

Geoheritage, Geoparks and the Promotion of Earth Sciences through the International Year of Planet Earth in 2008 (地质遗产、地质公园及通过2008国际地球年促进地球科学)

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In the years 2000 and 2001 a few visionaries in IUGS under the lead of Ed de Mulder, at that time President of IUGS, started to think out loudly about an “International Year of Planet Earth” (YEAR). It was their feeling that globally the geosciences did not get that part of public recognition that geosciences should earn, compared to ecology, economy, sustainable development and environmental sciences at large. They were convinced that geosciences could contribute much more to the well-being of the human society if the available knowledge of geoscientists would be used wisely. The low awareness of the benefits of geosciences to society in the public and at the level of politicians and decision-makers, created a long-lasting and continuing decrease of financial means which was and still is crucial for the decrease in the absolute number of geoscience projects, the reduction of respective university institutes, the closing of federal or state geological surveys or merging them with other institutions, and by such reducing the possibility of immediate impact and action, and, last, but not least, in a decreasing number of university students in geosciences. From the beginning of the considerations it was evident that the YEAR must combine science and outreach components in a balanced way. The best way to reach this challenge seemed to target an “International Year of Planet Earth”, proclaimed by the United Nations.

It was a rather long, complex and sometimes tricky way to find sufficient support on the geoscientific level, but also, even more complicated to gain political support. Extremely helpful was the support provided by

the Executive Committee of IUGS, received after convincing the majority of the EC members, as well as the full support of the former Division of Earth Sciences of UNESCO from the very beginning. A “high-level” UNESCO meeting under the chairmanship of the Director-General of UNESCO, Koichiro Matsuura, organized for permanent delegations as well as for top geoscientists took place on 11 February 2004: The result was a wide-range support of the idea to proclaim a UN “YEAR”. In August 2004 140 geoscientific delegations participating in the 32nd International Geological Congress in Florence adopted a resolution, addressed to UNESCO's Executive Board to proclaim an international Year of Planet Earth. Diplomatic support was provided by the Ministry of Land and Resources of the People's Republic of China, by Russia, by the Austrian diplomats to UNESCO and to UN and by numerous other countries, but the real break-through was reached when the diplomats of the Republic of Tanzania at UNESCO Paris and at the UN headquarters in New York took the lead and forwarded the respective resolutions the General Conference of UNESCO in September 2005 and to the General Assembly of the United Nations in autumn 2005. Finally the International Year of Planet Earth was proclaimed for the year 2008 at the General Assembly of UN on 22 December 2005. To give enough time to conduct project proposals and to prepare well-designed outreach activities there will be a “pre-year” in 2007 and a “post-year” in 2009, providing a total time span of three years.

In March 2006 an organizational structure was

created: A non-profit corporation under US law in the State of Delaware. A professional Secretariat under the lead of an Executive Director shall take care of the whole international business, covering especially fund raising and budgetary matters, science matters and the whole administration. The governing body will be a “Board”, consisting of representatives of UNESCO and IUGS, the Founding Partners, the Associate Partners, the National Representatives and the Sponsors. “Senior Advisers”, “Goodwill Ambassadors” and “Patrons” should support the YEAR, but will not be directly included into the corporation.

The whole preparatory work for the YEAR was organized by a “Management Team” that operated during the last five years on a voluntary basis under the umbrella of the International Union of Geological Sciences IUGS. Financial support was provided by UNESCO, IUGS, the Chinese Ministry of Land and Resources (MLR), and twelve “Founding Partners”:

- (1) The International Union of Geodesy and Geophysics (IUGG);
- (2) The Geographical Union (IGU);
- (3) The International Union of Soil Sciences (IUSS);
- (4) The International Quaternary Association (INQUA);
- (5) World Soil Information (ISRIC);
- (6) The International Lithosphere Programme (ILP);
- (7) The Geological Society of London (GSL);
- (8) The Institute for Applied Geosciences and the Geological Survey of the Netherlands (TNO-NITG);
- (9) The American Geological Institute (AGI);
- (10) The American Association of Petroleum Geologists (AAPG);
- (11) The American Institute of Professional Geologists (AIPG);
- (12) A Consortium of the International Association of Engineering Geologists (IAEG), the International Society of Rock Mechanics (ISRM), and the International Society for Soil Mechanics and Geotechnical Engineering (ISSMGE).

26 “Associate Partners” contributed morally and in kind in paving the successful avenue for the IYPE.

Additional scientific organizations, associations and societies will have the opportunity to become “Partners” that, starting from 2006 after the proclamation of the YEAR, shall financially support the YEAR. The most crucial role in backing financially the YEAR shall play sponsors from industry, bank institutes and science foundations.

The basic idea behind the YEAR is to demonstrate the great potential of Earth sciences in building a safer, healthier and wealthier society and to encourage the society to apply this potential more effectively.

There will be a science program and an outreach program. The science program must be based in the geosciences, it must be global in scope and holistic and multidisciplinary as well. It must also have a potential for developing countries and the science program should have a human impact and a potential for effective outreach.

10 Science Themes have been chosen. They are listed below in alphabetic order. For each of these themes a brochure has been completed, showing the ideas of the initiators and inviting the geoscientific community to actively contribute to the themes. All detailed information is available on the internet www.yearofplanetearth.org including forms to express the interest to contribute with a project proposal (forms for “expression of interest”).

- 1) Climate Change — the “stone tape”
- 2) Deep Earth — from crust to core
- 3) Earth & Health — building a safer environment
- 4) Earth & Life — origins of diversity
- 5) Groundwater — towards sustainable use
- 6) Hazards — minimizing risk, maximizing awareness
- 7) Megacities — going deeper, building safer
- 8) Ocean — abyss of time
- 9) Resources — prosperity and sustainability
- 10) Soils — the living skin of the Earth

1 Outreach

All ten Science Themes must have, and the related project proposals should have a remarkable outreach component. After subtracting the small overhead and office costs the remaining amount of

financial means which can be gained for the YEAR will be distributed 50 % for the ten Science Themes and 50 % for the Outreach Program, underlining the extraordinary importance of the outreach. Three main groups are targeted in the Outreach Program: Education, the media, and politicians and decision makers. The basic aims of the outreach program are to generate greater awareness among the public of the wide-ranging importance of the geosciences for human life and prosperity; to stimulate awareness of the societal contributions of the geosciences within national education systems, and to increase understanding of the societal importance of the geosciences on the part of decision-makers and politicians.

A list of planned outreach activities is given here, but there might be additional good ideas:

- (1) Events, event listing, and badging
- (2) Cooperation for increased visibility
- (3) Educational material
- (4) Citizen science — involving the public in research
- (5) Mass experiments
- (6) Scientific exhibitions
- (7) Competitions
- (8) Journalism and writing
- (9) Photography
- (10) Best scientific paper
- (11) Special magazine supplements
- (12) Books
- (13) “Story ideas”
- (14) Program making
- (15) Art commissioning

A world-wide contribution to the Science Themes as well as to the Outreach Themes will be the basis of a global success of the YEAR. Important museums on natural history or geosciences may develop special exhibitions during the years 2007 ~ 2009. Existing or planned Geoparks of the global UNESCO Network and national Geoparks, as well as further Natural or National Parks, like those existing in Canada, Japan or the USA are or shall be interested to develop activities under the umbrella of the IYPE. The member countries of the United Nations, of UNESCO and of IUGS have been invited to consider national activities during the

time span 2007 ~ 2009: In the UK the 200th anniversary of the Geological Society of London will be celebrated in January 2007 and will lead simultaneously the launch of the YEAR. Many other countries will consider similar actions. The quadrennial-international congresses of the IUSS (2006), IUGG (2007) and IGU (2008) shall give a remarkable room for respective events of the YEAR; the 33rd International Geological Congress (the congress of the IUGS), to be held in August 2008 in Oslo, will be one of the climaxes of the YEAR.

2 Geoparks — specific tools to highlight the YEAR

Apart from a very limited number of Geological World Heritage Sites, inscribed in UNESCO's famous World Heritage List, no geological site of local or regional importance has been recognized, up to now, internationally. This has changed through the creation of the European Geoparks Network (EGN) in the year 2000 and UNESCO's Global Geoparks Network (GGN), established since 2002 for “National Geoparks” seeking UNESCO's assistance. Recently, the Geoparks activities have been officially included into UNESCO's Workplan and Budget for 2006/2007, and thus, are responding to the decision of UNESCO's Executive Board in the year 2001 to invite the Organization “to support ad hoc efforts with Member States as appropriate to promote territories or natural parks having special geological features”.

Geoparks, notably those included in the Global Geoparks Network, provide an international platform of cooperation and exchange between experts and practitioners in geological heritage matters, and are as such excellent tools in promoting Earth sciences. The general goal of Geoparks to integrate the preservation of geological heritage into a strategy for regional sustainable socio-economic and cultural development serves ideally the overall objective of the “International Year of Planet Earth” with its subtitle “Earth Sciences for Society”. Under the banner or umbrella of the YEAR, each national Geopark initiative has a better chance to receive the recognition and support of national entities; each existing Geopark or planned Geopark initiative should highlight at the occasion of

the YEAR the issue of protecting and developing “Geological Heritage”.

The YEAR and the Geopark initiative have been remarkably supported in the past and in the present by China. China's authorities in harmony with their interests and those of UNESCO and IUGS have understood that Geoparks, as well as the activities of the YEAR are excellent tools for educating the public at large in Earth Sciences, geo-environmental management and sustainable development. As such, the “Geoparks” and the YEAR might provide an important component to UNESCO's “Education for All” programme, notably the youth, as well as to the United Nations Decade of Education for Sustainable Development (2005 ~ 2014), in which UNESCO as lead agency promotes a crucial ultimatum for humanity: to learn how to develop while preserving the environment.

Fourteen years after the United Nations Conference on Environment and Development (UNCED), held in 1992 in Rio de Janeiro, it can rightly be stated that the recommendations of this Earth Summit concerning a better management of the environment including the Earth's crust are still valid. Recalling the United Nations' Millennium Declaration (New York, 2000), in particular the assertion of the fundamental value of “Respect for Nature” in the management of all living species and natural resources, we are glad to note that the world has become increasingly aware of the need to better understand the interactions between human activities and our natural environment, recognising that the Earth constitutes a system of interrelated physical, geodynamic, chemical and biological processes. Greater knowledge and understanding of these processes are needed to ensure that human activities are organized in ways that preserve the environment to the largest extent possible. Based on this growing public awareness of the necessity for the conservation of nature, fortunately, more and more people recognize that geological features play an essential part in managing our environment in a “wise” way.

The history of the planet Earth is inscribed in its landscapes, its mountains and in the rocks beneath our

feet. Only here we can trace the cycles of climate change and biological renewal that have shaped the Earth in the past and that will continue to do so in the future. Too easy we forget that the geological history of the Earth, its rocks, minerals, resources, fossils and landforms are not only an integral part of our natural world, but are intrinsically linked to the evolution of life, cultural development itself and the ascent of humanity.

As a fundamental part of the natural world, geology and landscapes have had a profound influence on society, civilization, and cultural diversity, not only regarding the formation and location of mineral and energy resources, without which modern societies could not function. Our use of land for agriculture, forestry, mining, quarrying and for building homes and cities or centers for tourism is intimately related to the underlying rocks, soils and landforms.

But, the record of the Earth's history is also surprisingly fragile. It must be conserved, protected where needed, so that future generations can enjoy it and further understanding of it for the benefit of the planet and humanity. The record of the geological history of the Earth comprises concrete examples of features, rocks, mountainous landforms and soils and processes. We should strive to conserve this “Geological Heritage” because it is of aesthetic, cultural and scientific significance and because we recognize that it has nature conservation values. The safeguarding of the Earth's geological diversity may go hand in hand with the aspects of biodiversity and of the cultural diversity generated throughout the time humankind has existed and even before. It is against this background that the “Geoparks” initiative and the creation of a UNESCO Network of national Geoparks have to be seen as complementary activity to the “World Heritage and the Man and Biosphere Reserve” programmes.

UNESCO enjoys the unique position of being the only agency within the United Nations system to have a specific programme on earth sciences and capacity building in geosphere-related areas. Its Division of Ecological and Earth Sciences in cooperation with international partners is committed to impact on “Earth

Sciences for Society”, and that includes issues like “Education in Earth Sciences”, “Natural Disaster Reduction” and “Global Earth Observation”. The scientific understanding of the Earth is a prerequisite for good management and sound decision-making.

Concerning the future development of its Global Geoparks Network UNESCO has to build on the experiences of existing national structures (like in China, Germany or Austria) and, notably, on those of the only up-to-now existing continental network, the European Geoparks Network. In cooperation and consultation with IUGS and other non-governmental entities it will be ensured that all the available

expertise is fully recognized, and used for the conception and development of further continental networks in Asia, Africa, Australia—Oceania, North-America and Latin-America.

We are confident that the Chinese engagement in “Geoparks” and in the YEAR will serve as a model for other international partners. The synergy of promoting Geoparks whilst supporting the United Nations “International Year of Planet Earth” will provide us with the opportunity to engage in constructive reflections, to receive new ideas about the “System Earth” and Society, and undertake debates on future global peaceful developments.

