term. GEM comprises 16 officers from 14 countries, with a full participation by a number of developing countries. GEM has developed its Terms of Reference, and has attained precise objectives reached through Working Groups.

Currently GEM has several active working groups on topics such as Dust, Gold and Mercury, Land Subsidence and Groundwater, Communicating Environmental Geoscience, Climate Change Adaptation, Man Made Strata and Geopollution, Drinking Water, and Geological Hazards and Territorial Sustainability. The Commission has a very active membership and will host three sessions at the 34<sup>th</sup> IGC in Australia in 2012. GEM maintains an up-to-date website, and contributed two papers to *EPISODES* in 2011 (with two more in preparation). The

Commission also publishes through the GSL. GEM has a very good network of collaborators and partners who provide considerable in-kind support. Each working group delivered several outputs and there were two internal newsletters issued within the Commission, in addition to a few external publications in 2011.

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

The aims of this Commission are to provide the means for exchanging knowledge on geoscience information and systems, to support the dissemination of best practices in geoscience information applications, to encourage the development of geoscience standards, to keep IUGS informed on geoscience information matters and to help bring interested bodies and persons together. CGI has well defined objectives and action plans, the leadership and council are dynamic and representative, outreach is excellent (flyers, website, etc.), and working groups are active. Currently the Commission has 243 members in 66 countries

In 2011, CGI conducted workshops in Africa, Asia, South America, Oceania and Europe. Globally, CGI through its Working groups and members, deliver GeoSciML, the “interoperability engine” that powers OneGeology. OneGeology is a project tightly linked to CGI. The Commission made progress on several fronts in 2011: 117 nations are now participating, while data services are increasing in number and sophistication. CGI continues to strengthen its connections with the Open GeoSpatial Consortium (OGC [www.opengeospatial.org](http://www.opengeospatial.org)) a non-profit, international, voluntary consensus standards organization that is leading the development of standards for geospatial and location based services. CGI regards the OGC is the most relevant geoservice standardization body today, and it is actually driving the field. Visit the informative website at:

[http://www.bgs.ac.uk/cgi\\_web/welcome.html](http://www.bgs.ac.uk/cgi_web/welcome.html)

The major aims of CGI in 2012 are to continue GeoSciML and Earth Resource ML development, ensuring consistency between INSPIRE data specifications, or other regional developments and CGI standards. CGI will formalize the relationship between IUGS and The Open Geospatial Consortium (OGC) with the objective of making GeoSciML an OGC standard. CGI also aims to make the ISC stratigraphic chart web accessible in 2012. The Commission will prepare for participation in a geoinformation meeting in South America and hold the postponed Asian CGI outreach workshop in mid-February in Thailand. An important task will be preparing for the Geoinformation Supersession at the IGC2012 in Brisbane. At the Congress CGI will elect a new Council and officers at the IGC in August; and provide a sound base for the continuation of the CGI activities after the change of the



Council. This will be the most important critical milestone for CGI.

### **International Commission on the History of Geological Sciences (INHIGEO)**

INHIGEO, a commission of both IUGS and the International Union on the History and Philosophy of Science (IUHPS), has 232 members in 47 countries (22 elected in 2008) and 9 Honorary Senior Members. The overall objectives are to study the history of geological sciences and publication of works on this subject fit within the stated objectives of IUGS. The Commission attempts to be involved with other international projects such as the IUHPS. INHIGEO meets usually once each year to conduct a major symposium on the history of geology, produce an annual Newsletter and work with various publishing houses and journals, including *EPISODES*. The task of INHIGEO is to promote studies in the history of geological sciences through symposia and publications.

Publication productivity in 2011 remained high, with publication of the proceedings of the 2010 INHIGEO conference held in Madrid-Almaden (Spain), under the History of Research in Mineral Resources. The annual INHIGEO Newsletter continued through 2011 as a substantial publication with 139 pages, including reports on historical research in different countries and was also circulated in pdf format as well as in hard copy. The 2011 INHIGEO Symposium 36 was held in Toyohashi (Japan) in August, with sessions dedicated to “History of Geological maps and Related Geological Images in the World”, “History of Seismology, Volcanology and Geotectonics” and General Contributions to history of Earth sciences.

For 2012, INHIGEO is expecting the approval of a new version of its Terms of Reference and Byelaws, and is preparing a ballot for incorporation of new members. Other activities in 2012 include: editing Newsletter 44, the nomination for inaugural “Vladimir V. Tikhomirov IUGS History of Geology Award” at the 34<sup>th</sup> IGC; and editing the conference volume of INHIGEO’s Annual Conference in Japan. Six symposia are planned for the 34<sup>th</sup> IGC (Biographical studies of eminent geologists: 1) A symposium in honour of D.F. Branagan; 2) The early history of continental drift: a centenary tribute to Alfred Wegner, Major achievements in 20<sup>th</sup> century geology; 3) Geology in tropical regions; 4) Geologists, resource exploration and development; and 5) General contributions in the history of geology. The Commission will elect the new INHIGEO Board, revamp INHIGEO website, and address the recommendations of the IUGS ARC.

### **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 ICS promotes and coordinates long-term international cooperation in a number of other related stratigraphic topics, is the largest and oldest body within IUGS. It comprises fourteen Sub-commissions on Stratigraphy that 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. Nearly all Sub-commissions of ICS publish regular newsletters or circulars of a high scientific calibre. ICS receives very little financial support from sources other than IUGS.

In 2011, the ICS rejuvenated its website. Important results were accomplished on the establishment of GSSPs, with the dedication of the GSSP of the Hettangian Stage (Triassic-Jurassic boundary), ratification of the GSSP for the base of the Lutetian Stage (Eocene Series) and of the Jiangshanian Stage (Furongian Series, Cambrian System), approval of the name “Calabrian” for the second stage of the Pleistocene Epoch (Quaternary System).

For 2012, primary attention of the ICS will be to promote progress on GSSPs, initiate plans to produce a new version of the International Stratigraphic Guide, and preparation of symposia, activities and subcommission meetings and an ICS workshop for the 34<sup>th</sup> International Geological Congress in 2012. The ICS will work closely with the IUGS Commission on Geoscience Information to further develop the incorporation of the International Chronostratigraphic Chart into the computer language being used to store, access, and archive geoscience information, and with the Commission on Geologic Map of the World (CGMW) to produce time scale charts, mouse pads, and posters for distribution at the 34<sup>th</sup> IGC.

### **Commission on Tectonics and Structural Geology (TecTask)**

In 2011, the board was completed with the appointment of 7 more officers, leading to a total of 15 officers; two of them should join the Executive Committee of 4 people. The nomination of junior officers is still underway, with the consideration of 3 candidates by the executive committee.

A major achievement in 2011 was “Glacier Watch.” This project aims to identify and select areas worldwide of recent exposure of relevant structures at the front of glaciers; promote the formation of research groups for studying these unique outcrops; develop an efficient protocol for quantitative mapping through the interaction

between different research groups coordinated through Glacier Watch; and select easily accessible areas that can provide natural laboratories for teaching structural geology thanks to the unique exposure of structures (e.g., Neves, Eastern Italian Alps). Another key achievement was the growth of Outcropedia Project: a public web-database of all important and beautiful tectonic (and other) outcrops in the World. TecTask supported 3 major scientific meetings, including one Penrose Conference in 2011. The Commission interacted with other international projects, in Western Africa, through training and support for the regional resource industry, with the Geo-Heritage projects in Spain and UK, with the IGCP project on geohazards and ancient societies, with the NSF projects on Geoinformatics and Geoscience Education.

For 2012, TecTask is committed to the 34<sup>th</sup> IGC with at least three sessions, two convened by TecTask officers, along with displays (posters and handouts) at the IUGS booth providing an overview of TecTask projects, Outcropedia, and Glacier Watch. A critical milestone in 2012 will be the election of a new executive committee during the 34<sup>th</sup> IGC, with a generation change and a demographic shift of officers towards a wider international audience.

## ***IUGS Initiatives***

### **Foresenic Geology**

Although the documented history of forensic geology can be traced to the latter half of the 19<sup>th</sup> Century, in the past ten years or so there have been significant interest and development in the multidisciplinary fields of forensic geology throughout the world. Since the start of the millennium, there have been at least 25 international meetings, conferences and seminars on or including different aspect of forensic geology; at least 5 books have been published on the subject; and numerous technical papers in scientific journals, conference proceedings, magazines and newspapers have been published.

The IUGS Initiative on Forensic Geology (IFG) was officially launched during the 62<sup>nd</sup> Executive Committee Meeting of the IUGS, held at UNESCO headquarters in Paris, France, February 2011.

### **GeoHeritage and Geoparks**

IUGS supports the concept of GeoHeritage. The Secretary General is primarily responsible for all GeoHeritage issues for the Union, except for representation in the Bureau of UNESCO's Global GeoParks Network (GGN) by Councillor Colin Simpson, and the European GeoParks Network (EGN) by Vice President Jacques Charvet.

Geoparks have a role to play in counteracting the decline in interest in geosciences for students. Geopark management must acknowledge and cater to the different users of the parks, to ensure that there is appropriate access to geological sites for professional and practicing geologists as well as for visitors. Their needs are significantly different. Geopark interpretive materials (maps, signs, trails, brochures, etc) need to be improved to include geological information in an engaging manner as well as good photos and diagrams to facilitate the learning process for non-geoscientists. The development, sustainable and appropriate management of Geoparks should form part of a larger global move towards environmental and cultural awareness and sensitivity to the whole of society's role in the planet earth. There is a real sense that the time is right for Geoparks, and individuals are encouraged to use the Geopark Network guidelines for the development of existing and proposed Geoparks.

IUGS also has a MoU with the International Union for Conservation of Nature (IUCN) to evaluate new GeoHeritage proposals that relate to UNESCO World Heritage site status. IUCN provides a list of sites that have geological components and IUGS has to provide a technical report. IUGS readers are only one group of 10 sets of reviewers.

## ***IUGS Task Groups***

### **Task Group on Geoheritage**

This affiliated group became active in 2010 and has a steering committee of 10 members, including 4 IUGS EC members. The Task Group has three main objectives: 1) to develop an inventory of geoheritage sites, with a list and content available from any computer; 2) to compile the regulations on trade of objects like fossils, mineral, meteorites existing in different countries and make this information available on a website; and 3) to provide a single point of reference and coordination for the current diverse activities in geoheritage being undertaken by the Union.

In 2011, the Task Group joined other organizations dealing with Geoheritage at local, national and international level, and participated in several meetings in Europe and Africa. The first general meeting occurred during the GeoReg meeting in Lille, in October. The Task Group also attended the First International Conference on African and Arabian Geoparks: Aspiring Geoparks in Africa and Arab world, El Jadida, Morocco, in November. The action plan for 2012 includes improvement of the database on regulations and the Geosites database in cooperation with ProGeo. Geoheritage will attend the 34<sup>th</sup> IGC in Brisbane (August), Pro-Geo Geoheritage in Bari, Italy

(September), and Inventory and Geoheritage in Paris, France (November).

### **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 organized with a Steering Committee and an Analytical Committee. The nine people involved represent five countries; all of them are from North America or Western Europe.

There was continued and significant project progress during 2011. The full Task Group 2011 Annual Report summarizes details, activities and scientific accomplishments within U.S., Mexico, Brazil, Columbia, China, India, Australia, Boundary Regions of China and Mongolia; East and Southeast Asia, Africa, and Europe. A training course on Geochemical Mapping and Environmental Geochemical Survey for African Countries was held in Beijing in November. The Ministry of Commerce of the People's Republic of China sponsored the course. Twenty-three geoscientists from 12 African countries (Eritrea, Ethiopia, Guinea, Liberia, Malawi, Nigeria, Sierra Leone, South Sudanese, Sudan, Tanzania, Uganda and Zimbabwe) participated lectures, field sampling training, and laboratory demonstrations. This was the second training course on geochemical mapping for Africa given by China since 2004. Public relations accomplishments in 2011 included: a) a strategy to reorganize and update the Task Group's website material; b) a GEMAS calendar; c) a CD of the FOREGS/EuroGeoSurveys Geochemical Atlas of Europe, including the two volumes of the Atlas, the analytical data, the field manual, and IGCP 259 Report. This CD continues to be distributed at international conferences, with more than 2,300 copies distributed to date. Distribution of the memorial issue DVD to honor Arthur G. Darnley (1930-2006). More than 1,000 copies were also distributed in 2011. Revision of the FOREGS Geochemical Mapping Field Manual was completed in 2011, and will likely be published by the Geological Survey of Finland in 2012. The 2012 Business Meeting will either be at the EuroGeoSurveys Geochemistry Expert Group meeting in Portugal or at the 34<sup>th</sup> IGC Brisbane.

### **Task Group on Global Workforce (TGGW)**

The IUGS-sponsored taskforce on the Global Geoscience Workforce is focused on illuminating three distinct issues: 1) Establishing definitions of comparability of data and information regarding the jobs, education, fields, and international mobility of geoscientists; 2) Determining a global baseline knowledge of the quantity and diversity of the geoscience workforce; and 3) Identifying capacity-building strategies for a durable global competency in the Earth sciences. Participants in the taskforce are recruited from national organizations such as national geological surveys or national societies who have specific knowledge of the human resource capacity of the geosciences in their geographic region and/or a specific employment regime. Most of these individuals are expected to be middle-level professionals who have as a primary responsibility to monitor these issues for their institution and to advise their leadership. During April 2009 the American Geological Institute began recruiting membership of the taskforce from the participants in the WSS-22 workshop at the 33<sup>rd</sup> IGC in Oslo, from contacts in industry and national geological surveys, and through recommendations of individuals in these populations. During that time, AGI recruited individuals from North America, Europe, Asia, Africa, and Australia, while nearing identification of individuals in South America and deeper exposure in Asia and Africa.

Late in 2010 and through 2011 additional contributing sources were identified, particularly in Africa and parts of Asia to help bolster the knowledge base for the taskforce. Latin America remains a challenge for membership and consistent information. The primary focus during 2011 was: 1) promotion of preliminary results of the data to solicit additional participants and insights from the geoscience community; and 2) improving the understanding of the source of geoscientists around the world, especially by identifying as many geoscience academic programs as possible for the intent in ascertaining a more accurate assessment of new geoscience graduate production on a global/regional basis. Presentations were made at a number of conferences and meetings in 2011, including the: EGU General Assembly Session convened -Cultural and Political Impacts on Building Global Geosciences Human Capacity; EGU General Assembly Presentation - A Global View of the Geoscience Profession, Updates from the IUGS Taskforce on the Global Geoscience Workforce; U.S. National Committee for Geological Sciences, The National Academies, Washington, D.C. Development of the Geoscience Workforce - Current Practices and Future Needs; and Geological Society of America Annual Meeting, Minneapolis, MN - Global Science, Global Problems, Local Dependencies. In addition, data from the IUGS Global Geoscience Taskforce was a major part of the following article in the 2011 EAGE Recruitment Special magazine.

For 2012 there are three primary goals for the TGGW. First, using the new knowledge of academic geosciences departments to gain an understanding of the degree production in those programs and to better understand the supply-side of the geosciences human capital system. Second, the TGGW will re-engage the active membership to update the state of geosciences in their area of expertise, especially in regards to levels of employment and migration trends. Third, AGI and AIPG are hosting a workshop at the 34<sup>th</sup> IGC in Brisbane to look at issues of licensure and accreditation of geoscientists and geosciences programs around the world. This particular issue is the defining difference between the geosciences in most countries, and it is hoped to engage a broader population to flush out the trends, issues, and potential collaborations which may increase mobility of geoscientists and improve the understanding of how geoscientists are actually defined and classified globally.

### **Heritage Stone Task Group (HSTG)**

This new IUGS Task Group is compliments Commission C-10 Building Stones and Ornamental Rocks of the International Association of Engineering Geology and the Environment. This Group is providing an ongoing working framework that facilitates formal designation of a natural stone product as a “Global Heritage Stone Resource” (GHSR). Provision is also made for associated formal designations of natural stone materials, and for formal recognition of specified features characterising natural stone resources, where deemed appropriate.

Key definitions from 2011 include: 1) *Natural stone* refers to stone (= rock), removed from its original formation, in blocks, slabs or fragments; and subsequently utilised in its natural state; 2) A *Global Heritage Stone Resource* (GHSR) is a designated natural stone that has achieved widespread use over a significant historical period with due recognition in human culture; 3) A *Global Heritage Stone Province* (GHSP) is a designated area, where two or more GHSRs are associated in close geographic proximity and by their common geology. Designations of GHSR and GHSP are the responsibility of this Task Group.

### **Task Group on Isotopes and Geochronology (TGIG)**

The goal of this Task Group is to formulate new, specific recommendations for isotopic decay constants, isotopic abundances, and uncertainties. The group is financially and morally supported by both IUGS and IUPAC. The decay constants that have been in use in the geological community for the last 22 years were endorsed and recommended by IUGS. However, recent analytical improvements have exposed potential problems with the 1977 recommendations. Critical to the success of the

work of the Task Group is that its members were viewed by the entire scientific community as accomplished, recognized practitioners, rather than consumers, of radioisotope geochemistry and geochronology. Currently, activity of the Group includes re-evaluation the major papers on half-lives that are used for the radiometric dating in order to assess the uncertainties caused by the usage of the “year” as a time unit. In 2011, the Task Group published a paper in *EPISODES* (34/1) on “Recommendation for a common definition and use of the year as a derived unit of time”.

### **Task Group on IUGS / IGC Statutes and Byelaws**

Following the recommendations of the IUGS Strategic Planning Committee report in 2000, the IUGS-IGC Councils suggested that the Union and International Geological Congress (IGC) develop a much closer relationship. The IUGS Council and IGC General Assembly were officially combined in August 2004 at the 32<sup>nd</sup> IGC in Florence, Italy to provide a clear and simple representation of the global geological community through a unified body and a more effective management of both IUGS and IGC.

A special Task Group was formed in 2010 to combine and “streamline” the existing statutes and byelaws for IGC and IUGS. The Task Group consists of Jacques Charvet and Eldridge Moores, appointed by the Executive Board of IUGS and Arne Bjørlykke and Ian Lambert appointed by the IGC Steering Committee; Pat Leahy was collectively appointed by IUGS and IGC as Chair since he had not previously held direct position in either IUGS or the IGC. The Task Group is taking steps to address conflicting passages from the new Definitions, Statutes and Byelaws for IGC and IUGS.

During 2011, the Task Group completed a revision of the Definitions, Statutes and Byelaws for IGC and IUGS, and produced two documents that were, respectively, approved by the IGCC and IUGS EC, that will be considered for approval at the IUGS Council meeting to be held at the 34<sup>th</sup> IGC (Brisbane, August 2012).



## ***IUGS Collaborative projects***

### **Geological Applications of Remote Sensing (GARS)**



Geological Applications of Remote Sensing (GARS) is a joint operation of IUGS and UNESCO and now involves 40 institutes and individuals from 28 countries, most from the developing world. 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. 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. The GARS Programme has a strong interface with other international projects and thus continues to enhance the visibility of earth science amongst the space agencies, inter-governmental UN organizations and world research programmes sponsored by the Group on Earth Observation's (GEO).

In 2011, from the Geohazard Theme perspective, the highlight was an ESF-COST High-level Research Conference on Understanding Extreme Geohazards in Sant Feliu de Guixols, Spain in December 2011. This was Co-Chaired by the GARS Chairman and attended by the GARS Secretary and UNESCO staff. The Programme Committee had representatives from GEO, UNESCO, UNOOSA, UN-Spider, ICSU, and IRDR. Fifty-two conference participants from four continents and a wide range of disciplines reviewed the current understanding of high-impact geohazards and the challenges posed to the disaster risk management cycle. Participants agreed on a declaration identifying specific actions that would address these scientific and societal challenges. Within GEO there were two major accomplishments to which the GARS Programme contributed. Firstly, the matching of Supersites activity within the Americas by the development of longer term funding for Supersites within Europe. The Supersites initiative continued to operate during 2011, providing data and scientific analysis for the Tohoku Earthquake and Tsunami in Japan, for example. In the longer term, the initiative aims to match this responsive, web-based mode of operations with a more strategic, research element. The securing of European

Framework Programme funding for 2-3 longer-term Supersites in Europe, likely to include a Volcano and a major fault zone, was a significant step in this direction, set originally in the Frascati Declaration of 2007 under IGOS and refined in the GEO GHCP Roadmap developed under GARS auspices in 2010. The second accomplishment within GEO was the inclusion of mineral resources in the GEO Work Plan for the first time. Secured through attendance at the GEO Work Plan Symposium in Geneva in May and confirmed at the GEO Plenary in Istanbul in November, this had GARS as only one of several players, but it presents a significant opportunity for IUGS and Geoscientists from 2012-15. The topic now features within two Tasks: Human Impacts for the study of pollution and waste management; and Energy and Geo-resources, for the more conventional resource exploitation aspects.

### **Geological World Heritage**

Collaboration between IUGS and the World Conservation Union (IUCN) on World Heritage Site Evaluation entered its fifth year in 2011. Through the auspices of IUGS, a voluntary service provides technical desktop evaluations of applications of proposed World Heritage sites by some 1000 geoscientists. The IUGS and IUCN evaluate candidate applications for World Heritage status. A similar agreement and working arrangement also exists between IUCN and the IAG (International Association of Geomorphologists).

There was a significant increase in the number of evaluation reports submitted this year 2011 compared to 2010. About 82% of the evaluators submitted a report in 2011 compared to less than 50% submitted from the previous year. The input of IUGS is an important contribution to the work of evaluating proposals for new World Heritage Sites. Four sites are nominated for consideration in 2012: 1) Lacs d'Ounianga, Chad; 2) Chengjiang Fossil Site, China; 3) Lena Pillars, Russian Federation; and 4) Nahal Ma'arot/Wadi el Mughara Caves/Mount Carmel, Israel.

### **Group on Earth Observations (GEO-GEOS)**

The GEO is a voluntary partnership of governments and international organizations. Membership in GEO is open to all member States of the United Nations and to the European Commission. GEO Members currently include 80 Governments, the European Commission, and an additional 58 intergovernmental, international, and regional organizations, with a mandate in Earth observation or related issues. Participating Organizations include, among others, ICSU and UNESCO (including the UNESCO-IUGS joint program GARS), as well as some ICSU GeoUnions. The GEO is coordinating international efforts to build a Global Observation

System of Systems (GEOSS), with the aim of constructing a global public infrastructure for Earth observations that, like the Internet, will consist of a flexible and distributed network that connects users to existing data bases and portals and provides reliable, up-to-date and user friendly information. GEOSS is simultaneously addressing nine areas of critical importance to people and society: Disasters, Health, Energy, Climate and Biodiversity.

During 2011, IUGS participated in a number of activities to support GEO's work: 1) a survey is in progress in the area of Architecture and Data Management; 2) ratification of IUGS Principal designation; 3) agreement with the GEO 2012-2015 Work Plan version submitted for review. The IUGS also participated in the Eight Plenary session of the Group on Earth Observations (GEO-VIII), was hosted by the Scientific and Technological Research Council of Turkey (TUBITAK) at the Istanbul Congress Center in November: the meeting was attended by representatives of 49 Countries and 30 Participating Organizations.

The 2012-2015 workplan has the following objectives: a) the implementation of an operational and sustainable GEOSS offering full and open access and including interoperable observing, modeling and dissemination systems; b) the reinforcement of coordination, user engagement and resource mobilization; and c) the development of information products and end-to-end services tailored to serve society's needs across the nine Societal Benefit Areas; 4) Acceptance of a "List of Datasets for the GEOSS Data-CORE", i.e. "GEOSS Data Collection of Open Resources for Everyone". As a result of the GEO VIII meeting several actions have been implemented, such as the introduction of changes in GEO Rules of Procedures, the establishment of two working groups, one to lead the new task in the "Institutions and Development" section of the 2012-2015 Geo Work Plan on "Advancing GEOSS Data Sharing Principles", and the other, named "Post-2015 Working Group", with the mandate to assess options and scenarios for the next phase of GEOSS implementation, including the scope of activities, institutional arrangements, internal governance and resourcing of GEO. GEO will be visible at the UN Conference on Sustainable Development (Rio+20) in Rio de Janeiro in June 2012, and the 34<sup>th</sup> IGC in Brisbane with the aim to raise their international profile and its ability to contribute to the Conference themes and outputs, and would help to position GEOSS as a leading provider of Earth observation data and information.

### **International Lithosphere Programme (ILP)**

This program (<http://www.sclilp.org>), formerly the Scientific Committee on the Lithosphere (SCL), is a joint venture of IUGS and IUGG. It seeks to elucidate the nature, dynamics, origin and evolution of the lithosphere,

through international, interdisciplinary collaboration. The Programme involves several hundred scientists from over 60 countries. A number of challenges face ILP, including the need to strengthen the connection between solid-earth and non-solid-earth aspects relevant to the lithosphere and vice-versa; bolster the profile and impact of lithosphere research and topics of societal relevance (i.e., energy and environment); attract young researchers by choosing topics and adopting integrated approaches; promote training of young researchers on lithosphere studies; and to initiate dedicated programmes that address world-class problems.

During 2011, ILP was reviewed by a joint IUGS-IUGG committee. ILP success in accomplishing its tasks following the guideline assigned by IUGS and IUGG was remarked, together with a set of recommendations to improve some organizational and administrative matters.

### **OneGeology**

The IUGS has been formally involved with OneGeology since October 2009. Since then IUGS main goal in relation to OneGeology has been to support not only its interaction with the IUGS Commission on the Management and Application of Geoscience Information (CGI), but also with other IUGS bodies and with the 34<sup>th</sup> International Geological Congress (Brisbane 2012). IUGS has identified as priority tasks: (1) to make an inventory of all geostandards sponsored by IUGS in the past; (2) to identify existing geostandards which could be endorsed by IUGS; and 3) to propose new geostandards for future development.

The 2011 meeting of the OneGeology Steering Group that was to be held at the Geological Survey of Japan, on 6-7 April 2011 was postponed due to the earthquake and tsunami that affected the eastern coast of Japan on 11 March. Meetings of the OneGeology Operational Management Group and of the OneGeology Technical Working Group, were held at the British Geological Survey in Edinburgh in July 20. The OneGeology Steering Group meeting finally took place in Tokyo on the 27<sup>th</sup> and 28<sup>th</sup> September 2011. The OneGeology Web Services Accreditation Scheme was launched in July 2011 to provide an incentive for geological surveys organizations participating in OneGeology and help them to be more responsive to the needs of current and potential users of their map data. Practicability, attainability and simplicity of operation have been the key points in the design of the scheme. There is a star rating according to the level of service attained which is related to the technical and service parameters to be met, from a Basic Web Map Service (WMS) (one star) to a Enhanced Web Feature Service (WFS) (five star), with three intermediate levels: Upgraded Web Map Service (WMS) (two star), Enhanced Map Service (WMS) (three star) and Web Feature Service (WFS) (four star).

During 2012, OneGeology strengthened linkages with UNESCO Geoparks network to create a map of GeoParks and World Heritage sites that are geologically related. The information included in the OneGeology webpages links geological landscapes and sites with the geological maps data provided in the OneGeology portal. During the 34<sup>th</sup> IGC One Geology will hold its main meetings for 2012 and plans Operational Management and Steering Group meetings, along with Directors open meeting. Other events include the symposium sessions, an exhibition booth, a social evening and a competition.

### **Planet Earth Institute (Earth Science Matters Foundation)**

The Planet Earth Institute (PEI) initiative was launched at the end of 2009-beginning of 2010, with the aim to organize a wide spectrum of promotional activities for the Earth sciences to contribute to the same ambition as the International Year of Planet Earth: to increase interest among the youth to choose for a professional career in the Earth sciences. In May 2010 the IUGS accepted an offer from the Planet Earth Institute to become an International Scientific Partner. During the second half of 2010 the PEI was involved in some problems and at a Board Meeting in September 2011 it changed its name to the "Earth Science Matters Foundation". At this meeting, the direction of its operations, its final organizational structure and conceptual targets were defined. By the end of 2011, the organization was well in place with an active website. The focal areas for the Foundation were determined: Energy, Water, Hazards/disasters and Climate Change. The ten

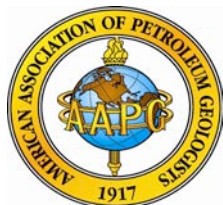
IYPE themes remain as targets for the Foundation's operations together with the eight UN Millennium Development Goals. The Foundation will operate in a top-down mode by determining themes or focal areas, but also in a bottom-up mode through its National Committees, Partners, organizations and individuals proposing relevant projects including budgets for implementation. A dedicated brochure describing the aims and ambitions of the Foundation became available by the end of November 2011 and was posted on the website.

During 2011, presentations about the Foundation were given in: February at the occasion of the 40<sup>th</sup> anniversary of the IUGS in Paris (France); in April at the annual General Assembly of the European Geoscientists Union (EGU); in Vienna (Austria), early September at the Fragile Earth Conference in Munich (Germany); late September at the European Geoparks Conference in Langesund near Oslo (Norway); in October at the annual Conference of the Geological Society of America; in November at an International Geomorphological Conference in Shaoguan (China); and in December at the First Conference of African-Arabian Geoparks in Al-Jadida (Morocco).

At the beginning of 2012 IUGS was offered to become part of ESM as a partner, but the EC decided to decline the proposal, as it was considered that the activities the Foundation could develop in relation to IUGS are currently promoted and executed by the IUGS and its different bodies.

# Organizations Affiliated with IUGS

## American Association of Petroleum Geologists (AAPG)



AAPG aims to foster scientific research, to advance the science of geology, to promote technology, and to inspire high professional conduct, aims that still guide the Association today. It is currently one of the world's

largest professional geological societies with a membership of over 32,000 of which over 4,000 are students; and over 30% of the membership works in the international arena. AAPG, together with sister organizations, is setting up branch offices around the world to better serve these members.

AAPG provides publications, conferences, and educational opportunities to geoscientists and disseminates the most current geological information available to the general public. AAPG's GIS Upstream Digital Reference Information Library (GIS-UDRIL) is now one of AAPG's most sought after products. AAPG is also a major player in the Geoscience World; and the publications aggregate now investigating the feasibility of publishing all key geoscience journals electronically. AAPG supports a code of ethics for professional geologists to assure employers and clients of the integrity of its members. Officers guide the Association and a House of Delegates is elected annually. The organization's programs are administered by an Executive Director and staff which are located in Tulsa, Oklahoma. Visit the Website at: <http://www.aapg.org>

## American Geosciences Institute (AGI)



In 2011, AGI changed its name from the American Geological Institute to the American Geosciences Institute to fully recognize the breadth of the activities of the profession and the AGI Federation. The AGI I is a non-profit federation of 44 geoscientific and professional associations representing over 100,000 members. It aims to voice the shared interests of the geological profession. In addition, it plays a major role in strengthening geoscience education and societal awareness. AGI's geoscience database GeoRef has reached 2.9 million references to become the world's largest and most

comprehensive on geoscience. AGI also participates in GeoScience World (GSW), an integrated system of dozens of journals and GeoRef. The fifth edition of the Glossary of Geology (40,000 terms) is available online, including Spanish equivalents for many terms. AGI participates as a member of the IUGS CGI Working Group for the Multilingual Thesaurus of Geosciences. AGI also organized the ninth annual Earth Science Week, together with the USGS, NASA, NOAA, IRIS, the AAPG Foundation, and the National Park Service. AGI is heavily involved in the support of teaching of earth science at the primary and secondary school level, and of popularization of earth science through television and films. It annually sponsors Earth Science Week. Activities include revamping the academic associates program. The AGI now has 50 geoscientific and professional associations including The Young Earth-Scientists (YES) network.

During 2011, AGI was very active in relation to the Center for Geoscience Education and Understanding, the online learning initiative, the two DVDs of nine short videos based on the Big Ideas of the Earth Science Literacy Principles which were distributed during AGI's 14<sup>th</sup> annual Earth Science Week, AGI's Government Affairs Program (GAP).

For 2012, AGI leadership is launching an important initiative to raise funding for the new AGI Center for Geoscience Education and Understanding. The Institute hopes to further strengthen its education programs and launch new Geoscience Critical Issues Forums. Additionally, through their Foundation, AGI is creating a graduate school scholarship for females in the geosciences. In association with the Geological Society of America Foundation, the U.S. National Committee for Geological Sciences of the National Academy of Sciences, and Shell Inc., AGI has announced a travel grant and mentoring program for students and early career geoscientists who are in, or employed at, U.S. institutions. The program includes travel grants to the 34<sup>th</sup> IGC.

## American Geophysical Union (AGU)



AGU helps to promote the development of Earth science worldwide and seeks to assure that the increasing understanding of the Earth is taken into account in formulating public policy. It is an active Union with over



54,000 members, ranging from geologists to astrophysicists. AGU is self-supporting although some grants, primarily from U.S. government agencies, to support special limited-term projects are also obtained. AGU is formally related with ICSU activities through the START Secretariat, an ICSU/IGBP activity that operates under AGU's umbrella in Washington, DC. AGU and IUGS cooperate and complement each other in achieving common objectives. Both promote the development of the earth sciences worldwide. AGU assures that the increasing understanding of how Earth works is taken into account in formulating public policy and is used to the benefit of the world's citizens. AGU also interacts with IUGG. All AGU journals are now fully electronic and their publication is faster than at any time in the past 15 years even as more pages are being published. A portion of a new AGU publication, Space Weather, is available on the web free at <http://www.agu.org>.

In 2011, the AGU produced 19 professional journals and Journal Citation Reports ranked *Paleoceanography* first for the fifteenth consecutive year. Their *Geophysical Research Letters* and *Journal of Geophysical Research-Atmospheres* both ranked among the top 10 of the most highly cited research publications on climate change over the past decade. The AGU conducted a comprehensive marketing campaign to expand the reach and number of subscriptions for AGU publications, especially in emerging markets. Their highest number of new sales was in Asia, India, Russia, and Brazil. The AGU held several major meetings and four leading edge Chapman Conferences, and conducted a Bright Students Training as Research Scientists (BrightSTaRS) program. The AGU actively promoted their scientific interests by interviews with significant political linkages in the USA and also in some other countries and doubled the number of annual press releases. The Union actively worked to educate Members of the US Congress on the importance of investing in science, with emphasis on the benefits that can be reaped from strong federal support. AGU launched the AGU Blogosphere ([blogs.agu.org](http://blogs.agu.org)), which averages approximately 108,000 page views per month. They have supported members' career growth by launching an online career center ([careers.agu.org](http://careers.agu.org)) that offers a one-stop repository allowing qualified applicants to connect with potential employers more quickly. One Area continues to promote the development of Earth sciences worldwide.

### Arab Geologists Association (AGA)

Arab Geologists Association, founded in 1975 and based in Baghdad, is a union of professional scientists that does not interfere in political affairs and religious beliefs. The AGA represents geological bodies in Arab countries, and is working to raise the level of Arab geologists morally and financially through the exchange scientific

information and experience in various professional and technical fields at national and international levels. On an annual basis, the AGA helps to organize seminars, conferences and fieldtrips that focus on geological research in Arab nations. AGA has a significant role in promoting IUGS visibility in Arab countries.

The Arab Geologist Association and the Iraqi Geologist Union were active in 2011. There were ten meetings held during the year and the major issue of the current leadership is "The Professional allocator". Major accomplishment during 2011 was the publication of the Iraqi Geological Journal. The major activity was the 10<sup>th</sup> Jordanian Geological Conference held in April 2011.

### Association of Applied Geochemists (AAG)

The Association of Applied Geochemists (formerly the Association of Exploration Geochemists - AEG) specializes in advancing the science of exploration and environmental geochemistry and furthering the interests of both geochemists and geochemistry by encouraging research and development and the distribution of scientific information. The new name better reflects its scope and its membership. It had an active membership about 500 during 2008. The Association has a ten-member Board of Councillors and Regional Councillors outside North America representing the southern Africa, Brazil, Chile, southern Asia, China, United Kingdom and Republic of Ireland.



The Association sponsors the publication of the journal *Geochemistry: Exploration, Environment, Analysis* in partnership with the Geological Society of London, and publishes a quarterly newsletter, *Explore*, which is distributed throughout the world and contains timely articles on a variety of applied geochemistry topics. The Association also produces special publications and conducts short courses on topics of concern in the fields of applied geochemistry. Visit the Website at: <http://www.appliedgeochemists.org/>

In August 2011, AAG hosted the 25<sup>th</sup> International Applied Geochemistry Symposium in Rovaniemi, Finland. This was jointly organized by the Finnish Association of Mining and Metallurgical Engineers, the Geological Survey of Finland, and the University of Oulu, and was attended by 390 participants from 45 countries. The Association's Gold Medal for outstanding contribution in Applied Geochemistry was awarded to Dr. Eion Cameron (Geological Survey of Canada, retired). The Association continues to sponsor the publication of the *Journal of Geochemistry: Exploration, Environment, Analysis* in partnership with the Geological Survey of London, and also publishes a quarterly

newsletter EXPLORE. AAG also produces special publications and conducts short courses in the area of applied geochemistry.

### Association of African Women Geoscientists (AAWG)



In 2011, the number of members in the AAWG increased to 400 from 32 countries, including non-African nations. The AAWG published its newsletter entitled “Women & Geosciences News”. AAWG now counts 400 members from 32 countries. It

is communicating with its members by a yearly newsletter entitled “Women & Geosciences News”. During 2011, a new AAWG website was designed, highlighting the IUGS logo.

The AAWG became an associated organization to Geosciences InfoRmation in AFrica (GIRAF) in 2011. To promote the AAWG African Geoparks Network, many presentation were given in different events: (62<sup>nd</sup> IUGS annual meeting held at Paris (France); Information meeting with UNESCO delegates and obserers about the geoparks activities of UNESCO held at Paris (France); Royal Agriculture College Students Conference (UK); Regional conference entitled “Leveraging best practices to accelerate quality improvement in teaching, learning and research in Higher Education in Africa” and formal launch of UEMOA-funded project of UNESCO Bamako Cluster Office (Mali); Workshop on “Cultural landscapes” organized by Euromed Heritage 4 and the Ministry of Culture of Tunisia, Hammamet (Tunisia). In order to promote the Geopark concept on the African continent and also to build the capacity of local community, a mission was organized to Tunisia where many meetings were held with representatives of local communities, associations and responsables. A field trip was organized to Zaghoun aspiring geopark. A website dedicated to the AGN and its activities was created. The AAWG was represented in the capacity building workshop on Skills development in preparing project applications for IGCP (Nairobi, Kenya) and in the World Heritage workshop aimed at strengthening the technical networks of the Advisory Bodies, to support the identification, evaluation and conservation of World Heritage properties organized by IUCN in Mombasa.

Two main activities were conducted in 2011: 1) A workshop, entitled “Earth Sciences Education in primary and secondary schools and its adaptation to Higher Education programs”, was organized in June. During this workshop, AAWG Cameroon was launched officially. 2) The First International Conference on African & Arabian Geoparks, entitled “Aspiring Geoparks in Africa and

Arab world”, to place in November in El Jadida, Morocco. This conference received 87 abstracts representing 39 countries and was attended by 100 delegates representing 31 countries from the five continents. Many international organizations were represented during the conference: UNESCO, GGN, EGN, Chinese Geoparks Network, GSAf, GSR, USGS, CoGE-IUGS, Geoheritage Task Group-IUGS, YES Network and Earth Science Matters Foundation/

AAWG is organizing its 6<sup>th</sup> conference entitled “Women and Geosciences for African Integration” in Yaoundé (Cameroon), April 2012. They are also co-organizing with YES Network a roundtable on “Women in Geosciences” during the 2<sup>nd</sup> World Congress of the YES Network, Brisbane (Australia). An AAWG member is co-convening the AGID symposium entitled “Role of Women Geoscientists in Resource Development” organized during the 34<sup>th</sup> IGC. AGN and AAWG are organizing in 2012 two workshops one in Zaghoun aspiring Geopark (Tunisia) and one in Dakar (Senegal).

### Association of European Geological Societies (AEGS)



The Association currently has 30 members from 29 countries. Membership to AEGS is open to all non-governmental societies, institutions and organizations in Europe active on a countrywide scale in geology or earth sciences. Since 1975,

AEGS has helped in the organization of the biannual meetings: MAEGS (Meeting of the Association of European Geological Societies). In this way the association serves as a “clamp” for European geological sciences, especially on the level of the national geological societies. Visit the Website at: <http://aegs.org/aegs.html>.

### Association of Geoscientists for International Development (AGID)



AGID operates as a decentralized organization with autonomous national groups in countries such as Bangladesh and Nigeria. The Association encourages communication between individuals, societies,

agencies and corporations with interest in the application of geosciences to sustainable development and further encourages and promotes activities in geoscientific fields that are related to the needs of developing countries. The headquarters are in Bangladesh.

In 2011, a successful international meeting on Geoethics was held as part of the Mining Příbram Symposium and further progress in Africa (Nigeria) with the AGID schools initiative, “The Earth and Me”. Several editions of Geoethics News and the AGID Geoscience Newsletter were issued during the year. Drafting of a proposed new constitution for the organisation, more suitable for the current decentralised structure of AGID, is in progress and will be completed early in 2012. Several AGID members took part in a study in Nigeria looking at the interesting phenomenon of eating clays, a common practice among pregnant women and tribes in Africa. The composition, and health effects of the sampled geophagic clays were studied and results presented at the 1<sup>st</sup> Clay and 2<sup>nd</sup> Geophagia Clay Conference in Africa in October. Also in October, the traditional International Section on Geoethics was hosted at the 50<sup>th</sup> Jubilee Mining Příbram Symposium. This included the regular meeting of the Working Group for Geoethics. Representatives from 12 countries with more than sixty delegates were present at the meetings on geoethics and the total number of printed contributions was 29 with 24 oral presentations. The AGID Geoscience Newsletter continues to be produced and distributed for a 25<sup>th</sup> year due to the continued dedication of its editor, AGID past President, Shrikant Limaye. Number 61 was published in June and 62 in December 2011, and is being distributed to over 700 recipients around the world. With similar dedication, Dr Vaclav Nemec produced four editions of Geoethics News in 2011. In addition, AGID contributed in 2011 to IGCP Project 523 (GROWNET), and was concerned with constructing a website with examples of best practice in groundwater development projects in low-income countries.

### Association Pour l'Etude des Argile (AIPEA)



AIPEA is an old, well-established association, which has a well-defined scientific focus. The association has played an important role in promoting clay mineral research worldwide. It serves a small scientific field, which today is of considerable practical importance (for instance with the increased application in environmental science). The aim of AIPEA 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.

AIPEA's efforts in 2011 were directed to develop and further improve its website, to produce the annual Newsletter and to organize its Ordinary Meeting that took place in Antalya, Turkey, during EUROCLAY 201, where several students received awards.

### Balkan Geophysical Society (BGS)



This is a non-profit organization that unites the Geophysical Societies of the Balkan countries (Albania, Bulgaria, Greece, Romania, Serbia and Turkey).

The objectives of the BGS are to promote the application of geophysics, to foster the collaboration and mutual assistance between geophysicists of member countries. The BGS achieves its objectives through joint research projects, publications, congresses, workshops, courses, inviting lecturers. BGS is an associated society to EAGE, SEG, SPE and IUGS. Visit the Website at: <http://www.balkangeophysoc.gr>.

### Carpathian Balkan Geological Association (CBGA)



The objective of this group is to promote and encourage joint fundamental and applied geological research, as well as training and specialization, in the Carpathian-Balkan realm. This concerns virtually all branches of the geological sciences (including geophysics), their environmental implications, and related disciplines. CBGA interfaces internationally with IGCP. CBGA unites 14 collective members which are: Albania, Austria, Bulgaria, Czech Republic, F.Y.R. of Macedonia, Greece, Hungary, Montenegro, Poland, Romania, Slovakia, Slovenia, Serbia and Ukraine. Activity of CBGA is connected to IGCP and to the Central European Initiative (CEI).

The CBGA council meeting was in September 2011 in Belgrade, Serbia. Scientific activities consisted of the working groups organised for different research fields, such as Petrology, Tectonics, Hydrogeology, etc. Also in September, the 17<sup>th</sup> meeting of AEGS was organised in Belgrade. Preparation of the website began for the forthcoming CBGA 2014 Congress to be held in Tirana, Albania.



## Commission for the Geological Map of the World (CGMW)



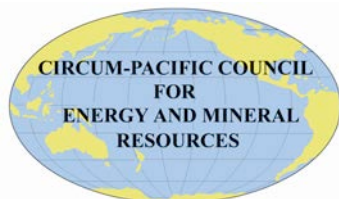
CGMW aims to promote, coordinate, publish and disseminate Earth Science maps at a small scale of continental and/or oceanic areas of the World. Geological Surveys or organizations responsible for national geological mapping of all countries and territories

of the World are statutory members, whereas others interested groups are allowed to join as Associated Members.

In 2011, the CGMW attended 5 international meetings: 23<sup>rd</sup> Colloquium of African Geology, Johannesburg (South Africa), in January; European Geoscience Union, Wien (Austria) in April; the 14<sup>th</sup> Latin American Congress, Medellin (Colombia), August-September; OneGeology steering committee, Tokyo (Japan), in September; and the American Geophysical Union Fall Meeting, San Francisco (USA), in December. The major accomplishments in 2011 were: i) publication of the Seismic Atlas of the Messinian Salinity Crisis markers in the Mediterranean and Black Seas; ii) several major mapping programs in completion to be presented at the 34<sup>th</sup> IGC: Structural Map of the Atlantic, Structural Map of the Pacific, International Geological Map of Asia, Magnetic World Maps, Geology of the World's oceans, Structural Map of the Alps. The CGMW has a partnership with the French Geological Society to publish scientific syntheses and an informal agreement with IUGG to publish international Geophysical maps such as the World gravimetric maps (3 maps, 2012), the European map of magnetic declination (2012). The production of the Commission, especially maps, is regularly presented in *EPISODES*.

## Circum-Pacific Council for Energy and Mineral Resources (CPCRM)

CPC develops and promotes research and cooperation among industry, government and academia for the sustainable utilization of earth



resources in the Pacific Region. The Council's goals include: improving knowledge of earth resources and damaging geologic hazards in the Pacific Region; increasing collaboration among geologists, hydrologists, biologists, oceanographers and related scientists; and disseminating earth-science information through maps, publications, symposia and workshops.

The Circum-Pacific Council had a very active year in 2011. Two major Director's meetings were held: in May at the Geological Survey of Finland in Helsinki, in conjunction with the 2011 GeoHab Conference; the other in October in Nadi, Fiji in conjunction with the SPC/SOPAC Divisional meeting and STAR science sessions. The Council continued to facilitate the publication of scientific results, such as the support provided for a Special Issue of Continental Shelf Research on "Geological and Biological Mapping and Characterization of Benthic Marine Habitats" (2011). Insights published a book entitled "Seafloor Geomorphology as Benthic Habitat, GeoHab Atlas of Seafloor Geomorphic Features and Benthic Habitats".

Highlights for 2012 include a Director's Meeting to take place on Orcas Island, Washington State, and a CPC sponsored workshop entitled "Geoscience Characterization of the Seabed for Environmental Assessment of Marine Renewable Energy Activities" at the end of April. A CPC Director's Meeting will also be held in Noumea, New Caledonia in November, followed by a workshop on "Marine Benthic Habitat Mapping for Fisheries". In addition, plans are being formulated for a CPC sponsored coastal and marine mapping workshop to be held later this year or early 2013 in Chile that will address geological and biological mapping techniques beneficial for Latin America. Visit their Website at: <http://www.circum-pacificcouncil.org/>

## Drilling, Observation and Sampling of the Earth's Continental Crust (DOSECC)

DOSECC is a not-for-profit corporation whose mission is to provide leadership and technical support in subsurface sampling and monitoring technology for



addressing topics of scientific and societal importance. It comprises 54 Member Institution that provide input to a Board of Directors and President on promoting a coordinated and integrated continental scientific drilling program for the earth science community. Funding for drilling projects comes from numerous international sources, including the International Continental Scientific Drilling Program (ICDP) and various national scientific funding agencies (e.g., United States, Germany, Austria and Switzerland)

Since the late 1990's DOSECC has performed or provided expertise or drilling equipment to more than 35 scientific drilling projects throughout the world. DOSECC's chief accomplishments over the last five years include successful completion of many international drilling projects, design and manufacture of the Global Lake Drilling System (GLAD800), design and manufacture of a suite of soft sediment sampling tools



allowing collection of deep sediment samples in lakes and marine environments, and increased interaction with the scientific drilling community. For the next five years, the Organization anticipates completion of many international drilling projects, and increase of education and outreach.

### **European Association for the Conservation of Geological Heritage (ProGEO)**

ProGEO aims to promote the conservation of Europe's rich heritage of landscape, rock, fossil and mineral sites. It informs a wide public of the importance of this patrimony, its' relevance to modern society, and advising those responsible for protecting our Earth heritage. ProGEO organizes and participates in research into all aspects of planning, science, management and interpretation that are relevant to geoconservation. To involve all countries in Europe, ProGEO exchanges ideas and information in an open forum, and taking a full part in conservation in a global setting, including the formulation of conventions and legislation.

This affiliated group was very active in 2011, holding one central European meeting and three regional working group meetings. A new regional working group was formed in southwest Europe and their first meeting was September 2011 in Caravaca de la Cruz, Spain. The regional group of southeastern Europe held a meeting in Elazig, Turkey in September, where a new leader from Romania was elected. UNESCO collaborates with ProGEO through GARS. ProGEO organizes or sponsors a number of events and are very supportive of IUCN and the Geoparks Network.

### **European Association of Science Editors (EASE)**

EASE (<http://www.ease.org.uk/>) is a non-governmental and not-for-profit organization, registered in England and Wales, and operated exclusively for the advancement of science editing and educational purposes. Since 2000, it has been a Company Limited by Guarantee in the UK. Membership is just under 900 from 55 countries, with some 40 % of members from the UK and 15 % outside Europe. EASE is an international non-governmental organization in a Category C relationship with UNESCO and Category A liaison with Technical Committee 46 of ISO (Information and Documentation Subcommittee 9; Presentation, identification and description of documents). The aims of EASE are in promoting improved communication in science. EASE is a not-for-profit organization, registered in England and Wales. EASE is affiliated to both IUGS and the International Union of Biological Sciences and is



an international non-governmental organization in relationship with UNESCO and the International Organization for Standardization. EASE also co-operates with editors' associations around the World, and is represented at meetings of ISO and BSI.

In June 2011, the EASE triennial conference was held. Training Workshop for Editors was held in Warsaw, Poland in January 2011 and a Peer Review Workshop was held in Barcelona, Spain in June. The major issue of the current leadership is the recruitment and retention of members. Major accomplishment of the organizations is the publication of Author Guidelines, which has been translated into 15 languages.

### **European Federation of Geologists (EFG)**

The EFG was established in 2009 and includes 20 country members. The main activities in 2010 were devoted to the implementation and management of EFG European Projects. GEOTRAINET, "Geo-Education for a sustainable geothermal heating and cooling market", is a European initiative for training and education of designers and drillers of geothermal heat pumps. The EFG is also involved in the EURO-AGES, "European Accredited Geological Study Programmes", developing Europe-wide quality standards and criteria for the assessment of higher education programmes in geology. Project TerraFirma is a Pan-European ground motion information service on several thematic areas: tectonics, flood and hydrogeology using satellite radar data. It is elaborated by ESA within the GMES Programme (Global Monitoring for Environment and Security) and started in 2003. The last three-year stage will end in 2012. A follow-on project involving the EFG: PanGeo, starts in 2011 for 3 years. EFG is also involved in the activity of panels of experts on: Geothermal Energy, Engineering Geology, Natural Hazards & Climate Change, Resources and reserves minerals and their sustainable use, Environmental Impact, Hydrogeology, CO<sub>2</sub> Geological Storage.

Key events for the EFG in 2011 included the nomination of new Officers to the EFG Council in Budapest. The EFG participated in GEOTRAINET Final Conference at the Royal Academy of Sciences, Brussels in January. In 2012, EFG will be present at the 34<sup>th</sup> IGC with a symposium on "Strengthening communication between fundamental and applied geosciences and between geoscientists and public".

## European Geopark Network (EGN)



Established in 2000, the European Geoparks Network (EGN) aims to protect geodiversity, to promote geological heritage to the general public as well as to support sustainable economic development of geopark territories primarily through the development of geological tourism. The network has drawn together territories from across Europe that share these aims and which are now working together in an active and dynamic way to achieve them. It constitutes the European branch of the Global Geoparks Network. Its affiliation with IUGS mirrors the closer cooperation between IUGS and the Global Geoparks Network through UNESCO. The network includes 43 territories across 17 European countries and operates primarily by continuous electronic communication, frequent coordination meetings, annual conferences and the establishment of common projects through which territories can exchange ideas, experience and best practice thereby supporting each other to achieve common goals.

In 2011, EGN held two meetings of the Advisory and Coordination Committees, one in Brecon, Wales, UK in March, and the other in Larvik, Norway, in September. The latter was followed by the 10<sup>th</sup> European Geoparks Conference in Langesund. Seven new Geoparks were accepted for Europe in 2011: Muskau Arch Geopark - Germany/Poland; Sierra Norte de Sevilla Natural Park, Andalucía – Spain; Burren and Cliffs of Moher - Republic of Ireland; Katla – Iceland; Bauges – France; Apuan Alps – Italy; Villuercaas-Ibores-Jara – Spain.

## European Mineralogical Union (EMU)



EMU members are national scientific societies from European countries, including Russia, with only one member per country allowed. The objective of EMU is to further European cooperation in the mineralogical sciences (mineralogy, petrology, geochemistry). The activities include the organization of meetings and schools, and book publishing. EMU has traditionally been involved both in the basic and the applied part of mineral sciences. EMU has built strong bridges to all other fields of geo- and material sciences where solid matter is present as a component of the geo-system studied. EMU keeps similarly strong connections with related fields in environmental, analytical and material sciences, physics and chemistry

In particular, it supports the Experimental Mineralogy, Petrology and Geochemistry (EMPG) and the European Union of Geosciences (EUG) meetings. EMU is an active organization with an excellent track record in organizing Schools, co-sponsoring International Conferences, widely spread over Europe and annually awarding medals for Research Excellence in Mineralogy, Petrology and Geochemistry.

In 2011, an EMU school was organized on '*Bulk and surface structures of layer silicates and oxides: theoretical aspects and applications*' in Rome, Italy, in July. An EMU School on '*Electron microscopy and nanoscale phenomena in minerals*' is planned for 2013 in Granada, Spain. EMU helped 56 institutional libraries facing serious financial difficulties (mainly in Eastern Europe and Latin America) by donating them free subscription of European Journal of Mineralogy. Two further volumes of the EMU Notes in Mineralogy were printed in 2011: '*Industrial Mineralogy*' and '*Layered mineral structures and their application in advanced technologies*'. EMU continues publication of the high-impact journal *European Journal of Mineralogy*.

## Geochemical Society (GS)



The Geochemical Society encourages the application of chemistry to the solution of geological and cosmological problems. Its membership (around 3000 from about 45 countries) is international and diverse in background, encompassing such fields as biogeochemistry, organic geochemistry, high and low-temperature geochemistry, petrology, meteoritics, fluid-rock interaction, and isotope geochemistry.

The Geochemical Society sponsors (jointly with the European Association of Geochemistry) the V. M. Goldschmidt Conference: a broad-scope conference covering all aspects of geochemistry and cosmochemistry. The Geochemical Society sponsors (jointly with the Meteoritical Society) the professional research journal "*Geochemica et Cosmochemica Acta*," as well as a quarterly newsletter "The Geochemical News," a quarterly newsletter which distributed to all members. In addition, the society publishes two book series, the Special Publications Series and, jointly with the Mineralogical Society of America, the Reviews in Mineralogy and Geochemistry Series. The Geochemical Society sponsors (jointly with the European Association of Geochemistry) the V. M. Goldschmidt Conference, a broad-scope conference covering all aspects of geochemistry and cosmochemistry.

## Geological Society of Africa (GSAf)



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

and other meetings. GSAf has now ca 600 nominal members from 35 African countries and 19 countries outside the continent. The Society does not directly implement scientific projects but continues to encourage members to take the initiative and become involved in international collaborative research. GSAf does not run its' own projects but is involved in bringing African scientists more actively into IGCP projects.

In 2011, the GSAf was involved in Earth Science Education initiatives in Africa (UNESCO, GSA, AGI, AAWG). The GSAf submitted a proposal of establishment of Regional Excellence Centers in Earth Sciences in Africa. The Society is working as steering committee member in AEGOS and GIRAF projects. The GSAf also become a member of the technical committee in developing framework on management of mineral resources in the ACP countries in 2011. The 23<sup>rd</sup> Colloquium of African Geology was held during the year. The GSAf participated in the 50<sup>th</sup> IUGS anniversary (Paris, France); the AEGOS meeting and conference (Dakar, Senegal); a mineral resources workshop and technical meeting (Brussel, Belgium); RIO+20 meeting (Pretoria, South Africa); a mineral resources conference in Western and Central Africa regions; and the First International Conference on African and Arabian Geoparks, FICAAC (El Jadida, Morocco). In 2012, the GSAf is preparing their 24<sup>th</sup> colloquium and the 40<sup>th</sup> anniversary of the society. The GSAf partly sponsored 10 young Earth Scientists to attend the YES conference organized jointly with the 23<sup>rd</sup> Colloquium of the African Geology "CAG23" held in January 2011. CAG24 will be in Ethiopia in 2013. Visit the Website at:

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

## Geological Society of America (GSA)



The GSA is a broad, unifying scientific society, which aims to foster the human quest for understanding the Earth, planets, and life, catalyzing new scientific ways of thinking about natural systems and applying geoscience knowledge and insight to human needs and aspirations and

stewardship of the Earth. There are now more than 24,000 members within the categories: Professionals,

Students, Recent graduates, & K-12 teachers. GSA has affiliates in 99 countries, 7 regional Sections within the U.S. with 40+ scientific specialties and interests who belong to one or more of 17 special interest Divisions from education, industry, and government. GSA student members represent 30% of GSA's total membership.

The GSA organized 10 meetings in 2011 included the Penrose Conferences, Field Forums, Specialty Meetings, Section Meetings. Their Annual Meeting & Exposition in Minneapolis attracted over 6,300 attendees from across the globe. Regional Section Meetings in the USA had a combined attendance of approximately 3,200, and four Penrose Conferences were held (Colombia, Spain, and 2 in the USA). GSA also sponsored a Specialty Meeting in Ankara, Turkey, which attracted over 400 people from 37 countries. GSA published 18 peer-reviewed scholarly books in fiscal year 2011 including 12 volumes in The Special Paper series, 2 volumes in The Memoir series, and 4 Field Guide volumes. In 2012 the GSA will engage in a Strategic Plan update focusing on where the geoscience profession is going and what role the GSA will play in that future. Visit the Website at

<http://www.geosociety.org/>

## Geological Society of France (SGF)

The Geological Society of France is a non-profit association built in 1830. It is composed of 1100 members, 1600 subscribers for one of its publications. The SGF interfaces with worldwide projects by the participation in the Geoscience world aggregate. It publishes scientific results in a bulletin (6 issues per year) and various books, organizes scientific meetings, for scientists and a larger public. SGF is part of the French Federation of Geology and is merged with UFG (Union Française des Géologues). The Society plays an important role in the preservation of geological heritage. A critical milestone achieved during 2010 was the merging of three major French geological societies (SGF-UFG-CNFG).

In total 17 meetings were held in 2011, including meetings of the Administration Council and board, one General Assembly and various commissions. A major issue in 2011 the merger of three major French geological societies (SGF-UFG-CNFG). SGF is now the Adhering Organisation to IUGS; and the role of the former CNFG. The first General Assembly of the new SGF took place in March 2012. SGF's objectives for the next five years include successful completion of additional international publication projects, increased education in Geosciences, protection of our Earth heritage, increase of the interaction between the academic and industrial communities and international outreach.



## Geological Society of India (GSI)

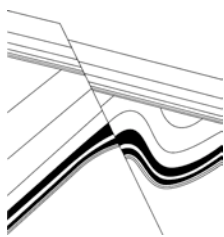


The Geological Society of India (GSI) was founded in 1958 with the main objectives of promoting the cause of advancement in all branches of Earth Sciences in India by co-operating with other institutions with similar objectives. The GSI has some

1425 members, 683 Honorary Fellows and 10 Corporate Members. There is now a strong affiliation with the IUGS through the MOU formalizing the GSI editorial and production support to publish *EPISODES*.

In 2011, the GSI continued with an important program of monthly meetings and lectures that provide a platform to young scientists, researchers, professionals and academicians to present their results of research. During the year all the four issues of *EPISODES* were published on schedule, including Vol. 34, No. 2 (June 2011), No. 3 (September 2011), No. 4 (December 2011) and Vol. 34, No. 1 (March 2012). The last one, dedicated to the 34<sup>th</sup> IGC includes overview papers and articles on the geological setting of the regions where the IGC field trips are to be held. The GSI website ([www.geosocindia.org](http://www.geosocindia.org)), which is linked to the IUGS website, underwent significant improvements with a continuous updating of its database. Author and/or Subject specific retrieval of data from the Society's Journal since 1970 is easily obtained. The database is being developed through a project with funding from the Department of Science and Technology was extended to 2011.

## Geologische Vereinigung (GV)



Geologische Vereinigung has 1600 members in 64 countries; but its Executive Committee is almost entirely Germanic. GV promotes the Earth sciences within the framework of modern society; fostering understanding between individuals,

organizations and institutions is regarded as being an important part of its role, which it undertakes through promoting Annual Meetings, short courses and excursions.

In 2011, the GV held its annual meeting "Fragile Earth – Geological Processes from Global to Local Scales, Associated Hazards & Resources" in Munich; this was a joint forum with the Deutsche Gesellschaft für Geowissenschaften and the Geological Society of America. Special support is provided for students to attend meetings and short courses. The GV section "Sedimentology" and the optional combined membership

with the Deutsche Mineralogische Gesellschaft was established in 2011. The society continues to communicate with its members by *Geowissenschaftliche Mitteilungen*, a quarterly journal jointly edited with the other Earth-Science societies of Germany. It also publishes the "International Journal of Earth Sciences" and the book series "Frontiers in Earth Sciences". Visit the Website at <http://www.g-v.de/>

## International Association for Engineering Geology and the Environment (IAEG)

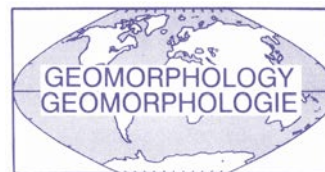


The IAEG is devoted to the investigation, study and solution of engineering and environmental problems, which may arise as the result of the interaction

between geology and the works and activities of man as well as to the prediction and the development of measures for prevention or remediation of geological hazards. IAEG is a worldwide scientific society with more than 24 associated members, and 3543 individual members in 55 National Groups.

In 2011, the IAEG Secretariat was moved from Paris to Beijing. There were several conferences, among them the 8<sup>th</sup> Asian Regional Conference on Engineering Geology (Bangalore, India), the International Symposium on Earthquake Induced Landslides and Disaster Mitigation (Chengdu, China), ENGEOPRO-2011 (Moscow, Russia), the International Scientific Conference Marcel Arnould (Paris, France). The IAEG continued to publish the successful Bulletin of Engineering Geology and the Environment with Springer and distributed a newsletter and ran 22 Commissions on a variety of subjects (one of which is Building Stones which is relevant to IUGS). Virtually every member country organized some sort of national conference on engineering geology in 2010. Visit the Website at <http://www.iaeg.info/>

## International Association of Geomorphologists (IAG)



IAG was founded to promote and develop collaboration in geomorphology between nations; affiliation is via National Scientific

Members. It is an extremely active scientific association with 39 national members. IAG runs a number of working groups and task forces, such as those on Arid Regions, Geoarchaeology, Large Rivers, Volcanoes, Geomorphological Sites, Sediment Budgets in Cold



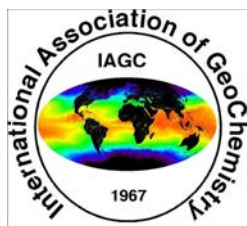
Environments, Rocky Coasts Geomorphology, Human Impact on the Landscape, Earth Systems, Geomorphological Hazards, Global Change and Geomorphology, Geomorphological Mapping and Planetary Geomorphology.

The Association also sponsors conferences and publishes scientific material. IAG's income is derived from annual fees paid by affiliated National Scientific Members and from scientific publications royalties (e.g. Encyclopaedia of Geomorphology). Most of the income serves to run a number of working groups and to support training activities for young geomorphologists, mostly from developing countries. Changes in the IAG constitution now give member organizations from severely low income countries exemption from fees provided they submit annual report of their activities. IAG is very active in publishing, and they have a very positive approach to cooperation with other scientific bodies. There are now fifteen Working Groups, many with no financial support from IAG. There is some income from membership fees, but considerable income from book royalties (e.g. Encyclopedia of Geomorphology) and their website ([www.geomorph.org](http://www.geomorph.org)) is extremely popular. IAG are actively seeking new members and will continue to promote geomorphology to young students. Publication with Wiley will continue. In 2011, the Executive held its annual meeting in Addis Abeba, operated several working groups, including a new one on geoheritage (Danxia in China), and had training courses for young geomorphologists. IAG continued to support the GeoParks movement. IAG has a long history of successful collaboration with IUGS. Visit the website at (<http://www.geomorph.org/>)

### International Association of Geochemistry (IAGC)

The IAGC is a pre-eminent international geochemical organization with over 500 members, whose prime objective is to foster co-operation in, and advancement of, geochemistry in its broadest sense. They sponsor meetings and publications organised by Working Groups to study problems that benefit from international co-operation.

The IAGC has a website ([www.iagc-society.org](http://www.iagc-society.org)) run through the IAGC Business Office and a server in Columbus Ohio. The website allows new users to join IAGC online and both new and renewing members to pay their membership dues, and subscribe to Applied Geochemistry online.



### International Association on the Genesis of Ore Deposits (IAGOD)

The Association's principal objective is to foster cooperation in, and advancement of, geochemistry and cosmochemistry in their broadest sense by working with any interested group in planning symposia and other types of meetings related to geochemistry, by sponsoring publications on topics not normally covered by existing organizations; and by the appointment of Working Groups to study problems that require, or would profit from, international cooperation. IAGOD plays a vital role in ore deposit research, together with other bodies (SGA, SEG, IGCP), with whom they cooperate. It is noteworthy, how much is achieved by IAGOD with small financial contributions by its membership. Visit IAGOD at [www.iagod.org](http://www.iagod.org).



### International Association of Hydrologists (IAH)

IAH (<http://www.iah.org/>) aims to advance public education and promote research in hydrogeological sciences. IAH is an organization of more than 3800 individual members and 44 national chapters from over 135 countries. In parallel with the preparation for the World Water Forum, IAH continues in international partnership projects with UNESCO. IAH is a charitable, incorporated organisation registered in the United Kingdom.



IAH continued its active participation with bodies with responsibilities for water management in the UN-system. With UNESCO the most significant are WHYMAP (Hydrogeological Map of the World) in 2011. IAH, through its Commissions and Chapters, organized and co-sponsored nearly 20 groundwater related meetings around the world. A new structure of commissions, networks and working groups was established mid 2011 with stronger reporting requirements. The IAH publication, Hydrogeology Journal, published by Springer, has become one of the major cited international journals dealing with groundwater issues. A key activity of IAH in 2011 was a conference in Pretoria the theme: "Groundwater: our source of security in an uncertain future", South Africa in September, held jointly with the Groundwater Division of the Geological Society of South Africa. The 320 participants were dominantly from within South Africa, but there were IAH colleagues from a number of countries in Europe, elsewhere in Africa and Asia. International IAH meetings were also held during the year in Morocco, Greece and Spain, and senior IAH

members also participated in international events in South Africa for World Water Day in March, Stockholm Water Week, Drinking water conference in Moscow, GSA in Minneapolis and AGU in San Francisco. The Executive of the Association met three times: in February, June and September; and the Council of the Association met in Pretoria in September. Many of IAH's national chapters held regular scientific meetings throughout the year, sometimes in collaboration with national geological and groundwater associations. These included France, Spain, UK, Ireland, Colombia, Netherlands, Canada, Australia, Denmark, Slovenia, Croatia, and the USA. IAH, through its Commissions and Chapters, organised and co-sponsored nearly 20 groundwater related meetings around the world.

### International Association for Mathematical Geosciences (IAMG)

The IAMG is an independent organization, with links and affiliations with other organizations such as the International Statistical Institute (ISI), American Association for Petroleum Geologists (AAPG). This specialised Association 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 organizations. A Student Grants Programme supports graduate student research in broad areas of mathematical geology for the purposes of advancing the development and application of quantitative methods in the geosciences.



The IAMG continues to be an active organisation with a strong focus on publications. During 2011, the IAMG continued to publish their three international scientific journals: *Computers & Geosciences* with Elsevier as publisher, and *Mathematical Geosciences*, and *Natural Resources Research*, with Springer. The Association continues to offer their monograph series (currently nine titles) with Oxford University Press; and have five titles in their series of Studies for Students. They issue a semi-annual Newsletter. In 2011, they sponsored several conferences and courses in the USA, Spain, China; and in the 50<sup>th</sup> Mining Pribram Symposium (Czech Republic), the IAMG supported 7 YES Student Chapters and funded travel to conferences for two students. The Association will provide research grants to 5 graduate students for 2011-2012.

For 2012 and beyond, future focus is directed to: 1) encourage the formation of new student chapters, and

increase the activity of existing ones; 2) identify and reward scholars in the mathematical geosciences through one of their several prizes and Distinguished Lecturer programs; 3) continue sponsoring events related to mathematical geosciences such as courses and conferences; and 4) continue to improve the quality and reach of their publications and newsletter. During 2011 they increased their membership to over 600. Visit the IAMG website at [www.iamg.org/](http://www.iamg.org/).

### International Association of Sedimentologists (IAS)

IAS (<http://www.iasnet.org/>) is a global association with ca. 1,750 members from 97 countries. The Association promotes the study of sedimentology through publications, discussion and comparison of research results, by encouraging the interchange of research through international collaboration and by favouring integration with other disciplines.



The IAS published several issues of its journal *Sedimentology*, and a Newsletter accompanies *Sedimentology*. The IAS homepage is regularly updated.

### International Centre for Training and Exchange in the Geosciences (CIFEG)

The International Centre for Training and Exchange in the Geosciences (Centre International pour la Formation et les Echanges en Géosciences, CIFEG) 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. Visit the Website at <http://www.cifeg.org>



For 2011, the major issues of the current leadership committee include: a) creating a stable long-term financial and organizational basis for CFES; b) the Canadian bid for IGC 2020; c) Geoparks – future nominations; d) continuing to update and make available the CanGeoRef reference database (a joint venture with the American Geoscience Institute (AGI); e) outreach through the Canadian Geoscience Education Network (CGEN), and legacy projects of CNC-IYPE; f) helping the Canadian Chapter of the Youth Earth Science

Network; and g) the Mentorship Medal. Major accomplishments of the organization (or the geological communities) in 2011 were: h) Legacy projects of the CNC-IYPE: Where Challenge, Careers website, Four Billion Years and Counting book, Geovistas project; i) National Earth Science Newsletter (4 times per year); j) Canada's first Global Geopark: Stonehammer, Saint John area, New Brunswick; k) CanGeoRef was launched September; and l) ongoing efforts on human resources challenges, partly in cooperation with Geoscientists Canada and Canadian Human Resources Councils.

### International Consortium on Landslides (ICL)

ICL (<http://icl.dpri.kyoto-u.ac.jp/>) is involved with international coordination, exchange of information and dissemination of research activities and capacity building through various meetings, dispatching experts, developing a landslide database, and publishing its journal "Landslides". ICL's central activity is the International Programme on Landslides (IPL). The construction of the headquarter building of UNITWIN (university twinning and networking) was jointly conducted by ICL, UNESCO and Kyoto University. ICL has strong links to UNESCO and WMO: and is well supported by these UN organizations. Although it only has about 51 members, ICL has a broad international membership with a strong bias in favour of Japan. There is considerable scientific focus, but minor attention to the public or education of young scientists. ICL holds annual Board of Representative meetings at which IUGS is always present. ICL regularly promotes the role IUGS plays in supporting the association. In 2011, the ICL published its color journal through Springer, plus numerous books. The ICL organizes a congress every three years: Italy in 2011 and China in 2014. The Consortium continues to promote education in developing countries (e.g. training schools in Kyrgyzstan and China). They plan to actively promote themselves through *EPISODES* and IUGS in all activities.



### International Federation of Palynological Societies (IFPS)

Currently, 22 societies are members of IFPS (<http://www.geo.arizona.edu/palynology/ifps.html>) and the number of affiliated palynological societies and members continues to increase.

In 2011, numerous meetings of 23 member societies took place. The major focus of the



IFPS was on the organization of the 2012 four yearly International Palynological Congress 13, to be held jointly with the International Organisation of Paleobotany Conference (IOPCG) in Tokyo in August 2012 following the 34<sup>th</sup> IGC. The newsletter "PALYNOS" was regularly published, the website remained active, and the "World Directory of Palynologists" is continually updated electronically.

### International Geological Education Organization (IGEO)

This organization 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.



International Geoscience Education Organisation

"promoting GeoScience education worldwid

### International Medical Geology Association (IMGA)



The IMGA formalized the Association by developing and adopting a Constitution and By-laws in 2010. At the year's end, IMGA had about 300 paying members and 100 members who are in the process of paying. IMGA membership is worldwide,

representing more than 55 countries.

The website (<http://www.medicalgeology.org/>) is updated at least every second week and expanded. Short courses were held in China and Italy in 2011. A web-based course in medical geology was tested in 2011. IMGA has been deeply involved in Encyclopedia of Environmental Health, EEA. In addition, IMGA had published papers on medical geology in a large variety of journals during 2011.

### International Mineralogical Association (IMA)



IMA comprises 39 mineralogical societies or groups (one per country) with a limited number of individual memberships. Its activities are carried out by 11 commissions and working groups. The Association promotes exchanges amongst mineralogists of all nations by organizing events or publishing relevant



literature. IMA is a very important organization and IUGS promotes the more intensive use of its expertise by other IUGS bodies and projects.

For 2011, the major issues of the current IMA officers were to further the international cooperation in the mineralogical sciences. To this end the activities of the Association included: a) promotion of intercourse among mineralogists of all nations by organizing meetings and field excursions and by sponsoring publications of mineralogical interest; b) maintenance of Commissions and Working Groups to examine and report on certain aspects of mineralogical practice, and to encourage international collaboration between mineralogists in specific fields; c) participation in action with other international groups having mineralogical interests; and d) establishment of committees to expedite other matters. A total of 11 commissions and 8 subcommissions were active within IMA in 2011 and 2012. The 'Annual List of New Minerals and Changes in Nomenclature' is now available on the IMA website (<http://www.ima-mineralogy.org/>). The Outreach Committee continued to recommend and develop research activities, useful and educative outreach materials that will be used by IMA society members, mineralogists, and to a larger extent by Earth scientists including teachers. This will help the interest in Mineralogical Sciences and complementary Earth Sciences.

## International Palaeontological Association (IPA)



**International  
Palaeontological  
Association**

IPA aims to promote and coordinate international cooperation in palaeontology and to

encourage the integration and synthesis of all palaeontological knowledge. IPA has some 1200 members and 19 corporate member organizations. There are about 160 individual subscribers for the *Lethaia* magazine which is authorized by IPA to collect membership dues as a component of each subscription.

The homepage contains a link to fossil collections of the world (<http://ipa.geo.ku.edu/index3.html>), to a very popular directory of palaeontologists and to a PalaeoLink database. IPA actively uses the outreach potential of the Internet and the website experiences over 1000 hits a month. The Directory of Paleontologists of the World, the Directory of the fossil collections of the World, and the Paleolink Database make IPA an effective and dynamic organization. IPA joined a consortium under the aegis of ProGEO in sponsoring the journal *Geo Heritage*.

## International Permafrost Association (IPA)

IPA unites 12 corporate members from China, Czech Republic, France, India, Japan, New Zealand, Romania, Spain, United Kingdom and United States. The objectives of IPA (<http://www.geo.uio.no/IPA/>) include the dissemination of knowledge concerning permafrost and the promotion of co-operation between persons and organizations engaged in scientific investigations and engineering work on permafrost. Some 24 national/multinational organizations form the basis of the membership, although individual membership is possible if no national body exists. Ten working and three task groups covering a range of topics undertake scientific work for the Association; many of these are involved in collaborative work with a very wide range of international bodies, including IUSS, IPA, IGU, the International Commission on Snow and Ice, and with bodies within IGOS (GCOS/GTOS). The Association publishes *Frozen Ground* and contributed special issues to several other journals.



In 2011, the International Permafrost Association has been pursuing a wide range of initiatives outlined in the strategic plan presented to the IPA Council in June 2010. Individual memberships have been growing steadily and more than 400 people were registered with the IPA as of December 2011. These totals are expected to rise with registration for the Tenth International Conference on Permafrost, which will offer a reduced registration fee for individual members of IPA. The IPA has also launched the first application process for Action Groups. These will take advantage of the financial resources set aside by the IPA to support international research projects. The first application round closed in October 2011 and the successful action groups will be announced at the beginning of 2012. The IPA launched a survey of national committees at the start of 2011 to gain a comprehensive overview of the institutional ties that the committees have been maintaining with national and international institutions; and to assess the level of interest and financial support available in each member country. The results of this survey will be released to the IPA Council Members in 2012 and will serve as a platform for developing new tools to strengthen the national committees. The IPA has also worked on improving its web presence, and to create a modern publishing platform for its country reports. The IPA has welcomed two new members in 2010 and 2011. Kyrgyzstan and South Korea became the 25<sup>th</sup> and 26<sup>th</sup> members of the IPA. Several members of the IPA were involved in writing the Climate Change and the Cryosphere: Snow, Water, Ice and Permafrost in the

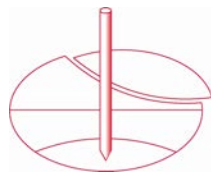


Arctic (SWIPA). The project aimed to synthesize the recent changes to the cryosphere, and examine their impacts and implications for northerners and the ecosystem. The IPA welcomed the release in April 2011 of the “State of the Arctic Coast 2010” report. This report, sponsored by the IPA, IASC, AMAP and the Land-Ocean Interactions in the Coastal Zone (LOICZ) project, was a collaborative effort by 47 lead and contributing authors from 10 nations including all those bordering the Arctic coast and others with Arctic interests.

The Task Force established in June 2010 by the IPA Executive Committee to create a Strategy and Implementation Plan for the Global Terrestrial Network for Permafrost (GTN-P) is close to completing its task and will release the plan in 2012. This plan highlights the need for GTN-P to professionalize its reporting process and to release results on the state of permafrost and of the active layer on a regular basis. The organization of the Tenth International Conference on Permafrost (TICOP) is now well under way in June 2012 in Salekhard, Yamalo-Nenets Autonomous District, Russia. The core theme of the conference – “Resources and risks of permafrost areas in the changing world” - relates to changes in the permafrost but also evokes the increasing role of mankind in transforming mountain, arctic and subarctic environments. More information on the TICOP is available on the conference website: <http://www.ticop2012.org>.

## International Society for Rock Mechanics (ISRM)

The ISRM operates in the field of physical and mechanical behaviour of rocks and rock masses and the applications of this knowledge for the better understanding of geological processes and in the fields of Engineering. The ISRM website provides information about the association, its national groups, commissions and meetings. The group continues close co-operation with the Sister Societies IAEG and ISSMGE. The Society has been planning certain scientific activities with IUGS, such as the study of geological problems through ISRM Commissions, Joint Technical Committees and Interest Groups, a Federation of International Geo-engineering Societies and a Virtual Library.



The Association published *News Journal* and has developed a web site. (<http://www.isrm.net/>). The ISRM is seeking to form a federation with the IAEG and ISSMGE. ISRM published proceedings, commission reports, a news journal, and their Blue Book in 2011.

## International Society of Soil Mechanics and Geotechnical Engineering (ISSMGE)

The aim of the Society (<http://www.issmge.org/home/>) is to promote international co-operation amongst engineers and scientists for the advancement and dissemination of knowledge in the field of geotechnics, and its engineering and environmental applications. The ISSMGE is composed of 75 national societies and has over 17,000 individual members. In 2011, ISSMGE held a Council Meeting at the XIV Panam Conference in Toronto, and major accomplishments were: establishment of the ISSMGE Foundation, collaboration with [Geo-engineer.org](http://Geo-engineer.org), promotion of Technical Committee activities, increase number of Corporate Associates. There were 12 different international meetings that ISSMGE was involved throughout 2011 held in cities worldwide. The ISSMGE recent geohazards activities included earthquake, landslides and geotechnical risks.. ISSMGE has also been working to increase participation of young geotechnical engineers, and to improve outreach programmes and to communications with individual members.

## Italian Federation of Earth Scientists (FIST)

FIST was formed in 1996 and is an organization comprising “Società Geologica Italiana” and “Società Italiana di Mineralogia e Petrologia”, together with the participation of almost twenty different Italian organizations covering different fields of the geosciences. During 2011 was mainly involved in organization of GEOITALIA 2011, the VIII Forum Italiano di Scienze della Terra, held in Torino.

## National Groundwater Association (NGWA)

The NGWA is dedicated to advancing the expertise of all ground water professionals and to furthering ground water awareness and protection through education and outreach. It has more than 12,000 members in 60 nations to advance the science and technology of the ground water professions. NGWA is supported by dues from individual and organizational members, and by income derived from its other activities.

In 2011, the Association filed an amicus brief with the New Mexico state Supreme Court on a matter relating to the role of the State Engineer determining groundwater extractions within the state using sound science to make an informed decision. More attention was given by the Association to the importance of hydrogeologic understanding of sites for proposed large-scale ground- and groundwater-source heat pump installations. Scientific insights related to public health and groundwater supplied by private residential well systems were shared with the Centers for Disease Control and Prevention by NGWA. Student membership in the

Association was at a recorded all-time high in 2011. Female students considering career paths and professional women considering career changes learned about opportunities in the geosciences during an October Webinar hosted by NGWA. The Association's charitable foundation awarded \$20,000 in scholarships, the most ever and seven students were honored. The Association provided input to the National Academy of Engineering with regard to a current study seeking to establish a metric of how many public groundwater supplies have been affected by man-made pollution. NGWA continued its relationship with Australia's National Centre for Groundwater Research and Training, affiliated with Flinders University. The Association started exploring, with the Russian Water Association, the potential for mutually rewarding collaboration. NGWA is assisting the Latin American Association for Ground Water Development (ALHSUD) as part of the organizing committee for the 12<sup>th</sup> Latin American Hydrogeological Congress in Colombia in August 2012. The NGWA have offered support to the bid of the Canadian Federation of Earth Sciences to host the 2020 International Geological Congress at Vancouver. Free continuing education expanded in 2011 with Webinars from member interest groups devoted to the economics of groundwater, high volume groundwater extractions, aquifer protection, and geothermal energy. For science and engineering firm members, the Association introduced a series of business management workshops. The NGWA Lexicon was converted to an "app" for the iPhone and the iPad. More than 300 Web sites promoted National Ground Water Awareness Week, in March worldwide in the event's broadest exposure of its 12-year history. Ground Water Awareness Week experienced a steady increase in awareness as measured by hits on Websites and social media platforms such as Facebook, Twitter and blogs.

### **Society of Economic Geologists Inc. (SEG)**

This Society is an international body that is committed to excellence in science, discovery, documentation, interpretation, evaluation and responsible development of mineral resources and the professional development of its members. SEG formed a tripartite relationship with IAGOD and SGA, and also has a good working relationship with IUGS. Members are currently distributed through more than 80 countries worldwide. SEG is a leading international society in its field, and having co-sponsored meetings with many national and international Organizations, including UNESCO, indicates its relevance for important society issues. SEG is closely associated with IAGOD, forming an ICSU cluster.

SEG successfully continued a lecture program and awards for leading scientists and distinguished lecturers. Publications includes monographs, Guidebooks, including CDs, Compilation series (CD), Special

publications, the Dummett DVD and other very popular series. Visit the website <http://www.segweb.org/>

### **Society for Geology Applied to Mineral Deposits (SGA)**

The SGA aims to advance the application of scientific knowledge to the study and development of mineral resources and their environment, to promote the profession and to improve and maintain professional standards.



The SGA is an active organisation. The Society has been growing quickly from 808 paying members in over 70 countries in 2005 to 1163 members in over 80 countries in 2011. Apart from its members interests the SGA also maintains a focus on students via their SGA Student Network. The network links existing chapters and individuals and is open to everyone on the Facebook SGA Network. The annual SGA Student Conference (Prague) was a great success and attracted many young geoscientists who are involved in research into mineral deposits. In 2011 they also organised a Baltic Student Chapter Meeting (Poland). Other meetings organised during 2011 included: the UNESCO-SEG-SGA Latin American Metallogeny Course (Colombia); the 11th SGA Biennial meeting (Chile); the joint Annual Meeting of the Geological Association of Canada / Mineralogical Association of Canada / Society of Economic Geologists / Society for Geology Applied to Mineral Deposits (GAC-MAC-SEG-SGA) (Canada); and a session in the Goldschmidt 2011 Conference (Czech Republic). The SGA, jointly with IUGS, UNESCO, IRD and Geological Society of Africa have prepared a joint *Short Course on African Metallogeny* in Ouagadougou, Burkina Faso for March 2012. They aim for this new geo-educational activity on the African Continent to be of similar success as their Latin-American Metallogeny Courses and their report acknowledges the financial assistance from IUGS, IRD and SEG for this course. The SGA maintained an active publication program in 2011. The *SGA News* newsletter was issued twice this year. The SGA Council also proposes to revive the SGA Special Publications (topical/e-books/hard copies), formerly published by the Springer Publishing House.

### **Society for Sedimentary Geology (SEPM)**



SEPM (<http://www.sepm.org/>) is an international not-for-profit Society dedicated to the dissemination of scientific information on sedimentology, stratigraphy, palaeontology, environmental sciences, marine geology,

hydrogeology, and many additional related specialties.

As the major international association dealing with all aspects of sedimentary geology, SEPM is a very active and diversified organization. In 2011, the SEPM held its Annual Meeting in Houston, TX jointly with A.A.P.G. Most of SEPM activities were in publishing and meeting organization. Both SEPM technical journals increased their Impact Factors for both journals increased again. SEPM and its journals continued to play an important role, as a founder and current board member of the geoscience online journal aggregate, GeoScienceWorld (GSW), which continues to thrive. GSW could be taken into consideration as a potential outlet for wider and more effective distribution of *EPISODES* in the future. In 2011, a total of seven new SEPM books were published by year end. SEPM continues to work with AAPG, GSA, and GSL to produce jointly sponsored conferences and publications where applicable.

SEPM is part of GSA-AGU-SEPM-GSL planned meeting on the coastal impacts of sea level change, being planned for 2012. SEPM is also an official member of the American Geosciences Institute (AGI), the North American Commission on Stratigraphic Nomenclature (NACSN), the Association of North American Paleontological Societies (ANAPS).

### The Meteoritical Society (MS)



The Society, founded in 1933, promotes research and education in planetary sciences, with an emphasis on studies of meteorites and other extraterrestrial materials

that further the understanding of the origin of the solar system. The society has around 950 members in 37 countries. The Society publishes its own journal, *Meteorites and Planetary Sciences* and also the *Meteoritical Bulletin*. Members donated ten subscriptions of the former journal to libraries in countries where the journal is unavailable. The Society publishes the journal *Meteoritics and Planetary Sciences*, the *Meteoritical Bulletin* database, and *Geochemica et Cosmochemica Acta*, together with the Geochemical Society.

In 2011 the Meteoritical Society held the 74<sup>th</sup> Annual Meeting (London, 8-12 August), providing support to students and professionals from low-income countries to attend it. Visit the Website at:

<http://www.meteoriticalsociety.org/>

### Young Earth Scientist (YES) Network

The Young Earth Scientists (YES) Network gained IUGS Affiliated Organization status in 2011. The current leadership is due to change in early 2012. The YES Network grew significantly in 2011 to nearly 2000 international members.

YES participated in numerous international geoscience conferences including EGU, GSA and AGU meetings. Official 2011 YES meetings and events included: YES Africa (South Africa) in January; YES Network sessions at EGU (Austria) in April; YES Network Sessions at GSA Fall Meeting (USA) in October; a YES co-convened a roundtable at the Conference on African/Arabian Geoparks (Morocco) in November; a YES Network co-convened session at AGU Fall Meeting (USA) in December. The YES Network is assisting the IUGS Global Workforce Taskforce in compiling a global reference on geoscience information (educational institutions, professional societies, employers). The YES Network partnered with AGI to determine key decision points in career pathways for early-career geoscientists, from university through 10 years post graduation. YES Geomicrobiology is an initiative of the Network, started in 2011, to motivate early-career geoscientists to pursue research in geobiology and encourage collaboration between geologists, geochemists microbiologists and environmental scientists.

The Network received partnership funds towards joint sessions at EGU and GSA meetings. Funds have been allocated by the IUGS to the GeoHost program for delegate attendance at the 34<sup>th</sup> IGC and 2<sup>nd</sup> YES Congress. For 2012, the YES Network is launching an online journal to showcase Network projects and work. The organization also aims to link-in with the major meetings of EGU, AGU and GSA by holding YES Network convened sessions at these meetings. YES is also in communication with the AAPG Young Professional and Student Groups. National Chapters are working with the geological and other geoscientific societies in their countries to raise awareness of the existence of YES (e.g., publishing articles).





# Appendices

**Appendix 1: Executive Committee Officers, Permanent Secretariat, Executive Committee and Bureau Meetings**

**Appendix 2: IUGS Adhering Organizations**

**Appendix 3: Membership Category and Status**

**Appendix 4: IUGS Financial Situation and Statement**

**Appendix 5: IUGS Allocations**

**Appendix 6: ICS- IUGS Ratified Global Boundary Stratotype Sections and Points (GSSP)**

**Appendix 7: IGCP Projects (IUGS-UNESCO Co-Sponsored)**

**Appendix 8: Acronyms Used by IUGS**



## APPENDIX 1

# IUGS – Executive Members and Meetings

### EXECUTIVE COMMITTEE OFFICERS OF THE IUGS IN 2011

President	Prof. A. Riccardi	Aug. 2008 – Aug. 2012	<a href="mailto:riccardi@museo.fcnym.unlp.edu.ar">riccardi@museo.fcnym.unlp.edu.ar</a>
Past President	Prof. Z. Hongren	Aug. 2008 – Aug. 2012	<a href="mailto:iugs8@yahoo.com">iugs8@yahoo.com</a>
Secretary General	Dr. P.T. Bobrowsky	Aug. 2008 – Aug. 2012	<a href="mailto:pbobrows@nrcan.gc.ca">pbobrows@nrcan.gc.ca</a>
Treasurer	Prof. W. Cavazza	Aug. 2008 – Aug. 2012	<a href="mailto:william.cavazza@unibo.it">william.cavazza@unibo.it</a>
Vice President	Prof. O. Gerel	Aug. 2008 – Aug. 2012	<a href="mailto:gerel@must.edu.mn">gerel@must.edu.mn</a>
Vice President	Prof. J. Charvet	Aug. 2008 – Aug. 2012	<a href="mailto:jacques.charvet@univ-orleans.fr">jacques.charvet@univ-orleans.fr</a>
Councillor	Prof. E. Errami	Aug. 2008 – Aug. 2012	<a href="mailto:erramiezzoura@yahoo.fr">erramiezzoura@yahoo.fr</a>
Councillor	Mr. C. Simpson	Aug. 2008 – Aug. 2012	<a href="mailto:simpsons@grapevine.com.au">simpsons@grapevine.com.au</a>
Councillor	Ms. W. Hill	Aug. 2010 – Aug. 2014	<a href="mailto:whill@geosociety.org">whill@geosociety.org</a>
Councillor	Prof. S.K. Tandon	Aug. 2010 – Aug. 2014	<a href="mailto:sktand@rediffmail.com">sktand@rediffmail.com</a>

### PERMANENT SECRETARIAT

Head of Secretariat	Mr. R. Calnan	<a href="mailto:IUGS@usgs.gov">IUGS@usgs.gov</a>
Assistant	Ms. N. Zeigler	

### EXECUTIVE COMMITTEE AND BUREAU MEETINGS, JANUARY 2011 – DECEMBER 2011

63 <sup>rd</sup> Executive Committee Meeting	San Sebastian, Spain	February 14 – 17, 2011
Bureau Meetings	Bangalore, India	January 21 - 22, 2011
	Rome, Italy	September 21, 2011

## APPENDIX 2

# IUGS Adhering Members

List of Member Countries 2011 and Status

Total 121, 86 active (8 active pending), 35 inactive

	COUNTRIES	CAT.	Status
1	Albania	1	A
2	Algeria	1	I
3	Angola	1	I
4	Argentina	3	A
5	Australia	6	A
6	Austria	3	A
7	Azerbaijan	1	A
8	Bangladesh	1	A
9	Belarus	1	I
10	Belgium	3	A
11	Belize	1	I
12	Bolivia	1	I
13	Bosnia and Herzegovina	1	A
14	Botswana	2	A
15	Brazil	4	A
16	Bulgaria	2	AP
17	Burkina Faso	1	I
18	Burundi	1	I
19	Cameroon	1	AP
20	Canada	6	A
21	Chile	1	A
22	China, People's Republic of	7	A
23	Colombia	1	A
24	Congo	1	I
25	Costa Rica	1	A
26	Croatia	2	A
27	Cuba	1	I
28	Cyprus	2	A
29	Czech Republic	3	A
30	Denmark	4	A
31	Ecuador	1	I
32	Egypt	2	A
33	Estonia	2	A
34	Finland	3	A
35	France	7	A
36	Gambia	1	AP
37	Georgia	1	I

	<b>COUNTRIES</b>	<b>CAT.</b>	<b>Status</b>
38	<b>Germany</b>	7	<b>A</b>
39	<b>Ghana</b>	1	<b>I</b>
40	<b>Greece</b>	2	<b>A</b>
41	<b>Guatemala</b>	1	<b>I</b>
42	<b>Guyana</b>	1	<b>A</b>
43	<b>Hungary</b>	3	<b>A</b>
44	<b>Iceland</b>	1	<b>A</b>
45	<b>India</b>	5	<b>A</b>
46	<b>Indonesia</b>	1	<b>I</b>
47	<b>Iran</b>	3	<b>I</b>
48	<b>Iraq</b>	2	<b>A</b>
49	<b>Ireland</b>	4	<b>A</b>
50	<b>Israel</b>	2	<b>A</b>
51	<b>Italy</b>	7	<b>A</b>
52	<b>Ivory Coast</b>	1	<b>A</b>
53	<b>Jamaica</b>	1	<b>I</b>
54	<b>Japan</b>	8	<b>A</b>
55	<b>Jordan</b>	1	<b>A</b>
56	<b>Kazakhstan</b>	3	<b>A</b>
57	<b>Kenya</b>	1	<b>AP</b>
58	<b>Korea North (PDR)</b>	1	<b>A</b>
59	<b>Korea South (ROK)</b>	3	<b>A</b>
60	<b>Kosovo</b>	2	<b>A</b>
61	<b>Latvia</b>	1	<b>I</b>
62	<b>Lebanon</b>	1	<b>A</b>
63	<b>Lesotho</b>	1	<b>I</b>
64	<b>Libya</b>	1	<b>I</b>
65	<b>Lithuania</b>	1	<b>A</b>
66	<b>Luxembourg</b>	1	<b>A</b>
67	<b>Madagascar</b>	1	<b>I</b>
68	<b>Malawi</b>	1	<b>A</b>
69	<b>Malaysia</b>	1	<b>A</b>
70	<b>Mexico</b>	2	<b>AP</b>
71	<b>Mongolia</b>	1	<b>A</b>
72	<b>Morocco</b>	2	<b>A</b>
73	<b>Mozambique</b>	1	<b>A</b>
74	<b>Namibia</b>	1	<b>A</b>
75	<b>Netherlands</b>	4	<b>A</b>
76	<b>New Zealand</b>	3	<b>A</b>
77	<b>Nicaragua</b>	1	<b>I</b>
78	<b>Niger</b>	1	<b>I</b>
79	<b>Nigeria</b>	1	<b>AP</b>
80	<b>Norway</b>	3	<b>A</b>
81	<b>Pakistan</b>	1	<b>I</b>
82	<b>Panama</b>	1	<b>I</b>
83	<b>Papua New Guinea</b>	1	<b>I</b>
84	<b>Paraguay</b>	1	<b>I</b>
85	<b>Peru</b>	1	<b>A</b>

	COUNTRIES	CAT.	Status
86	Philippines	1	I
87	Poland	2	A
88	Portugal	2	A
89	Romania	3	A
90	Russia	8	A
91	Saudi Arabia	4	A
92	Senegal	1	I
93	Serbia	1	A
94	Slovak Republik	2	A
95	Slovenia	1	A
96	Somalia	1	I
97	South Africa	4	A
98	Spain	4	A
99	Sri Lanka	1	AP
100	Sudan	1	AP
101	Suriname	1	I
102	Swaziland	1	I
103	Sweden	3	A
104	Switzerland	4	A
105	Syria	1	A
106	Taiwan (China)	3	A
107	Tajikistan	2	A
108	Tanzania	1	A
109	Thailand	1	A
110	Tunisia	1	I
111	Turkey	3	A
112	Uganda	1	A
113	Ukraine	3	I
114	United Kingdom	8	A
115	Uruguay	1	I
116	USA	8	A
117	Uzbekistan	2	A
118	Venezuela	1	I
119	Vietnam	1	A
120	Yemen	1	A
121	Zambia	1	I
Notes: situation as of Dec. 31 <sup>st</sup> , 2011. A=active, AP=active pending, I=inactive.			



## APPENDIX 3

# Categories of IUGS Membership

## AND MEMBERSHIP FEE (2008-2011)

### Categories of Membership for 2008

Category	1	2	3	4	5	6	7	8
Value in US \$	521	1042	2084	3647	6252	10420	18235	36470

### Categories of Membership for 2009

Category	1	2	3	4	5	6	7	8
Value in US \$	541	1028	2164	3787	6492	10820	18935	37870

### Categories of Membership for 2010

Category	1	2	3	4	5	6	7	8
Value in US \$	539	1078	2155	3772	6466	10777	18859	37719

### Categories of Membership for 2011

Category	1	2	3	4	5	6	7	8
Value in US \$	548	1096	2192	3836	6576	10960	19180	38260

## APPENDIX 4

# IUGS Financial Situation and Statement

### Income in 2011

RECEIVED			TOTAL (US dollars)
INCOME	< 2010	2010	> 2010
<b>Membership dues</b>	<b>53,807.32</b>	<b>313,215.26</b>	<b>367,022.58</b>
Adhering Organizations	53,807.32	313,215.26	
<b>IGCP Program</b>	<b>18,923.00</b>	<b>40,955.00</b>	<b>59,878.00</b>
UNESCO*	18,923.00	40,955.00	
<b>Other incomes</b>		<b>5,585.40</b>	<b>5,585.40</b>
Geological Society of London		5,585.40	
<b>Interests</b>		<b>21,280.96</b>	<b>21,280.96</b>
<b>INCOME</b>			<b>453,766.94</b>

\* Including contribution from the Government of China

## Expenses in 2011

	PAID			TOTAL
	< 2011	2011	> 2011	
<b>EXPENSES</b>				
<b>IGCP Projects</b>	<b>4,180.00</b>	<b>132,500.00</b>		<b>136,680.00</b>
UNESCO		62,500.00		
IUGS	4,180.00	70,000.00		
<b>Joint Programs</b>		<b>15,000.00</b>		<b>15,000.00</b>
ILP		15,000.00		
<b>IUGS Commissions, Task Groups and Committees</b>		<b>115,950.00</b>		<b>115,950.00</b>
Commissions		85,000.00		
Task Groups		15,950.00		
Initiatives		15,000.00		
<b>Affiliated Organizations</b>		<b>23,500.00</b>		<b>23,500.00</b>
<b>Contributions</b>		<b>4,099.00</b>		<b>4,099.00</b>
Contribution ICSU		4,099.00		
<b>Other expenses</b>		<b>87,631.00</b>		<b>87,631.00</b>
Routine meetings		40,929.00		
Representing Scientific Meetings		19,757.00		
Ad-hoc Reviews		9,355.00		
Exhibitions		4,134.00		
Website		2,583.00		
Bank charges		4,393.00		
<b>Episodes</b>		<b>28,000.00</b>		<b>28,000.00</b>
IUGS Contribution		23,000.00		
UNESCO Dissemination Funds		5,000.00		
<b>Contingency</b>		<b>7,684.00</b>		<b>7,684.00</b>
<b>Movie</b>		<b>18,649.00</b>		<b>18,649.00</b>
<b>IUGS 50th Anniversary Celebration</b>		<b>16,574.00</b>		<b>16,574.00</b>
<b>IGCC</b>		<b>9,975.00</b>		<b>9,975.00</b>
<b>EXPENSES</b>				<b>463,742.00</b>

## APPENDIX 5

# IUGS Allocations in 2011

EXPENSES USD		Allocated 2011
<b>IGCP</b>		<b>166,500</b>
	UNESCO	96,500
	IUGS	70,000
<b>Joint Programmes</b>		<b>31,000</b>
<b>GARS</b> <i>Geological Application of Remote Sensing</i>	IUGS	6,000
	UNESCO	6,000
<b>ILP</b> <i>International Lithosphere Program</i>		15,000
<b>Geoparks Networks</b>		4,000
<b>IUGS Commissions</b>		<b>85,000</b>
	<b>CGI</b> <i>(Geoscience Info)</i>	10,000
	<b>COGE</b> <i>(Edu., Training / Tech. Transfer)</i>	3,500
	<b>GEM</b> <i>(Geosci. Env. Mgmt.)</i>	10,000
	<b>ICS</b> <i>(Stratigraphy)</i>	50,000
	<b>INHIGEO</b> <i>(Hist. Geol. Sci.)</i>	4,500
	<b>TECTASK</b> <i>(Tectonics and Structural Geology)</i>	7,000
<b>IUGS Task Groups</b>		<b>15,950</b>
	<b>TGGB</b> <i>(Geochemical Baselines)</i>	5,000
	<b>GeoHeritage</b>	6,000
	<b>TGIG</b> <i>(Isotope Data in Geoscience)</i>	4,950
<b>IUGS Initiatives</b>		<b>15,000</b>
	<b>Initiative on Forensic Geology</b>	15,000
<b>IUGS Committees</b>		<b>12,000</b>
	<b>FC</b> <i>(Finances Committee)</i>	2,000
	<b>SPC</b> <i>(Strategic Planning Committee)</i>	2,000
	<b>PC</b> <i>(Publications Committee)</i>	8,000
<b>IUGS Affiliated Organizations</b>		<b>23,000</b>
	<b>AGID</b> <i>Ass. of Geoscientists for Int. Develop.</i>	1,000
	<b>CGMW</b> <i>Commission Geological Map World</i>	6,000
	<b>GSAf</b> <i>Geological Society of Africa</i>	6,000
	<b>AAWG</b> <i>Afr. Ass. Women in Geosciences</i>	6,000
	<b>SGA</b> <i>Soc. Geolo. Applied Min. Deps.</i>	1,500
	<b>SGA</b> <i>course</i>	3,000
<b>Contributions</b>		<b>3,163</b>
	<b>ICSU</b>	3,163



<b>EXPENSES USD</b>		<b>Allocated 2011</b>
<b>Other expenses</b>		<b>103,000</b>
	Routine Meetings (including celebration)	50,000
	Representative Scientific Meetings	10,000
	Exhibitions	5,000
	Website	2,000
	ARC	10,000
	Promotion Items (incl. 50th Anniv. items)	5,000
	IGCP 40th Anniversary Contribution	15,000
	Anniversary Publication	2,000
	Bank Charges	4,000
<b>Episodes</b>		<b>28,000</b>
	IUGS Contribution	28,000
<b>Contingency</b>		<b>5,000</b>
<b>Hutchison reserve</b>		<b>2,000</b>
<b>Secretariat expenses</b>		<b>20,000</b>
<b>Officers reserves</b>		<b>5,000</b>
<b>Movie</b>		<b>19,000</b>
<b>50<sup>th</sup> Anniversary</b>		<b>15,000</b>
<b>IGCC request for South Africa</b>		<b>20,000</b>

\* Including contribution from the Government of China

# APPENDIX 6

## ICS – IUGS Ratified (2004-2011)

### GLOBAL BOUNDARY STRATOTYPE SECTIONS AND POINTS (GSSP)

EON, Era, System, Series, Stages	Age (Ma)	Est. $\pm$ Ma	Derivation of age	Principal correlative events	GSSP and location	Status	Publication
<b>PHANEROZOIC Eon</b>							
<b>Cenozoic Era</b>							
<b>Quaternary System</b>							
<b>Holocene Series</b>							
Holocene	0.011784	0.00	Annual layer counting in ice core ("ka" is relative to AD2000); counting uncertainty is 69 years	Climatic -- End of the Younger Dryas cold spell, which is reflected in a shift in deuterium excess values, followed closely by changes in $\delta^{18}O$ , dust concentration, a range of chemical species, and by a change in annual layer thickness	North GRIP ice core, Greenland (75.1°N, 42.32°W)	Ratified 2008	<i>EPISODES</i> , 31/2, 2008 <i>J. Quaternary Sci.</i> , Vol. 24, pp. 3-17, 2009
<b>Pleistocene Series</b>							
Tarantian Stage	0.126	0.00	Astronomical cycles in sediments	Climatic -- Base of the Eemian interglacial stage (= base of marine isotope stage 5e) before final glacial episode of Pleistocene. Base of Tyrrhenian regional stage of Mediterranean	Amsterdam-Terminal borehole (63.5 m below surface), Netherlands (52°22'45"N, 4°54'52"E)	Accepted by ICS in 2008; on hold by IUGS	<i>EPISODES</i> , 31/2, 2008
Ionian Stage	0.781	0.00	Astronomical cycles in sediments	Magnetic -- Brunhes-Matuyama magnetic reversal (base of Chron 1n)	Candidate sections in Italy (Montalbano Jorica or Valle di Manche) and Japan (Chiba)	GSSP anticipated in 2012	-
<b>Neogene System</b>							
<b>Miocene Series</b>							
Serravallian Stage	13.82	0.00	Astronomical cycles in sediments	Climatic -- Mi3b isotopic event (global cooling episode) in upper magnetic polarity chronozone C5ACn. Above (13.65 Ma) is the lowest occurrence of nannofossil <i>Sphenolithus heteromorphus</i> (previously considered base of Serravallian).	Base of Blue Clay Formation, Ras il Pellegrin coastal section, Fomm Ir-Rih Bay, west Malta (35°54'50"N, 14°20'10"E)	Ratified 2007	<i>EPISODES</i> , 32/3, 152 - 166 -

Langhian Stage	15.97	0.00	Calibrated magnetic anomaly scale	Planktonic foraminifer -- Near first occurrence of <i>Praeorbulina glomerosa</i> and top of magnetic polarity Chron C5Cn.1n	Potentially in astronomically-tuned ODP core	GSSP anticipated in 2012	-
Burdigalian Stage	20.43	0.00	Calibrated magnetic anomaly scale	Planktonic foraminifer -- Near lowest occurrence of <i>Globigerinoides altiaperturus</i> or near top of magnetic polarity Chron C6An	Potentially in astronomically-tuned ODP core	GSSP anticipated in 2012	-
<b>Paleogene System</b>							
<b>Oligocene Series</b>							
Chattian Stage	28.4	0.1	Calibrated magnetic anomaly scale relative to base-Miocene and C24n. Arbitrary 100 kyr uncertainty assigned.	Potentially extinction of planktonic foraminifer <i>Chiloguembelina</i> (base Foram Zone P21b); or an isotopic/climatic event	Monte Cagnero (Umbria-Marche region, Italy)	GSSP anticipated in 2012	-
<b>Eocene Series</b>							
Priabonian Stage	37.2	0.1	Calibrated magnetic anomaly scale relative to base-Miocene and C24n	Potentially near lowest occurrence of calcareous nannofossil <i>Chiasmolithus oamaruensis</i> (base Zone NP18)	Tiziano Bed, Alano section (Piave River; Veneto Prealps, Belluno province, N. Italy)	GSSP anticipated in 2012	-
Bartonian Stage	40.4	0.2	Calibrated magnetic anomaly scale relative to base-Miocene and C24n	Potentially near base of magnetic polarity Chron C19n, or extinction of calcareous nannofossil <i>Reticulofenestra reticulata</i>	Contessa highway section near Gubio, Central Apennines, Italy	GSSP anticipated in 2012	-
Lutetian Stage	48.6	0.2	Calibrated magnetic anomaly scale relative to base-Miocene and C24n	Potentially a planktonic foraminifer (lowest occurrence of <i>Hantkenina</i> ), or magnetic polarity chronozone. [Events traditionally thought to be synchronous and used to place the base-Lutetian are now known to occur at different levels.]	Leading candidates are Gorrondatxe beach section, W Pyrenees, Basque country (Spain) and Agost section, Murcia province, Betic Cordilleras (Spain)	Ratified 2011	-
<b>Paleocene Series</b>							
Thanetian Stage	58.7	0.2	Astronomical cycles in sediments scaled from base Paleocene, using base of magnetic polarity chronozone C26n. Arbitrary 0.1 (2 precession cycles, plus the base-Paleogene radiometric) uncertainty assigned to all estimates.	Magnetic polarity chronozone, base of C26n	Leading candidate is Zumaya section, northern Spain	Ratified 2008	<i>EPISODES</i> , 34/4, 220-243, 2011

Selandian Stage	61.1	0.2	Astronomical cycles in sediments scaled from base Paleocene, using magnetic polarity chronozone placement of C26r	Geochemical -- Onset of a carbon isotope shift and sea-level drop (Exxon/Hardenbol sequence boundary "Se1"); near diversification of the <i>Fasciculith</i> group of calcareous nannoplankton, preceding the lowest <i>Fasciculithus tympaniformis</i> (base of nannoplankton zone NP5). Approximately 0.65 myr (ca. 33 precession cycles) above the base of magnetic polarity Chron C26r	Base of the red marls of Itzurun Formation in the Zumaia section at San Telmo Beach (N. Spain) (43°18'02"N, 2°15'34"W)	Ratified 2008	<i>EPISODES</i> , 34/4, 220-243, 2011
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## Mesozoic Era

### Cretaceous System

Most Cretaceous substages also have recommended GSSP criteria

#### Upper Cretaceous Series

Campanian Stage	83.5	0.7	Spline fit of Ar-Ar ages and ammonite zones	Crinoid, extinction of <i>Marsupites testudinarius</i>	Leading candidates are in west of Seaford Head (southern England) and Waxahachie dam spillway (north-central Texas)	GSSP anticipated in 2012	-
Santonian Stage	85.8	0.7	Spline fit of Ar-Ar ages and ammonite zones	Inoceramid bivalve, lowest occurrence of <i>Cladoceras undulaticolatus</i>	Leading candidates are Olazagutia (Spain) and Ten-Mile Creek (Texas)	GSSP anticipated in 2012	-
Coniacian Stage	89.3	1.0	Spline fit of Ar-Ar ages and ammonite zones	Inoceramid bivalve, lowest occurrence of <i>Cremnoceras rotundatus</i> (sensu Tröger non Fiege)	Candidates are in central Poland, Colorado, USA, and Germany	GSSP anticipated in 2012	-

#### Lower Cretaceous Series

Albian Stage	112.0	1.0	Cycle-stratigraphy of FAD of <i>P. columnata</i> relative to base of Cenomanian, with large uncertainty due to lack of GSSP criteria	Candidates include: (1) calcareous nannofossil, lowest occurrence of <i>Praediscosphaera columnata</i> (= <i>P. cretacea</i> of some earlier studies), (2) carbon-isotope excursion (black-shale episode), (3) ammonites	Southeastern France	GSSP anticipated in 2012	-
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Aptian Stage	125.0	1.0	Base of M0r, as recomputed from Ar-Ar age from MIT guyot	Magnetic -- base of Chron M0r; near base of <i>Paradeshayesites ogranlensis</i> ammonite zone	Leading candidate is Gorgo a Cerbara, Piobbico, Umbria-Marche, central Italy	GSSP anticipated in 2012	-
Barremian Stage	130.0	1.5	Pacific spreading model for magnetic anomaly ages (variable rate), using placement at M5n.8.	Ammonite -- lowest occurrence of <i>Spitidiscus</i> [now <i>Taveraidiscus</i> ] <i>hugii</i> -- <i>Spitidiscus vandeckii</i> group	Río Argos near Caravaca, Murcia province, S. Spain	GSSP anticipated in 2012	-
Hauterivian Stage	133.9	2.0	Pacific spreading model for magnetic anomaly ages (variable rate), using placement at base M11n	Ammonite -- lowest occurrence of genus <i>Acanthodiscus</i> (especially <i>A. radiatus</i> )	Leading candidate is La Charce village, Drôme province, southeast France	GSSP anticipated in 2012	-
Valanginian Stage	140.2	3.0	Pacific spreading model for magnetic anomaly ages (variable rate), using placement at M14r.3 (base T. pertransiens).	Calpionellid -- lowest occurrence of <i>Calpionellites darderi</i> (base of <i>Calpionellid</i> Zone E); followed by the lowest occurrence of " <i>Thurmanniceras</i> " <i>pertransiens</i>	Leading candidates are near Montbrun-les-Bains (Drôme province, SE France) and Río Argos (S. Spain)	GSSP anticipated in 2012	-
Berriasian Stage, base Cretaceous System	145.5	4.0	Pacific spreading model for magnetic anomaly ages (variable rate), assigning to base of <i>Berriasella jacobi</i> zone (M19n.2n.55)	Maybe near lowest occurrence of ammonite <i>Berriasella jacobi</i>		GSSP anticipated in 2012	-
<b>Jurassic System</b>							
<b>Upper Jurassic Series</b>							
Tithonian Stage	150.8	4.0	Pacific spreading model for magnetic anomaly ages (variable rate), age is provisionally assigned as base M26r.2	Maybe near base of <i>Hybonoticeras hybonotum</i> ammonite zone and lowest occurrence of <i>Gravesia</i> genus, and the base of magnetic polarity Chron M22An	Candidates are Pfeffingen (Swabian Alb, SW Germany) and in Russia	GSSP anticipated in 2012	-
Kimmeridgian Stage	155.6	4.0	Pacific spreading model for magnetic anomaly ages (variable rate), assigning to base M26r.2 (Boreal ammonite definition)	Ammonite -- base of <i>Pictonia baylei</i> ammonite zone of Boreal realm	Flodigarry (Isle of Skye, NW Scotland) (57.6°N, 6.2°W)	GSSP anticipated in 2012	-
Oxfordian Stage	161.2	4.0	Pacific spreading model for magnetic anomaly ages (variable rate), assigning to base M36An	Ammonite -- <i>Cardioceras redcliffense</i> Horizon at base of the <i>Cardioceras scarburgense</i> Subzone (defines base of <i>Quenstedtoceras mariae</i> Zone)	Candidates are Redcliff Point (Dorset, SW England) and Savouron (Provence province, SE France)	GSSP anticipated in 2012	-

<b>Middle Jurassic Series</b>							
Callovian Stage	164.7	4.0	Equal subzones scale Bajo-Bath-Callov	Ammonite -- lowest occurrence of the genus <i>Kepplerites</i> ( <i>Kosmoceras</i> ) (defines base of <i>Macrocephalites herveyi</i> Zone in sub-Boreal province of Great Britain to southwest Germany)	Candidates are Pfeffingen (Swabian Alb, SW Germany) and in Russia	GSSP anticipated in 2012	-
Bathonian Stage	167.7	3.5	Equal subzones scale Bajo-Bath-Callov	Ammonite -- lowest occurrence of <i>Parkinsonia</i> ( <i>G.</i> ) <i>convergens</i> (defines base of <i>Zigzagoceras zigzag</i> Zone)	Candidates are in Iberia, and Ravin du Bès near Digne (Hautes-Alpes, SE France)	Ratified 2008	<i>EPISODES</i> , 32/4, 222 - 248, 2009 -
<b>Lower Jurassic Series</b>							
Toarcian Stage	183.0	1.5	Duration of Aalenian-Toarcian from cycle stratigraphy	Ammonite -- near lowest occurrence of a diversified <i>Eodactylites</i> ammonite fauna; correlates with the NW European Paltus horizon.	Peniche (Portugal)	GSSP anticipated in 2012	-
Plainsbachian Stage	189.6	1.5	Base of Bed 73b	Ammonite association of <i>Biferoceras donovani</i> and <i>Apoderoceras</i> sp.	Wine Haven, Robin Hood's Bay, Yorkshire Coast, England	Ratified 2005	<i>EPISODES</i> , 29/2, 93-106, 2006
Hettangian Stage	199.6	0.6	U-Pb age just below proposed GSSP for base-Jurassic in British Columbia	Near lowest occurrence of <i>Psiloceras</i> ammonite group; associated with a carbon-isotope excursion	Leading candidate is New York Canyon (Nevada, USA) with Kunga Island (British Columbia, Canada) as auxiliary. Other candidate is St. Audries' Bay (Somerset, UK)	Ratified 2010	-
<b>Triassic System</b>							
<b>Upper Triassic Series</b>							
Rhaetian Stage	203.6	1.5	Magnetostratigraphic correlation to cycle-scaled Newark magnetic polarity pattern	Near lowest occurrence of ammonite <i>Cochloceras</i> , conodonts <i>Misikella</i> spp. and <i>Epigondolella mosheri</i> , and radiolarian <i>Proparvicungula moniliformis</i>	Key sections in Austria, British Columbia (Canada), and Turkey	GSSP anticipated in 2012	-
Norian Stage	216.5	2.0	Magnetostratigraphic correlation to cycle-scaled Newark magnetic polarity pattern. However, revised correlations suggest 228.8 Ma	Ammonoid -- Base of <i>Stikinoceras kerri</i> ammonoid zone; near the appearance of <i>Metapolygnathus echinatus</i> within the <i>M. communisti</i> conodont zone	Candidates are Black Bear Ridge (Williston Lake, Canada) and Pizzo Mondello (Sicily, Italy)	GSSP anticipated in 2012	-

Carnian Stage	228.7	2.0	Magnetostratigraphic correlation to cycle-scaled Newark magnetic polarity pattern. However, revised correlations suggest 236.8 Ma	Ammonoid -- lowest occurrence of <i>Daxatina</i> (base of <i>D. canadensis</i> subzone of Trachyceras Zone). Near appearances of conodont <i>Metapolygnathus polygnathiformis</i> noah and of <i>Halobia</i> bivalves. Just above base of S2n magnetic polarity zone and above the maximum flooding surface of Sequence Lad 3.	Candidate GSSP is base of marly limestone bed from base of San Cassiano Fm, 4.5 km south of S. Cassiano town, Dolomites, N. Italy. Important reference sections in New Pass (Nevada, USA) and Spiti (India) (46°31'37"N, 11°55'49"E)	Ratified 2008	<i>Albertiana</i> , 36, Dec 2007
<b>Middle Triassic Series</b>							
Ladinian Stage	237.0	2.0	U-Pb array by Mundil et al. on levels near Nevadites (= Secedensis) ammonite zone in Dolomites, plus placement relative to magnetostratigraphy correlations to cycle-scaled Newark magnetic polarity pattern. However, revised correlations and zircon processing suggest 240.5 Ma	Ammonoid -- lowest occurrence of the <i>Eoprottrachyceras curionii</i> (base of the E. curionii zone); onset of the Trachyceratidae family. Above lowest <i>Budurovignathus praeungaricus</i> conodont	Top of "Chiesense groove", 5m above base of Buchenstein Beds, Caffaro river bed, Bagolino (Brescia province, N. Italy) (45°49'9.5"N, 10°28'15.5"E)	Ratified 2005	<i>EPISODES</i> , 28 (4), 233-244, 2005
Anisian Stage	245.0	1.5	Cycle-stratigraphy scaled to base-Triassic. However, revised zircon processing at P/Tr suggest 251.0 Ma	Either Conodont -- profound turnover including lowest occurrences of <i>Chiosella</i> ( <i>Cs. gondoloides</i> ) followed by <i>Cs. timorensis</i> , or Magnetic -- base of magnetic normal-polarity chronozone MT1n between those two conodont levels. Near base of <i>Paracrochordiceras-Japonites</i> ammonite beds	Candidate GSSPs are in northern Dobrogea province, Romania, and Guandao Guizhou province, China	GSSP anticipated in 2012	<i>Albertiana</i> , 36, Dec 2007
<b>Lower Triassic Series</b>							
Olenekian Stage	249.5	0.7	Cycle-stratigraphy scaled to base-Triassic. However, revised zircon processing at P/Tr suggest 251 Ma	Conodont -- lowest occurrence of <i>Neospathodus waageni</i> s.l., just above base of <i>Rohillites rohilla</i> ammonite zone, and below lowest occurrence of <i>Flemingites</i> and <i>Euflemingites</i> ammonite genera. Within a prominent positive Carbon-13 peak, and just above widely recognizable sequence boundary	Candidate GSSP is in the Mikin Fm. ~1 km NE of Mud (Muth) village, Spiti valley, northwest India (31°57'55.5"N, 78°01'28.5"E)	GSSP anticipated in 2012	<i>Albertiana</i> , 36, Dec 2007

Paleozoic Era							
Permian System							
Lopingian Series							
Changhsingian Stage	253.8	0.7	Permian-Carboniferous time scale is derived from calibrating a master composite section to selected radiometric ages	Conodont -- near lowest occurrence of <i>conodont Clarkina wangi</i>	Base of Bed 4a-2, 88 cm above base of Changxing Limestone, Meishan D section (Zhejiang province, E. China) (31°4'55"N, 119°42'22.9"E)	Ratified 2005	<i>EPISODES</i> , 29(3), 175–182, 2006
Wuchiapingian Stage	260.4	0.7		Conodont -- lowest occurrence of <i>Clarkina postbitteri postbitteri</i>	Base of Bed 6K/115 in Penglaitan section, S. bank of Hongshui River, 20 km ESE of Laibin country town (Guangxi province, S. China). Nearby Tieqiao (Rail-bridge) section is a supplementary reference section (23°41'43"N, 109°19'16"E)	Ratified 2004	<i>EPISODES</i> , 29(4), 253-262, 2006
Cisuralian Series							
Kungurian Stage	275.6	0.7		Conodont -- near lowest occurrence of conodont <i>Neostreptognathus pnevi-N. exculptus</i>	Leading candidate is Mechetlino in southern Ural Mtns.	GSSP anticipated in 2012	-
Artinskian Stage	284.4	0.7		Conodont -- lowest occurrence of conodont <i>Sweetognathus whitei</i>	Leading candidate is Dalny-Tulkas sections in southern Ural Mtns.	GSSP anticipated in 2012	-
Sakmarian Stage	294.6	0.8	"	Conodont -- near lowest occurrence of conodont <i>Sweetognathus merrelli</i>	Leading candidate is at Kondurovsky, Orenburg Province, Russia	GSSP anticipated in 2012	-



Carboniferous System							
<i>Pennsylvanian Subsystem</i> (series classification approved in 2004)							
<i>Upper Pennsylvanian Series</i>							
Gzhelian Stage	303.4	0.9	"	Conodont -- lowest occurrence of <i>Idiognathodus simulator</i> (s.str.). Close to lowest occurrence of ammonoid <i>Shumardites</i>	Candidates are in southern Urals or Nashui (south China)	GSSP anticipated in 2012	-
Kasimovian Stage	307.2	1.0	"	Fusulinid (benthic foraminifer) -- lowest occurrence of fusulinid <i>Protriticites</i> , which is near lowest occurrence of ammonoid <i>Eothalassoceras</i> . Alternative (higher) base is lowest occurrence of fusulinid <i>Montiparus montiparus</i> , which is near lowest occurrence of conodont <i>Idiognathodus sagittalis</i> . Age given here is the higher version; the lower one is about 1 myr older.	Candidates are in southern Urals, southwest USA and south-central China	GSSP anticipated in 2012	-
<i>Middle Pennsylvanian Series</i>							
Moscovian Stage	311.7	1.1	"	Conodont -- either the lowest occurrence of <i>Idiognathoides postsulcatus</i> or of <i>Declinognathodus donetzianus</i>	Candidates are in southern Urals or Nashui (south China)	GSSP anticipated in 2012	-
<i>Lower Pennsylvanian Series</i>							
<i>Mississippian Subsystem</i>							
<i>Upper Mississippian Series</i> (series classification approved in 2004)							
Serpukhovian	328.3	1.6	"	Conodont -- lowest occurrence of <i>Lochriea zieglerei</i> [one zone lower than working definition in GTS04]	Candidates are Verkhnyaya Kardailovka (southern Urals) or Nashui (south China)	GSSP anticipated in 2012	-
<i>Middle Mississippian Series</i>							
Visean	345.3	2.1	"	Benthic Foraminifer -- first appearance of <i>Eoparastaffella simplex</i> , in the lineage of " <i>E. ovalis</i> group" to <i>E. simplex</i>	Stream section south of Pengchong village, about 130 km SW of Guilin, Guangxi Autonomous Region (south China) (24°26'N, 109°27'E)	Ratified 2008	-

## Ordovician System

### Upper Ordovician Series

Hirnantian Stage	445.6	1.5	"	Graptolite, lowest occurrence of <i>Normalograptus extraordinarius</i> , base of major positive carbon-13 isotope excursion, and beginning of pronounced sea-level fall associated with onset of a major glaciations	0.39 m below base of Kuanyinchiao Bed, Wangjiawan North section, 42 km N. of Yichang city (west Hubei province, China) (30°59'2.68"N, 111°25'10.76"E)	Ratified 2006	<i>EPISODES</i> , 29 (3), 183-196, 2006
Katian Stage	455.8	1.6	"	Graptolite, lowest occurrence of <i>Diplacanthograptus caudatus</i> . Just below base of Guttenberg carbon-13 isotope excursion	Above base of Bigfort Chert, Black Knob Ridge section, 5 km NE of Atoka town (S. Oklahoma, USA) (34°25.829'N, 96°4.473'W)	Ratified 2006	<i>EPISODES</i> , 30 (4), 2007

### Middle Ordovician Series

Dapingian Stage	471.8	1.6		Conodont -- lowest occurrence of <i>Baltoniodus triangularis</i> . Approximates the boundary between the lower and upper intervals of <i>Azygograptus suecicus</i> graptolite zone	Near base of the Dawan Formation (Huanghuachang roadside exposure, 22km NE of the Yichang city (Hubei Province, South China) (30°51'37.8"N, 110°22'26.5"E)	Ratified 2007	<i>EPISODES</i> 28 (2), 105-117, 2005 <i>EPISODES</i> , 32 (2), 96-113, 2009
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## Cambrian System

Overview of potential Cambrian subdivisions in *EPISODES* 23 (3), p. 188-195, 2000

### Furongian Series

Stage 10	492.0	-	Estimated from trilobite-zone scalings	Trilobite -- lowest occurrence of <i>Lotagnostus americanus</i> . An internal substage division might be lowest occurrence of <i>Codylodus adesei</i> conodont	Candidate section is Duibian (Zhejiang province, China)	GSSP anticipated in 2012	-
Stage 9	496.0	-	Estimated from trilobite-zone scalings	Trilobite -- lowest occurrence of <i>Agnostotes orientalis</i>	Candidate sections at Duibian (Zhejiang province, China) and Gonggiri (Korea)	GSSP anticipated in 2012	-

<b>Series 3</b>							
Guzhangian Stage	503.0	-	Estimated from trilobite-zone scalings	Trilobite -- lowest occurrence of <i>Lejopyge laevigata</i>	>121.3 m above the base of the Huaqiao Formation. Louyixi, Guzhang County, NW Hunan Province, S. China (28°43.20'N, 109°57.88'E)	Ratified 2008	<i>EPISODES</i> 32/1, 41-55, 2009-
Drumian Stage	506.5	-	Estimated from trilobite-zone scalings	Trilobite -- lowest occurrence of <i>Ptychagnostus atavus</i> . Just above the GSSP is a significant negative carbon-isotope excursion	62 m above base of Wheeler Fm., Stratotype Ridge, Drum Mountains, western Utah, USA (39°30.705'N, 112°59.489'W)	Ratified 2006	<i>EPISODES</i> , 30 (2), 2007
Stage 5	510.0	-	Estimated from trilobite-zone scalings -- slightly younger than the 511 Ma age on <i>Protolenus</i> and <i>Ellipsocephalus</i> -bearing strata in New Brunswick	Trilobite -- potentially lowest occurrence of <i>Oryctocephalus indicus</i>	Candidate sections are Wuliu-Zengjiayan (east Guizhou, China) and Split Mountain (Nevada, USA)	GSSP anticipated in 2012	-
<b>Series 2</b>							
Stage 4	517.0	-	-	Trilobite -- lowest occurrence of <i>Olenellus</i> or <i>Redlichia</i>	-	GSSP anticipated in 2012	-
Stage 3	521.0	-	-	Trilobites -- their lowest occurrence (superfamily <i>Fallotaspidoidae</i> )	-	GSSP anticipated in 2012	-

Status of GSSPs 2004 - 2011 modified from: <https://engineering.purdue.edu/Stratigraphy/gssp/> [URL 2012]

## APPENDIX 7

# IGCP Projects – 2011

### (IUGS-UNESCO CO-SPONSORED)

#### Earth Resources: Sustaining our Society

Knowledge on natural resources - including minerals, hydrocarbons, geothermal energy, and water - and their management is the frontline of the struggle for more sustainable and equitable development. The environmentally responsible exploitation of these resources is a challenge for geoscience research. The progress of technological development is equally bound to this premise.

#### 540 GOLD-BEARING HYDROTHERMAL FLUIDS OF OREGENIC DEPOSITS

**Project leaders:** P.S. Garofalo (Italy), J.R. Ridley (USA), Vsevolod Prokof'ev (Russia)

*Duration:* 2007-2011

[http://www.geomin.unibo.it/igcp\\_540](http://www.geomin.unibo.it/igcp_540)

#### 557 DIAMONDS, XENOLITHS AND KIMBERLITES

**Project leaders:** Holger Sommer (Botswana), Klaus Regenauer-Lieb (Australia), Haemyeong Jung (South Korea), Jonathan Kashabano (Tanzania), Gétan Moloto-A-Kenguemba (Central African Republic)

*Duration:* 2007-2011

[http://www.holgersommer.de/IGCP\\_557.html](http://www.holgersommer.de/IGCP_557.html)

#### 565 GEODETIC MONITORING OF THE GLOBAL WATER CYCLE

**Project leaders:** Hans-Peter Plag (USA), Richard S. Gross (USA), Markus Rothacher (Germany), Norman L. Miller (USA), Susanna Zerbini (Italy), Chris Rizos (Australia)

*Duration:* 2008-2012

<http://www.iag-ggos.org/igcp565>

#### 582 TROPICAL RIVERS: HYDRO-PHYSICAL PROCESSES, IMPACTS, HAZARDS AND MANAGEMENT

**Project leaders:** Edgardo M. Latrubesse (Argentina), Rajiv Sinha (India), Jose C. Stevaux (Brazil)

*Duration:* 2009-2013

[Website in preparation](#)

#### 597 AMALGAMATION AND BREAK-UP OF PANGAEA: THE TYPE EXAMPLE OF THE SUPERCONTINENT CYLCE

**Project leader:** J. Brendan Murphy (Canada)

*Duration:* 2011-2015

#### Global Change: evidence from the geological record

Changes in the Earth's climate and of life on Earth are preserved in the geologic record. Ice and dust records, terrestrial and ocean sediments, and sequences of fossil plant and animal assemblages all tell the story of our Planet which holds important lessons about present-day environmental challenges and the ways to mitigate and manage environmental damage.

#### 526 RISKS RESOURCES AND RECORD OF THE PAST ON THE CONTINENTAL SHELF

**Project leaders:** Francesco Latino Chiocci (Italy), Lindsay Collins (Australia), Michel Michaelovitch de Mahiques (Brazil), Renée Hetherington (Canada)

*Duration:* 2007-2011

<http://gte526.geoma.net>

#### 572 PERMIAN-TRIASSIC ECOSYSTEMS

**Project leaders:** Zhong Qiang Chen (Australia), Richard J. Twitchett (United Kingdom), Jinnan Tong (China), Margret L. Fraiser (USA), Sylvie Crasquin (France), Steve Kershaw (United Kingdom), Thomas J. Algeo (USA), Kliti Grice (Australia)

*Duration:* 2008-2012

<http://www.igcp572.org/>



- 575 PENNSYLVANIAN TERRESTRIAL HABITATS AND BIOTAS OF SOUTHEASTERN EURAMERICA**  
**Project leaders:** Christopher J. Cleal (United Kingdom), Stanislav Opluštil (Czech Republic), Isabel van Waveren (The Netherlands), Mihai E. Popa (Romania), Barry A. Thomas (United Kingdom)  
*Duration: 2010-2014*
- 587 ENTITY, FACIES AND TIME – THE EDIACARAN (VENDIAN) PUZZLE**  
**Project leaders:** Patricia Vickers-Rich (Australia), Mikhail Fedonkin (Russia), Jim Gehling (Australia), Guy Narbonne (Canada)  
*Duration: 2010-2014*  
<http://www.geosci.monash.edu.au/precseite/>
- 588 PREPARING FOR COASTAL CHANGE**  
**Project leaders:** Adam D. Switzer (Malaysia), Craig Sloss (Australia), Benjamin Horton (USA), Yongqiang Zong (China)  
*Duration: 2010-2014*  
[Website in preparation](#)
- 591 THE EARLY TO MIDDLE PALEOZOIC RECOLUVION**  
**Project leaders:** Bradley D Cramer (USA), Thijs R.A. Vandenbroucke (France), Rebin Zhan (China), Michael J. Melchin (Canada), Živilė Žigaitė (Lithuania), Kathleen Histon (Italy), Guillermo L. Albanesi (Argentina) and Kikael Calner (Sweden)  
*Duration: 2011-2015*  
<http://igcp591.org/>
- 596 CLIMATE CHANGE AND BIODIVERSITY PATTERNS IN THE MID-PALEOZOIC**  
**Project leaders:** Peter Königshof (Germany)  
*Duration: 2011-2015*  
<http://www.senckenberg.de>

#### **Geohazards: mitigating the risks**

Geohazards include earthquakes, volcanic activity, landslides, tsunamis, floods, meteorite impacts and the health hazards of geologic materials, and can range from local events such as a rock slide or coastal erosion to events that threaten humankind such as a supervolcano or meteorite impact. Earth scientists undertake research to better understand these hazards and contribute to risk management policies related to social and technical issues associated with geohazards as well as disaster mitigation.

- 567 EARTHQUAKE ARCHAEOLOGY – ARCHAEOSEISMOLOGY ALONG THE ALPINE-HIMALAYAN SEISMIC ZONE**  
**Project leaders:** Manuel Sintubin (Belgium), Iain Stewart (United Kingdom), Tina Niemi (USA), Erhan Altunel (Turkey)  
*Duration: 2008-2012*  
<http://ees.kuleuven.be/igcp/567/>
- 571 RADON, HEALTH AND NATURAL HAZARDS**  
**Project leaders:** Gavin K. Gillmore (United Kingdom), Robin G.M. Crockett (United Kingdom), Frederic Perrier (France), Tadeusz Przylibski (Poland), Vivek Walia (Taiwan of China), Bikram Jit Singh Bajwa (India)  
*Duration: 2009-2013*  
<http://www2.northampton.ac.uk/appliedsciences/appliedscience/research/igcp>
- 585 E-MARSHAL: EARTH'S CONTINENTAL MARGINS: ASSESSING THE GEOHAZARD FROM SUBMARINE LANDSLIDES**  
**Project leaders:** Roger Urgeles (Spain), David Mosher (Canada), Jason Chaytor (USA), Michael Strasser (Germany)  
*Duration: 2010-2014*  
<http://www.igcp585.org>

#### **586-Y GEODYNAMIC PROCESSES IN THE ANDES 32°-34°S**

**Project leaders:** Laura Giambiagi (Argentina), Luisa Pinto (Chile), Maisa Tunik (Argentina), Sergio Sepúlveda (Chile), Stella Maris Moreiras (Argentina), Marcelo Farias (Chile), Greg Hoke (USA)

*Duration: 2010-2012 (Young Scientist Project)*

[Website in preparation](#)

#### **Hydrogeology: Geoscience of the water cycle**

Life on Earth depends on water, and its sustainable use is crucial for continued human activities. Earth's water cycle involves studying, understanding, and managing groundwater systems, hydrogeology, as well as sources, contamination and vulnerability of water systems.

#### **580 APPLICATION OF MAGNETIC SUSCEPTIBILITY ON PALEOZOIC SEDIMENTARY ROCKS**

**Project leaders:** Anne-Christine da Silva (Belgium), Michael T. Whalen (USA), Jindrich Hladil (Czech Republic), Daizhao Chen (China), Simo Spassov (Belgium), Frederic Boulvain (Belgium), Xavier Devleeschouwer (Belgium)

*Duration: 2009-2013*

[Website in preparation](#)

#### **581 EVOLUTION OF ASIAN RIVER SYSTEMS**

**Project leaders:** Hongbo Zheng (China), Liviu Giosan (USA), Ryuji Tada (Japan), Peter Clift (United Kingdom), Masood Ahmad (India), Zheng-Xiang Li (Australia), Kuo-Yen Wei (Taiwan of China)

*Duration: 2009-2013*

<http://isg.nju.edu.cn/Exchange/Index.aspx>

#### **604 GROUNDWATER AND WETLANDS IN IBERO-AMERICA**

**Project leader:** Emilia Bocanegra (Argentina), Emilio Custodio (Spain), Marisol Manzano (Spain), Gerson Cardoso (Brazil) and Teresita Betancur (Columbia)

*Duration: 20011-2015*

[Website in preparation](#)

#### **Geodynamic controls our environment**

Our habitable environment at the Earth's surface is linked and controlled by processes occurring deep within the Earth. Earth scientists use, inter alia, geophysical techniques to study deep Earth processes ranging from changes in the Earth's magnetic field to plate tectonics to understand better the Earth as a dynamic planet. Those processes are also relevant to natural resource exploration, distribution and management of groundwater resources and the study and mitigation of natural hazards such as earthquakes.

#### **546 SUBDUCTION ZONES OF THE CARIBBEAN**

**Project leaders:** Antonio Garcia-Casco (Spain), Uwe Martens (USA)

*Duration: 2007-2011*

<http://www.ugr.es/~agcasco/igcp546/>

#### **559 CRUSTAL ARCHITECTURE AND LANDSCAPE EVOLUTION**

**Project leaders:** Bruce R. Goleby (Australia)

*Duration: 2008-2012*

<http://www.earthscrust.org>

#### **574 BENDING AND BENT OROGENS, AND CONTINENTAL RIBBONS**

**Project leaders:** Stephen T. Johnston (Canada), Gabriel Gutierrez-Alonso (Spain), Arlo Weil (USA)

*Duration: 2009-2013*

<http://www.brynmawr.edu/geology/faculty/aweil/IGCP-574/>

## IGCP-SIDA Projects

### 594 IMPACT OF MINING ON THE ENVIRONMENT IN AFRICA

**Project leaders:** Bohdan Kribek (Czech Republic), Benjamin S. Mapani (Namibia), Imasiku A. Nyambe (Zambia)

*Duration: 2011-2015*

<http://www.geology.cz/igcp594>

### 598 ENVIRONMENTAL CHANGE AND SUSTAINABILITY IN KARST SYSTEMS

**Project leaders:** Zhang Cheng (China), Chris Groves (USA), Augusto Auler (Brazil), Jiang Yongjun (China), Martin Knez (Slovenia), Bartolome Andreo-Navarro (Spain), Yuan Daoxian (China) and Ezzat Raeisi (Iran)

*Duration: 2011-2015*

### 599 THE CHANGING EARLY EARTH

**Project leader:** Jaana Halla (Finland), Kent C. Condie (USA) and Roberto Dall'Agnol (Brazil)

*Duration: 2011-2015*

<https://sites.google.com/a/helsinki.fi/early-earth-tectonics/>

### 600 METALLOGENESIS OF COLLISIONAL OROGENS

**Project leaders:** Zenqian Hou (China), David Leach (USA), Jeremy Richards (Canada), Richard J. Goldfarb (USA)

*Duration: 2011-2015*

### 601 SEISMOTECTONICS AND SEISMIC HAZARDS IN AFRICA

**Project leaders:** Mustapha Meghraoui (France), Midzi Vunganai (South Africa), Ayele Atalay (Ethopia) and Benouar Djillali (Algeria)

*Duration: 2011-2015*

### 606 ADDRESSING ENVIRONMENTAL AND HEALTH IMPACTS OF MAJOR AND ABANDONED MINES IN SUB-SAHARAN AFRICA

**Project leader:** Theo C. Davies (South Africa) and Benjamin S. Mapani (Namibia)

*Duration: 2011-2015*

### 616 TECTONIC, PALEOCLIMATIC, LANDSCAPE EVOLUTION OF CENTRAL AFRICA

**Project leader:** Boniface Kankue (France)

*Duration: 2011-2015*

## Active IGCP Projects in 2011

IUGS-UNESCO funded projects	22
IGCP /SIDA funded projects	7
Total	29

## APPENDIX 8

# Acronyms Used by IUGS


AAPG	American Association of Petroleum Geologists
AAS	NC for Solid Earth Sciences
AAS	Australian Academy of Science
AAWG	Association of African Women Geoscientists
AECS	Association of European Geological Societies
AGA	Arab Geologist Association
AGA	Asociación Geológica Argentina
AGI	American Geosciences Institute
AGID	Association of Geoscientists for International Development
AGS	Albanian Geological Survey
AGSO	Geoscience Australia
AGU	American Geophysical Union
AIPEA	Association Internationale Pour l'Etude des Argiles
ANCG	Austrian National Committee for Geosciences
ANGPA	Asociacion Nacional de Geologos Profesionales Afines
ASRT	Academy of Scientific Research and Technology
Az NCG	Azerbaijan NC of Geologists for IGCP and IUGS
BGS	Belarusian Geological Society
BUMIGEB	Bureau of Mines and Geology of Burkina Faso
CBCG	Comitê Brasileiro de Ciências Geológicas, Brasília
CBGA	Carpathian Balkan Geological Association
CCCDRLP	Coordinating Committee on Continental Drilling for International Lithosphere Program
CCOP	Coordinating Committee for Geoscience Programmes in E and SE Asia
CFES	Canadian Federation of Earth Sciences
CGI	Commission on the Management & Application of Geoscience Information
CGMW	Commission for the Geological Map of the World
CIFEG	International Center for Training and Exchanges in the Geosciences
CNFG	Comité National Français de Géologie
CODATA	Committee on Data for Science and Technology
COGE	IUGS Commission on Education, Training and Tech Transfer
COSPAR	Committee on Space Research
COSTED/IBN	Committee on Science & Technology in Developing Countries
CPC	Circum-Pacific Council
DGRM	Dirección General de Recursos Minerales
DGSM	Department of Geological Survey and Mines
DINAGE	La Dirección Nacional de Geología
DMG	Dirección des Mines et de la Géologie
DNC	Danish National Committee for Geology
DOSECC	Drilling, Observation and Sampling of the Earth's Continental Crust
EAGE	European Association Geological Engineering
EASE	European Association of Science Editors
EGU	European Geosciences Union
EMU	European Mineralogical Union
ENCGS	Egyptian National Committee of Geological Sciences
EstNCG	Estonian National Committee for Geology
FCT	Fundação para a Ciência e Tecnologia
FNCG	Finnish National Committee for Geology

GARS	IUGS/UNESCO Program on Geological Application of Remote Sensing
GEM	Geoscience for Environmental Management
GMD	Geologisch Mijnbouwkundige Dienst
GRAS	Geological Research Authority of Sudan
GS	Geochemical Society
GSL	Geological Society of London
GSA (m)	Geological Society of America
GSA (f)	Geological Society of Africa
GSB	Geological Survey of Bangladesh
GSC	Geological Society of China
GSC	Geological Society of Croatia
GSD	Geological Survey Department, Cyprus
GSD	Geological Survey of Zambia
GSI	Geological Survey of Iran
GSI	Geological Society of India
GSMRB	Geological Survey and Mineral Resources Board
GSN	NC for Geological Sciences for New Zealand
GSN	GSN's Subcommittee for IUGS
GST	Geological Survey of Tanzania
GV	Geologische Vereinigung
IAEG	International Association of Engineering Geology and the Environment
IAG	International Association of Geomorphologists
IAGC	International Association of GeoChemistry
IAGC	The Indonesian Association of Geologists
IAGOD	International Association on the Genesis of Ore Deposits
IAH	International Association of Hydrogeologists
IAMG	International Association for Mathematical Geology
IAS	International Association of Sedimentologists
IAU	International Astronomical Union
ICL	International Consortium on Landslides
ICS	International Commission on Stratigraphy
ICS ISES	Subcommission on Ediacarn Stratigraphy
ICS SCCS	Subcommission on Carboniferous Stratigraphy
ICS SSC	Subcommission on Stratigraphic Classification
ICS SCS	Subcommission on Cretaceous Stratigraphy
ICS SDS	Subcommission on Devonian Stratigraphy
ICS SJS	Subcommission on Jurassic Stratigraphy
ICS SNS	Subcommission on Neogene Stratigraphy
ICS SOS	Subcommission on Ordovician Stratigraphy
ICS SPS	Subcommission on Paleogene Stratigraphy
ICS SPS	Subcommission on Permian Stratigraphy
ICS SSS	Subcommission on Silurian Stratigraphy
ICS STTP	Subcommission on the Terminal Proterozoic System
ICS-STS	Subcommission on Triassic Stratigraphy
ICSU	International Council for Science
ICSU-Africa	ICSU Regional Office for Africa
ICSU-Asia	ICSU Regional Office for Asia and the Pacific
IFPS	International Federation of Palynological Societies
IGCC	International Geological Congress Committee
IGCP	IUGS-UNESCO International Geoscience Program
IGEO	International Geoscience Education Organization
IGME	Institute of Geology and Mineral Exploration



IGU	International Geographical Union
ILP	International Lithosphere Program
IMA	International Mineralogical Association
IMGGA	International Medical Geology Association
INGEOMIN	National Institute of Geology and Mining
INGEMMET	Instituto Geologico Minero y Metalurgico
INHIGEO	International Commission on the History of Geological Sciences
INQUA	International Union for Quaternary Research
IPA	International Palaeontological Association
IPA	International Permafrost Association
IRGM	Institute for Geological and Mining Research
ISCS	Subcommission on Cambrian Stratigraphy
ISPGJ	Albanian Geological Research Institute
ISPRS	International Society for Photogrammetry and Remote Sensing
ISRM	International Society for Rock Mechanics
ISSMGE	International Society of Soil Mechanics & Geotechnical Engineering
IUGG	International Union of Geodesy and Geophysics
IUGS	International Union of Geological Sciences
IUSS	International Union of Soil Sciences
IWGSSM	International Working Group on Sustainable Subsurface Management
IWGUG	International Working Group on Urban Geology
JGA	Jordanian Geologists Association
JMG	Minerals and Geoscience Department Malaysia
KazGEO	The Kazak Geological Society
Met. Society	Meteoritical Society
MGS	Ministère de l'Energie et des Mines
MIME	Dirección Nacional de Minería y Geología
MME	Commission for Geological Sciences
NC	Nominating Committee
NDG	National Directorate of Geology
NGWA	National Ground Water Association
ONM	Office National des Mines
ORGM	Office National de Recherche Géologique et Minière
PAGS	Pakistan Academy of Geological Sciences
PC	Publications Committee
ProGEO	The European Association for the Conservation of the Geological Heritage
RASAB	The Royal Academies of Sciences and Arts of Belgium
RNCG	Russian National Committee of Geologists
RSZN	Royal Society of New Zealand
SC-IGBP	Scientific Cttee. for the International Geosphere-Biosphere Prog.
SCAR	Scientific Committee on Antarctic Research
SCCT	Subcommission on Computing in Tectonics
SCFCS	Standing Committee on Freedom in the Conduct of Science
SCMR	Subcommission on the Systematics of Metamorphic Rocks
SCNS	Swedish National Committee for Geology
SCOPE	Scientific Committee on Problems of the Environment
SCOR	Scientific Committee on Oceanic Research
SDBP	Subcommission on Data Bases for Petrology
SECE	Commission on Solid Earth Chemistry and Evolution
SEG	Society of Economic Geologists, Inc.
SEPM	Society for Sedimentary Geology
SERGIOTECMIN	Servicio Nacional de Geología y Minería

SEUA	Laboratory of Experimental Seismotectonics
SGA	Society for Geology Applied to Mineral Deposits
SGCH	Sociedad Geologica de Chile
SGS	Saudi Geological Survey
SIS	Stratigraphic Information Services
SNIG	Sistema Nacional de Instituto Geografico
SPC	Subcommission on Precambrian Stratigraphy
SQS	Subcommission on Quaternary Stratigraphy
SSIR	Subcommission on the Systematics of Igneous Rocks
SSSR	Subcommission on Systemics of Sedimentary Rocks
TECTASK	Task Group on Tectonics and Structural Geology
TGGB	IUGS Task Group on Global Geochemical Baselines
TGPA	IUGS Task Group on Public Affairs
TIGG	Isotope Geology and Geochronology
UFRSTRM	CURAT – Science de la Terre e des Ressources minieres
UNAM	National Committee for Geological Sciences
URSI	International Union of Radio Science
USNC	U.S. National Committee for IUGS
Uzbekistan NC	National Committee of Geologists of Uzbekistan
VUGS	Vietnam Union of Geological Sciences



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