

**40th Anniversary Meeting
of the International Geoscience Programme (IGCP)**
UNESCO Headquarters, Room IV
22 February 2012



MEETING SUMMARY

For forty years, the International Geoscience Programme has been encouraging international geoscience research teams, increasingly collaborating on Earth science questions of special societal relevance.

IGCP, the acronym retained from the original International Geological Correlation Programme, celebrated this 40th anniversary with a series of events based around a conference at UNESCO Headquarters in Paris on 22 February 2012.



The celebration was opened by greetings from representatives of the two partners in IGCP: the UNESCO Director-General, Irina Bokova, and the President of the International Union of Geological Sciences, Alberto Riccardi. The chair of the IGCP Scientific Board, Vivi Vajda from Lund University in Sweden, provided an overview of the work of the IGCP, and Scientific Board Member and science communicator, Iain Stewart from Plymouth University in the UK provided an explanation of the importance of the Geosciences for Society using the stories held in stones as a lens. For example, he provided coal as a record of previous climate during the Carboniferous Geological Period, being used extensively for economic activity which is one of the reasons of changing climate today.

I. Panel discussion on The Geoscience Challenges for the Planet

The panel, moderated by Hamish Campbell from the Institute of Geological and Nuclear Sciences Limited (GNS Science) and New Zealand IGCP National Committee, consisted of high level experts who were asked to provide their views of what are the current geosciences challenges for the planet and some solutions. Discussions including significant contributions from the audience and were as follows:



Heavy use of **minerals and natural resources** was raised as a major challenge for our modern society, with a crucial need to adopt stronger sustainable practices and more transparent use of the resources. Increased efforts on accurate and reliable quantity surveying would provide better sustainable planning of the use of natural resources. Issues of demand, supply, and consumption can be overcome by increased efficiency and technology, as well as reduced consumption by being less dependent on non-renewable natural resources with the contribution of increased research and investment into renewable energy.



Natural hazards are of increasing concern with ever-growing world population combined with the accelerating rate of urbanization. Natural disasters from subduction zone mega-earthquakes still remain poorly understood. Research on such earthquakes through modelling and data integration should become an important focus in the geoscientific community. Volcanic hazards including their effects on aviation safety were also raised as important challenges, with a need to deploy more monitoring of active volcanoes.

Communication of science was raised numerous times as a major ambition to effectively transmit science to policy. Some of the key initiatives needed would invest in more science-led communication, and ensure adequate geoscience education of journalists. A well-received proposal was the creation of an International School of Science Education. IGCP projects were used as examples with successful practices communicating follow-up results and establishment of UNESCO Category II Centres.

Education remains a central issue with respect to the societal awareness of the relevance of Earth science. A focus on implementing geoscience education in school's curriculum including adequate geoscience education of teachers is needed. Improvements in enhancing outreach and Earth science education can also be achieved successfully through communication using Geoparks.

Issues of **human resources** were raised in the discussion with respect to the training and sourcing skills required to investigate many of "The Geoscience Challenges for the Planet". It was suggested to make better use of the experience and wisdom of the older generation in the scientific community.

Other challenges brought up in the panel discussion included issues related to climate change, water resources and usage, pollution and health hazards, demand for hi-tech infrastructure, and renewable energy. All of these issues are important concerns for the future of our society and each of them need to be managed with more sustainable planning.

The main summary points addressing the geoscience challenges ahead and their potential solution include **knowledge, education, and communication**. The challenges and solutions all relate to these three major areas of human endeavour.

II. Talks on the Relevance of IGCP

Edward Derbyshire, former IGCP Chair and editor of *Tales set in Stone: 40 years of IGCP*, introduced the session on the relevance of IGCP and gave a history of the programme. The session moderated by Jean-Paul Cadet from UNESCO consisted of presentations from project leaders of each of the five IGCP themes about the key project results and vision for the future of the theme.



The IGCP themes include ***Earth Resources: Sustaining our society***, ***Global Change and Evolution of Life: Evidence from the geological record***, ***Geohazards: Mitigating the risks***, ***Geoscience of the water cycle***, and ***Geodynamic Control of our Environment***.

For the past 40 years, there have been 617 project proposals, out of which 340 have been funded as successful IGCP projects. These IGCP projects have been highly successful in connecting international research teams and developing early career scientists while producing high-quality scientific data utilizing multidisciplinary approach upon which to base planning for the Earth's future. The funding level is not immense with seed money, but the scientists profoundly benefit from this cooperative spirit generated under the umbrella of UNESCO and IUGS enabling them in most cases to obtain the remaining larger funds from national sources. The projects also have the benefit to engage the youth, the public and global leaders, educating them in the knowledge and application of Earth sciences.

For instance the IGCP theme ***Geohazards*** represents one of the major issues the globalized society of the 21st century will be increasingly confronted with. Scientists and engineers must find a way to transfer their knowledge to satisfy local policy makers and the general public, whom ultimately perceive the risks to be too remote to be taken seriously. Recent disasters – in particular the Tohoku earthquake and tsunami that hit Japan in March 2011 – has shockingly revealed the limitations of science and technology, despite our concerted efforts to sensitize the community to geohazards. Contributors to the discussion on geohazards unanimously hold the conviction that an informed citizenry is the best defence for future geohazards. Scientists and engineers need to recognize that they have to invest in better communicating the consequences of their scientific findings, in particular when risks are involved. They need to raise the general level of knowledge of local communities, by using past disasters as valuable 'learning moments', and by investing in geosciences education. Moreover, scientists and engineers should be increasingly involved in the policy making itself, eventually guaranteeing that geosciences become pivotal in any decision making.

III. Panel discussion on IGCP and other Earth Science global programmes

The panel consisted of diverse experts who were asked to provide a reflection on the IGCP and how they (or may in the future) integrate with other Earth Science Programmes. The discussion was moderated by John Ludden of the British Geological Survey.



The IGCP is probably the oldest and most successful global scientific and educative programme in the Earth sciences. The panel was unanimous in applauding the contribution of IGCP in bringing the global geosciences community closer together, that result from the cooperative character of the programme, which crosses natural, political, economical and knowledge boundaries at a fundamental level. In particular IGCP contributes not only to the advance of scientific fields of relevance to society but also contribute to filling existing gaps in geoscience education and the management and application of information around the world.

Other “Earth Science global programmes” such as the International Ocean Drilling Programme (IODP), International Continental Drilling Programme (ICDP), or the International Lithosphere Programme (ILP) are very successful international programmes with large projects; however they differ from a programme like IGCP in being mainly focused on research and funded by a few national governments. Their educative and international participation is therefore restricted, and do not operate as a truly global network of earth scientists. It was suggested that programmes through UNESCO’s IGCP and IUGS could provide travel grants and seed monies to encourage scientists with limited funding from developing countries to develop through some of these well-established international science programmes.

In other more recent programmes such as Group on Earth Observations (GEO) and Global Earth Observations System of Systems (GEOSS) that resulted from actions taken by leading industrialized countries in 2002 to collect remote sensing data in “Societal Benefit Areas”, there is a strong network of international collaboration; however Earth sciences thus far play a minor role in their initiatives. The panel recognized the need to reemphasize the role and importance of Earth sciences in initiatives such as GEOSS.

Advance in the transference of information on mapping data via the internet has recently resulted in the creation of some new programmes such as One Geology. This is clearly a global programme focused in fundamental aspects of the Earth sciences with a strong input from some geological surveys, and in the future potentially stronger involvement from UNESCO.

The Earth sciences contribution to the global challenges of poverty alleviation, resource supply, a healthy planet and disaster reduction had been underlined in UNESCO supported actions such as the International Year of Planet Earth (IYPE).

The Young and Early career earth Scientists (YES Network) was presented as an influential driving force facilitating global geosciences initiatives. It was proposed that IUGS should target young and outstanding scientists across the globe, where a small contribution would allow a young scientist to be part of a larger international science project or global programme.

In general, unlike UNESCO's IGCP, national funding in the Earth sciences has facilitated the implementation of diverse programmes in different countries and has been associated with deployment of diverse infrastructure and data and modeling systems which are generally focused on "national" needs. More focus on a global approach should be a priority and international organizations could facilitate this. UNESCO's IGCP programmes and IUGS would be instrumental in the future in ensuring sustainable global growth and could provide powerful links to other global programmes.

One important goal for the future at the international level is to achieve better implementation and coordination of all existing related geoscientific initiatives. This issue brought considerable debates on some of the solutions for better coordination. The general perspective is to reinforce the existing infrastructures and networks coordinated by the global programmes, and work toward greater efficiency and relevance while reducing the existing duplications of functions and efforts.

In terms of funding, the Belmont forum <http://www.igfagcr.org/index.php/belmont-forum> in its first call will have as its two first-order challenges *Coastal vulnerability and Freshwater Security* both of which should involve Earth sciences. This forum of funders is an important group to influence the add-ons objectives proposed here from this IGCP panel discussion. Similar objectives have been proposed by the Geoscience Global Initiative (GGI) (<http://www.agiweb.org/members/ggi/GGIReport.pdf>), which will have a meeting in August this year at the International Geological Congress in Brisbane to further advance this agenda.

The meeting ended with closing remarks from Iain Stewart on some of the key themes including knowledge, education, communication, global collaboration, and better coordination.



The event was followed by a reception and geological wine and cheese tasting, with guest speakers Patrick De Wever and Jean-Pierre Tastet, wine and cheese donations from Mr. et Mme Vignot, Mr. Chouial, and from the French Geoparks of the Reserves Géologique de Haute-Provence and the Massif des Bauges.

