Proceedings of the First International Conference on Geoparks

第一届世界地质公园大会论文集

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Editors of the Proceedings of the First International Conference on Geoparks

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Foreword

The First World Geoparks Conference Co-sponsored by the Ministry of Land and Resources of the People's Republic of China and the UNESCO is due to inaugurate soon .

Meanwhile, the first group of world geoparks named by the UNESCO will be open to public ! This is a significant milestone in the conservation of geological relics .

Geological relics are important evidence for mankind to know the Earth's history and its evolution, therefore it is our historical duty to protect them .Now geologists all over the world who are concerned with the conservation of geological relics gather together in Beijing to discuss the protection of geological relics and promote the construction and development of world geoparks . It will be a mobilization meeting for the conservation of geological relics, and also a meeting to discuss the measures, achieve a common understanding, make clear our goals and promote cooperation, and so it will certainly be recorded in the history of earth sciences .

The construction of geoparks is aimed at protecting the geological relics, rehabilitating the geoecological environment and popularizing knowledge on earth sciences, and will contribute to the sustainable development of local economy and creation of employment for local residents through the protection and rational utilization of the geological relics .

The geopark is a newly emerging thing .Its construction has a long and tough road to go .We shall cultivate and water it so that it can develop healthily .

I sincerely wish the First World Geoparks Conference all the success .

Sun Wensheng
Minister of Land and Resources of PRC
Honorary Chairman of the First International Conference on Geoparks
15 June, 2004

前　言

由中国国土资源部与联合国教科文组织共同召开的第一届世界地质公园大会开幕在即。

由联合国教科文组织命名的首批世界地界公园即将正式开园！

这是地质遗迹保护工作的重要里程碑。

地质遗迹是人类了解地球历史，了解地球演化的重要佐证，保护地质遗迹是历史赋予我们的责任。全球关心地质遗迹保护工作的地质学家汇聚中国北京，共商地质遗迹保护大计，推动世界地质公园的建设和发展。这将是一次保护地质遗迹的动员大会，是一次探讨措施、取得共识、明确目标、推进合作的大会，必将载入地球科学史册。

地质公园的建立以地质遗迹保护、地质生态环境的恢复和推动地球科学知识普及为目的，并通过地球遗迹的保护与合理利用，为地域经济的可持续发展，为当地居民增加就业机会服务。

地质公园是一个新生事物，地质公园建设任重而道远，我们愿为它培土浇灌，使之更加健康发展。

我衷心祝贺第一届世界地质公园大会圆满成功！

中华人民共和国国土资源部部长
第一届世界地质公园大会名誉主席

二〇〇四年六月十五日

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The Global UNESCO Network of Geoparks

F. Wolfgang Eder
UNESCO, Division of Earth Sciences, Paris, France

The Geopark concept was developed by several sources, mainly European ones, in strong co-operation with UNESCO about ten years ago. In 1997 UNESCO proposed to launch a 'UNESCO Geoparks Programme' on a global scale with the aim of safeguarding Earth heritage sites of international importance and enhancing regional socio-economic development. In 2001 however, driven by structural considerations, this programme proposal was suspended.

In response to a decision of UNESCO's Executive Board in June 2001, and in harmony with a recommendation of an International Group of Experts, as well as of the Scientific Board of the *International Geoscience Programme* (IGCP) at its 29th session in February 2001, the Division of Earth Sciences of UNESCO was invited to pursue the general objective 'Education in Earth Sciences' by promoting Geoparks as multidisciplinary activities, providing UNESCO's assistance to national initiatives on an *ad hoc* basis as requested by Member States. UNESCO's involvement in the Geopark concept was considered as crucial in raising public awareness of geological heritage issues, in achieving the fullest international recognition, and in securing the most effective political impact.

National Geoparks seeking UNESCO's assistance have been invited to send their applications respecting guidelines and criteria agreed upon by a UNESCO International Advisory Group for Geoparks to the Division of Earth Sciences.

The International Advisory Group for Geoparks, was created by UNESCO in consultation with the Scientific Board of the IGCP in the follow-up of the 31st International Geological Congress, Rio de Janeiro 2000. It consists of geoscientists representing governmental as well as non-governmental organizations from the Americas, Africa, Asia/ Oceania, and Europe, as well as the *International Geoscience Programme* (IGCP), *International Union of Geological Sciences* (IUGS) and *International Geographical Union* (IGU).

Within the framework of an international meeting, held at UNESCO headquarters in Paris on 13 February 2004, the "*Operational Guidelines for National Geoparks seeking UNESCO's assistance*" and recommendations were presented in their final version.

A“*Global Network of Geoparks assisted by UNESCO*”was established . The aim of this network is to provide a platform of cooperation and exchange between experts and practitioners in geological heritage matters under the umbrella of UNESCO . The network spans all regions of the world and shall bring together groups that share common values, interests, or backgrounds . The International Network of National Geoparks under UNESCO shall serve to develop models of best practice and set standards for territories which integrate the preservation of geological heritage into a strategy for regional economic development .

Geoparks under UNESCO's assistance shall:

1) preserve geological heritage for future generations (conservation)

2) educate and teach the broad public about issues in geological landscapes and environmental matters (education) and provide research facilities for geosciences

3) ensure sustainable development (tourism)

The impact on the area is immediate, by improving human living conditions and the rural environment, strengthening identification of the population with their area and triggering cultural renaissance . Respectful of the environment, Geoparks stimulate, for example, the creation of innovative local enterprises, small business, cottage industries and new jobs, generate new sources of revenue (e .g . geotourism, geoproducts) . This provides supplementary income for the local population and attracts private capital .

25 National Geoparks (17 European and 8 Chinese) were evaluated and are at the moment members of the Global Network of Geoparks assisted by UNESCO .

(PR China)

1 . Mount Lushan Geopark
2 . Geopark Wudalianchi
3 . Songshan Geopark
4 . Yuntaishan Geopark
5 . Danxiashan Geopark
6 . Shilin Stone Forest Geopark
7 . Zhangjiajie Sandstone Peak Forest Geopark
8 . Huangshan Geopark

(Europe)

9 . Reserve Géologique de Haute Provence - France

10 . Petrified Forest of Lesvos - Greece
11 . Vulkaneifel European Geopark - Germany
12 . Maestrazgo Cultural Park - Spain
13 . Psiloritis Natural Park - Greece
14 . Rochechouart Chassenon Astrobleme - France
15 . Nature Park Terra Vita European Geopark - Germany
16 . Coper Coast - Ireland
17 . Marble arch caves & Cuilcagh mountain park - Northern Ireland, UK
18 . Madonie Natural park - Italy
19 . Rocca di Cerere cultural park - Italy
20 . Kamptal Geopark - Austria
21 . Nature Park Eisenwurzen - Austria
22 . Cabo de Gata Natural Park- Spain
23 . European Geopark Bergstrasse-Odenwald - Germany
24 . North Pennines AONB Geopark - UK
25 . Abberley and Malvern Hills Geopark - UK

Geological Heritage Protection and National Geopark Construction in China

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Summary

A total of 85 national geoparks and 8 world geoparks has been formally set up in China by now. The establishment of these geoparks is favorable not only for protecting the geological heritages, recovering the geological and ecological environment, but also for popularizing the knowledge of Earth science, supporting the sustainable development of local socio-economy, as well as providing new employment opportunities. To set up the World Geoparks marks a new era for geological heritage protection in the World.

The geological heritages are referred to the important geological phenomena preserved through the long geological history, and they provide direct and indispensable evidence for us to trace back the evolutionary history of the Earth. All geological products formed in different geological processes are nonrenewable, which are regarded as the geological heritages bestowed by Mother Earth. Safeguarding and treasuring these precious heritages has become a common responsibility of all inhabitants on the Earth.

1 The construction of the national and world geoparks in China

Yan zhenqing, a celebrity and calligrapher in Tang Dynasty, noted that shells remained in high mountains may imply that time brings a great change to the World, from which we get to know that long ago our ancestors realized that fossils preserved in the strata provide important traces and evidences of this great change in the Earth. Between the lines written by him we easily taste the fine wish of our ancients to understand the geological history by geological heritages. Indubitably, with increasing popularization of the modern civilization, on the one hand,

the development of geoscience provides us increasing possibility to understand the geological history by geological heritages; and on the other hand, we have to accelerate protection and rational utilization of the geological heritages due to the need of and damage to the natural resources by the modern social and economic development .

Therefore, as early as in 1985, Chinese geologists proposed to establish geoparks in those areas with important geological significance and beautiful geological landscapes . From the end of the 1980s, the former Ministry of Geology and Mineral Resources (MGMR) successively put forward and made clear, in the form of sector 's statutes and regulations, the envisagement and relevant stipulations about establishment of natural geological conservation areas . From the end of the last century to the beginning of this century, establishment of the national geoparks put on a regular basis gradually . A leading organization of the national geological heritages (geoparks) and an appraisal committee of the national geological heritages (geoparks) were established successively, and relevant policies, standards and rules regarding application and approval of the geoparks were promulgated . So far, the conditions and requirements for establishing the national geoparks and their application procedures and documents, appraisal requirements and standards have been systematically and perfectly, thus setting the construction and management of the national geoparks on the right track of legal system and providing powerful guarantee for their healthy development in the future .

Because of the great efforts made by the Ministry of Land and Resources (MLR), various provinces, municipalities and autonomous regions have actively applied for the national goeparks . From 2000, departments concerned seriously compared, appraised and approved nearly 100 candidates applied by the various parts of the country, and selected 85 geological heritages relatively concentrated as the national geoparks successively in 3 rounds, and then successfully proposed 8 sites including the Mount Huangshan (Anhui), Mount Lushan (Jiang xi), Mount Yuntaishan (Henan), Stone Forest (Yunnan), Mount Danxia (Guangdong), Zhangjiajie (Hunan), Wudalianchi (Heilongjiang) and Mount Songshan Geoparks are proposed as the first-batch of geopark as the first-batch of geopark candidates of world geoparks .

The establishment of the national and world geoparks in China also attracted the great attention of various provinces, cities and counties to protection of the geological heritages . Many local governments also named a number of provincial-and municipal-level geoparks through examination and appraisal . As a result, a distinguishable multi-level protection system of geological heritages is taking shape in China, with the national and world geoparks as the center and provincial and municipal geoparks as the hub . China 's geoparks covered not only stratigraphic, palaeontological, structural geologic, geological and geomorphological, glacial geological, volcanic geological, hydrogeological, geological-engineering and geological hazard heritages etc ., but also the resplendent civilization of the Chinese nation . We may say that the perfect combination of the rich and colorful geological heritages resources with the long history of the Chinese nation is both the characteristics of the geoparks in China and the important conditions allowing China to take the lead in pushing forward the geopark program at country level .