



# UNESCO SITES, SPACE TECHNOLOGIES AND SUSTAINABLE DEVELOPMENT

*A REPORT ON THE HUANGSHAN DIALOGUE AND ITS OUTCOMES*

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*International Centre on Space Technologies for Natural and Cultural Heritage (HIST)  
under the Auspices of UNESCO  
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## List of Acronyms Used

- APSARA** – Authority for the Protection and Management of Angkor and the Region of Siem Reap (the acronym APSARA is derived from the French version of the name of this authority)
- CAS** – Chinese Academy of Sciences
- ESA** – European Space Agency
- COPUOS** – Committee on the Peaceful Uses of Outer Space (this is a United Nations Committee under the auspices of UNOOSA (see below))
- DRC** – Democratic Republic of Congo
- GGN** – Global Geoparks Network
- GIS** – Geographical Information System
- HIST** – International Centre on Space Technologies for Natural and Cultural Heritage under the auspices of UNESCO
- ICC** – International Coordinating Council of the MAB Program or International Coordinating Committee of the Angkor World Heritage site
- ICCROM** – International Centre for the Conservation and Restoration of Monuments
- ICOMOS** – International Council on Monuments and Sites
- InSAR** – Interferometric Synthetic Aperture Radar
- IUCN** – International Union for Conservation of Nature
- LiDAR** – Light Detection and Ranging
- MAB** – Man and the Biosphere Program
- OUV** – Outstanding Universal Value
- RADI** – Institute of Remote Sensing and Digital Earth
- SAR** – Synthetic Aperture Radar
- UN DESA** – United Nations Department of Economic and Social Affairs
- UNDESD** – United Nations Decade of Education for Sustainable Development
- UNDP** – United Nations Development Program
- UNEP-WCMC** – United Nations Environment Program – World Conservation Monitoring Centre
- UNESCO** – United Nations Educational Scientific and Cultural Organisation
- UNOOSA** – United Nations Office for Outer Space Affairs



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## Acknowledgements

**T**he Huangshan Dialogue on UNESCO Designated Places and Sustainable Development convened in Mt. Huangshan World Heritage site and Global Geopark was a significant success. Its success is attributable primarily to the financial and logistical support provided by two organizations which conceived the idea of the Dialogue and followed through with all necessary steps for its effective organization.

Firstly, we thank the Mayor of the Huangshan City, Mr. Ren Zefeng and the Heads of the Huangshan Administrative Committee, Mr. Huang Linmu and his colleagues for mobilizing a large team of committed staff who organized an excellent international event. In particular, we would like to recognize and express our sincere thanks to all those individuals in the Huangshan Administrative Committee who played critical roles in generating timely financial and human resources needed for the successful organization of the Huangshan Dialogue.

Secondly, we like to register our sincere appreciations to Prof. Guo Huadong, Director

of RADl and HIST and his staff, in particular Prof. Wang Xinyuan, Prof. Wang Changlin, Prof. Wang Cheng, Prof. Chen Fulong, Ms. Liu Jie, Ms. Chen Mingmei, Mr. Lu Ming and Ms. Wang Xiaomei who provided tremendous assistance in all academic, organizational and administrative matters related to the participation of international and Chinese experts at the Conference. The Dialogue benefitted significantly from the participation of a large number of staff from RADl who made key technical presentations.

We would like to acknowledge the contributions of the Administration of the Wudalianchi Biosphere Reserve and Global Geopark, the MAB National Committee of China in the Chinese Academy of Sciences (CAS) in Beijing and the Office of the Global Geoparks Network (GGN) in Beijing for their sponsorships and contributions to the organization of the Huangshan Dialogue.

The participation of a critical number of high-level officials as well as senior professionals from UNESCO was an important dimension that attracted participation of many



international experts and managers in the Huangshan Dialogue. We are thankful to Mr. Kishore Rao, Director of the World Heritage Centre, Mr. Han Qunli, Director of the Division of Ecological and Earth Sciences and the Secretary of the MAB Program of UNESCO, Mr. Patrick McKeever, Chief of the Earth Sciences Section of the Division of Ecological and Earth Sciences, and the other program specialists from UNESCO Headquarters as well as UNESCO Offices in Beijing, China and Phnom Penh, Cambodia for taking time despite their busy schedules to attend the Dialogue and contribute to its success. Participation of other

experts, particularly the representatives of the Advisory Bodies to the World Heritage Committee, namely the International Union for Conservation of Nature (IUCN) and the International Council of Monuments and Sites (ICOMOS) as well as representatives from individual World Heritage sites, World Biosphere Reserves and Global Geoparks, both from within China and from elsewhere raised the quality of the discussions and outcome of the Dialogue. We like to register our sincere appreciations to all of them and their contributions to the Dialogue.



## Executive Summary

UNESCO, the UN specialized agency dedicated to the promotion of a mix of disciplines and professional practices linked to education, natural and social sciences, culture and communications, recognizes places in its Member States as World Heritage sites and world biosphere reserves. It also supports the recognition of global geoparks. Currently there are 1031 World Heritage sites, 651 world biosphere reserves and 120 global geoparks distributed among the Member States of UNESCO.

UNESCO also recognizes national or regional centres committed to supporting UNESCO programs and initiatives. Such UNESCO category 2 centres are financed entirely by national governments of its Member States. The International Centre on Space Technologies for Natural and Cultural Heritage (HIST) is a UNESCO category 2 centre hosted by the Institute of Remote Sensing and Digital Earth (RADI) of the Chinese Academy of Sciences (CAS) in Beijing, China. HIST is the only UNESCO category 2 centre dedicated entirely to the promotion of the application

of space technologies for natural and cultural heritage.

The Huangshan Administrative Authority, responsible for the management of the World Heritage site and Global Geopark of Mount Huangshan and HIST/RADI joined hands to host the first ever international dialogue that addressed the sustainable development of all UNESCO designated and affiliated places and the contributions that space technologies could make towards that goal. The Huangshan Dialogue on UNESCO Designated Places and Sustainable Development was convened from 26 to 30 May 2014 in Huangshan City, Anhui Province, China. More than 170 experts and practitioners from 23 countries representing several world regions participated in the Dialogue.

Participants at the Huangshan Dialogue acknowledged that as the UN readies itself to adopt sustainable development goals (SDGs) in 2015 UNESCO recognized World Heritage Sites, world biosphere reserves and global geoparks could serve as important experimental and demonstration areas for the attainment of



SDGs. Many of the keynote and case study presentations made by UNESCO staff, space technology experts from HIST and RADI and administrators, managers and scientists from individual World Heritage Sites, world biosphere reserves and global geoparks highlighted experiences and lessons learnt from space technology applications and emphasized the potential for their enhanced use in the future.

UNESCO had been the UN coordinator of the UN Decade of Education for Sustainable Development (UN DESD; 2005-2014) which would come to an end later that year (2014). The adoption of SDGs in 2015 provided an opportunity for UNESCO to build follow-up initiatives to UN DESD by emphasizing action research focusing on sciences for sustainability. The World Heritage Sites, world biosphere reserves and global geoparks constitute a global asset class of UNESCO that can serve as important testing grounds for designing and implementing programs and projects for attaining SDGs.

Experts, managers and administrators who contributed to discussions during 3 days of the Huangshan Dialogue unanimously adopted the Huangshan Declaration that, amongst others, called for UNESCO, the World Heritage Committee, the International Coordinating

Council (ICC) of the MAB Program and the Bureau of the Global Geopark Network to take specific measures to launch pilot projects for demonstrating the role of space technologies in attaining SDGs in World Heritage Sites, world biosphere reserves and global geoparks. Capacity building and technology transfer in space technology applications for the conservation, monitoring, management and sustainable development of World Heritage Sites, world biosphere reserves and global geoparks, particularly in less developed UNESCO Member States was also strongly encouraged.

Dialogue participants appreciated and welcomed the opportunity for exchanging experiences and lessons in space technology applications which are increasingly sought after by World Heritage, world biosphere reserve and global geopark managers and administrators as important tools for the conservation and sustainable development of their respective sites. The participants expressed the wish that the networking and international exchanges started by the Huangshan Dialogue be continued and that the next dialogue be convened in 2016 in a site in China or in another country that would be interested in hosting the event.





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# 1 Introduction

United Nations Educational, Scientific and Cultural Organization (UNESCO), established in 1946, aims to promote international cooperation in the fields of education, sciences, culture and communications. UNESCO's programs, conventions and initiatives are of interest to a wide range of stakeholder communities in academia, research, education and learning, politics, law and governance, natural and human resources development and social and environmental equity and justice. To achieve its goals and objectives spanning such a wide ranging agenda, UNESCO's Governing Bodies and its Secretariat seek partnerships with institutions, governmental and non-governmental organizations and people in UNESCO Member States.

The cultural and natural properties included in the World Heritage List and the places included in the World Network of Biosphere Reserves are designated by UNESCO. Global geoparks are a relatively new category of sites whose identity is affiliated with that of UNESCO. Furthermore, UNESCO also designates category 2 centres and institutes,

which are financed and managed entirely by Member States in support of UNESCO's strategic program objectives and their expected outcomes.

The Huangshan Dialogue on UNESCO Designated Places and Sustainable Development – Application of Space Technologies for World Heritage Sites, world biosphere reserves and global geoparks – was convened in Huangshan City from 26 to 30 May 2014. The idea for the Dialogue was conceived and the Dialogue successfully organized by two entities that share a UNESCO identity:

The International Centre on Space Technologies for Natural and Cultural Heritage (HIST) under the auspices of UNESCO is hosted by the Institute of Remote Sensing and Digital Earth (RADI) of the Chinese Academy of Sciences (CAS). HIST is the only UNESCO category 2 Centre in the world fully dedicated to enhancing space technology applications for natural and cultural heritage among UNESCO Member States. Its focus on natural and cultural heritage in the broadest sense enables it to work with all UNESCO designated and affiliated



places; i.e. World Heritage sites, world biosphere reserves and global geoparks.

Huangshan World Heritage site and Global Geopark are managed by the Huangshan Administrative Authority. As a mixed World Heritage site, Mt. Huangshan meets both natural and cultural heritage criteria for inscription of properties on the World Heritage

List. Mt. Huangshan faced problems of sustainable tourism management soon after its inscription on the UNESCO World Heritage List in 1990. However, with international technical guidance provided by the International Union for Conservation of Nature (IUCN) and UNESCO World Heritage Centre and strong local and national commitment to meet



Photo 1(a): Huangshan Mountain



Photo 1(b): Mt. Huangshan Administrative Committee



China's international obligations under the 1972 World Heritage Convention, Huangshan implemented what were at time difficult yet necessary changes to its management. Today, Huangshan is recognized as a best practice case for sustainable tourism management and development. The Huangshan Administrative Authority showed their appreciation for all the

international guidance they have received to-date by honoring, at the inaugural session of the Huangshan Dialogue, Dr. James Thorsell, former IUCN Advisor for Natural Heritage in the 1990s for his continuing interest and support to improving Huangshan's reputation as a World Heritage site of management excellence(Photographs 1 and 2) .



Photo 1(c): RADI Headquarters



Photo 1(d): HIST Launching Ceremony





Photo 2: Dr. James Thorsell being recognized an Honorary Citizen of Huangshan by the Mayor of Huangshan City

The organization of the Huangshan Dialogue was fully supported by the World Heritage Centre, the Secretariat of the Man and the Biosphere (MAB) Program and the Division of Ecological and Earth Sciences of UNESCO. The Global Geoparks Network (GGN) Office

and the MAB National Committee of China in Beijing as well as the Administration of the Wudalianchi Biosphere Reserve and Geopark (photograph 3) also sponsored the organization of the Dialogue.



Photo 3: The Wudalianchi Biosphere Reserve and Geopark