

Newsletter

October – December, 2023

**International Centre on Space Technologies for
Natural and Cultural Heritage under the Auspices of UNESCO**



CONTENTS

(October – December, 2023)

Special Focus

02 The Establishment Meeting of the HIST Changsha Workstation was held

Research News

04 The project "Key Technologies and Applications for Earth Big Data Assessment of Sustainable Development Goals" gain the Special Prize in the 2023 Surveying Science and Technology

AIR News

05 Bokova, former Director-General of UNESCO and co-Chair of the Global Commission on Science Mission for Sustainable Development of the International Council for Science, visited the International Research Center on Big Data for Sustainable Development

06 Official publication of Light pollution data on the Iberian Peninsula based on the SDGSAT-1 satellite

UNESCO News

08 Implementation of the Historic Urban Landscape (HUL) Recommendation

09 Culture and Digital Technologies; UNESCO and Its Partners Highlighting Innovative Approaches to Cultural Projects

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Special Focus

The Establishment Meeting of the HIST Changsha Workstation was held

On November 21, 2023, the establishment meeting of the HIST Changsha Workstation, affiliated with the International Center on Space Technologies for Natural and Cultural Heritage under the United Nations Educational, Scientific and Cultural Organization (UNESCO), took place at Changsha University. The meeting was attended by prominent leaders and experts, including Academician Guo Huadong, Director of HIST, Vice Chairman of the Hunan Provincial Committee of the Chinese People's Political Consultative Conference (CPPCC) Li Min, Chairman of the Changsha CPPCC Chen Gang, Party Secretary of Changsha University Yang Xiaoyun, Vice President Chen Shiping, and Professor Zhang Shiying, who presided over the meeting.

During the meeting, the inaugural Board of Directors and Scientific Committee of the HIST Changsha Workstation were elected. Yang Xiaoyun was elected as the Chairperson of the first Board of Directors, while Guo Huadong was honored as the Chairperson of the first Scientific Committee. Wang Xinyuan and Bao Jigang were elected as the Chairpersons of the Scientific Committee. Liu Peilin, the former Party Secretary of Changsha University, was appointed as the Director of the HIST Changsha Workstation.

Academician Guo Huadong congratulated the establishment of the HIST Changsha Workstation, expressing his hope that, with the strong support of the Hunan Provincial Government, Changsha Municipal Government, and Changsha University, the Workstation would fully leverage the advantages of interdisciplinary integration. He encouraged the active utilization of cutting-edge technologies, including space technology, to construct an integrated innovation ecosystem encompassing production, learning, research, and application. The focus was on conducting scientific research, talent cultivation, technical services, information sharing, and capacity building. The goal is to develop the Workstation into an international scientific and technological innovation platform for "Inscribed Heritage Value Inheritance and Protection," making new contributions to the cause of inscribed heritage.

Vice Chairman Li Min of the Hunan Provincial Committee of the Chinese People's Political Consultative Conference

(CPPCC) expressed during his speech that Hunan is currently steadfastly advancing in the direction guided by President Xi. The province is firmly anchored in the vision of the "Three Highs and Four News," actively promoting high-quality development, and vigorously implementing landmark and leading projects in the "Three Highs" to accelerate cultural and technological integration. The establishment of the HIST Changsha Workstation signifies active support for Hunan's efforts to build a technologically innovative hub with core competitiveness and to develop Changsha into a global research and development center city. Hunan aims to use this platform as a foundation to create an international exchange platform, a technology innovation platform, and a talent development platform with a global perspective and innovative capabilities.

Chairman Chen Gang of the Changsha Municipal Committee of the Chinese People's Political Consultative Conference (CPPCC) congratulated the establishment of the Changsha Workstation. He stated that in recent years, Changsha University has achieved remarkable results in high-quality talent cultivation, high-level scientific research, and efficient outcome transformation. The university has also developed distinctive features in areas such as digitizing cultural creativity and integrating cultural and tourism elements. Changsha is committed to being a steadfast supporter of Changsha University and the Changsha Workstation, believing that with the strong support of the International Centre on Space Technologies for Natural and Cultural Heritage under UNESCO, the city and the university will achieve even more splendid results in cultural heritage protection and the integration of culture and tourism. This, in turn, will contribute to Changsha's goal of becoming a global research and development center city.

Yang Xiaoyun, Secretary of the Party Committee of Changsha University, welcomed the distinguished guests on behalf of the university. He emphasized the school's focus on the construction of research platforms and academic exchanges. The establishment of the HIST Changsha Workstation will contribute to strengthening the university's discipline construction, enlarging the talent pool, expanding external



Ongoing conference



Academician Guo Huadong and Professor Yang Xiaoyun signed the "Agreement on the Establishment of HIST Changsha Station"



The experts and leaders at the meeting jointly unveiled the Changsha workstation The participating experts and scholars visited HIST Changsha workstation



exchanges, and actively supporting Hunan Province in realizing the "Three Highs and Four News" blueprint. It will also support Changsha in playing a pivotal role as the provincial capital, implementing the "Three Upgrades and Three Major" development strategy and objectives, and striving to become a distinctive high-level applied local university.

During the event, Academician Guo Huadong and Professor Yang Xiaoyun signed the agreement on the establishment of the HIST Changsha Workstation on behalf of both parties. Subsequently, they unveiled the workstation together with Vice Chairman Li Min of the Hunan Provincial Committee of the CPPCC, Chairman Chen Gang of the Changsha Municipal Committee of the CPPCC, and Professor Liu Peilin, Director of the Changsha Workstation.

On the same afternoon, the HIST Changsha Workstation organized an academic seminar on "Digital Technology

Assisting Heritage Protection and Utilization." Eight experts from institutions such as the Chinese Academy of Sciences, Beijing Normal University, Guangzhou University, Central South University, Hunan Normal University, Hunan University of Technology, as well as HIST headquarters and its branches, delivered brilliant academic presentations. Over 70 representatives attended the conference.

Before the conference, HIST headquarters and Changsha University jointly held a symposium on "Digital Technology Assisting Heritage Tourism Activation," where leaders and experts from natural and cultural heritage sites, including Zhangjiajie, Mount Langshan, and Fenghuang Ancient City, shared experiences in promoting heritage tourism development.

It is reported that the HIST Changsha Workstation will rely on key research platforms such as Changsha University's Digital Humanities Research Institute, the National-Local

Joint Engineering Laboratory for Digital Protection and Creative Utilization of Traditional Village and Town Culture, Hunan Province Engineering Research Center for Cultural Heritage Protection and Digitization Application, and the Hunan Province Key Research Base of Philosophy and Social Sciences for the Protection and Digitization of Folk Culture. Collaborating with relevant enterprises and research institutions in the Malanshan Video Cultural and Creative Park, the workstation will focus on scientific research in four major areas: sustainable development of heritage sites based on spatial technology, construction of cultural gene databases and big data applications, digital protection and virtual tourism of

cultural heritage sites, and digital creation and metaverse scene presentation based on heritage sites. The aim is to explore a technological innovation and application system centered around spatial information technology, big data technology, virtual reality technology, and digital human technology. This effort will provide decision-making support for the digital protection, restoration, and activation of regional natural and cultural heritage, and contribute to the virtual reconstruction of Changsha's ancient city, the virtual presentation of Dongting Lake's historical environmental changes and future trend predictions, and the creation of Hunan-Xiangxi culture and metaverse scenes.

Research News

The project "Key Technologies and Applications for Earth Big Data Assessment of Sustainable Development Goals" gain the Special Prize in the 2023 Surveying Science and Technology

On November 9, 2023, the inaugural China Surveying and Geographic Information Conference was held in Deqing County, Zhejiang Province. During the opening ceremony, the 2023 Surveying Science and Technology Awards were presented, and the project "Key Technologies and Applications for Earth Big Data Assessment of Sustainable Development Goals," led by Academician Guo Huadong, was honored with the Special Prize for the 2023 Surveying Science and Technology Awards.

The project "Key Technologies and Applications for Earth Big Data Assessment of Sustainable Development Goals" pioneered theories and methods in Earth Big Data. It established the world's first Sustainable Development Goals (SDG) Big Data platform system, independently developing a software stack including the Earth Big Data Management System (DataBank), the Computational Analysis System (EarthDataMiner), and the Visualization Application System (DESP). The project successfully achieved the efficient



Awarding Site

integration of large-scale high-performance computing, cloud computing, and intelligent computing services. This platform became the first dedicated SDG Big Data platform capable of online calculation, interactive analysis, and visualization of SDG indicators.

The project also involved the launch of the world's first sustainable development scientific satellite. It proposed a continuous observation mode for human activity traces through satellites, and developed the world's first 10-meter full-color micro-light + 40-meter color micro-light payload. This payload included the world's highest swath width resolution thermal infrared imager and a satellite platform that supports collaborative payload operations.

In addition, the project created a systematic evaluation method for SDG Earth Big Data and proposed globally comparable monitoring methods for SDG indicators. The "Earth Big Data Supporting Sustainable Development Goals Report," authored by the project team, has been released by national leaders for five consecutive years.

The project was primarily supported by the Chinese Academy of Sciences' Class A Strategic Priority Research Program "Earth Big Data Science Engineering." It was a collaborative effort involving 11 institutions: the International Research Center for Sustainable Development Big Data, the Computer Network Information Center of the Chinese Academy of Sciences, the Innovation Academy for Microsatellites of the Chinese Academy of Sciences, the Northwest Institute of Eco-Environment and Resources of the Chinese Academy of Sciences, the Institute of Geographic Sciences and Natural Resources Research of the Chinese Academy of Sciences, the Institute of Botany of the Chinese Academy of Sciences, the Institute of Software of the Chinese Academy of Sciences, the Changchun Institute of Optics, Fine Mechanics, and Physics of the Chinese Academy of Sciences, the Shanghai Institute of Technical Physics of the Chinese Academy of Sciences, the Research Center for Eco-Environmental Sciences of the Chinese Academy of Sciences, and China University of Geosciences (Wuhan).

AIRCAS News

Bokova, former Director-General of UNESCO and co-Chair of the Global Commission on Science Mission for Sustainable Development of the International Council for Science, visited the International Research Center on Big Data for Sustainable Development

On October 24, 2023, Irina Bokova, former Director-General of UNESCO and Co-Chair of the Global Commission on Science Missions for Sustainable Development of the International Science Council (ISC), visited the International Research Center for Sustainable Development Big Data (SDG Center). She was received by Guo Huadong, academician of the Chinese Academy of Sciences and director of the SDG Center.

During her visit, Bokova toured the Sustainable Development Big Data Platform, gaining insights into its data sharing service system, the SDG Big Data Collaborative Analysis System, the Sustainable Development Science Satellite System, and the SDG Big Data Visualization and Application System. She also received presentations on the international organizations and scientific programs associated with the SDG Center and its

affiliated centers.

In 2023, the SDG Center launched the Fellow Program, honoring individuals who have made outstanding contributions to advancing sustainable development in the field of science and technology innovation. Being named a Fellow is the highest academic honor bestowed by the SDG Center. Bokova was among the first group of Fellows. During her visit, a special ceremony was held at the SDG Center to confer the Fellow title upon Bokova. Director Guo presented her with the Fellow certificate and medal, expressing hopes for closer strategic cooperation with Bokova in addressing significant sustainable development challenges through digital technology in the future.



Guo Huadong presented Irina Bokova with the SDG Center Fellow certificate and medal

Irina Bokova expressed sincere gratitude for being awarded the Fellow title by the SDG Center. During the ceremony, she delivered a presentation titled "Guiding Mission: Science in the Service of Sustainable Development Goals" and engaged in discussions with students and faculty from the SDG Center. The presentation highlighted the severe challenges facing the United Nations' 2030 agenda and emphasized the global need

for increased understanding and enhanced dialogue.

Bokova emphasized that international scientific cooperation plays a crucial role in helping humanity comprehend the intricate implications of achieving sustainable development goals. Timely and reliable data from various fields such as natural and social sciences, along with open sharing of solutions, are seen as the only way to address the challenges posed by the 2030 agenda. Additionally, as the Co-Chair of the ISC Global Committee on the Sustainable Development Science Mission, Bokova expressed sincere appreciation for the contributions made by Professor Guo Huadong as a committee member. She conveyed ISC's willingness to collaborate with the SDG Center in advancing multilateral scientific cooperation and practical initiatives, fostering more research endeavors aimed at realizing sustainable development goals in the future.

The Executive Director of the International Programme Office of Integrated Research on Disaster Risk (IRDRI), Han Qunli, accompanied by Chen Fang and Yan Dongmei, Deputy Directors of the SDG Center, visited, with over a hundred faculty and students participating in the event.



Seminar



Official release of light pollution data on the Iberian Peninsula based on the SDGSAT-1 satellite

Recently, the International Research Center for Sustainable Development Big Data (SDG Center), in collaboration with Complutense University of Madrid in Madrid, Spain, jointly released the first set of light pollution data for the Iberian Peninsula based on the micro-light data from the Sustainable Development Science Satellite 1 (SDGSAT-1).

The light pollution data was developed through collaboration between the SDG Center's SDG Satellite and Data Processing Department and the Department of Geophysics and Astrophysics at Complutense University of Madrid. It was derived from three-band color micro-light data provided by the SDGSAT-1 satellite, with a spatial resolution of 40 meters.

The coverage includes the entire Iberian Peninsula region, including the Canary Islands, Madeira, and the Balearic Islands.

The light pollution data enables the estimation of the color temperature of light sources and is a key factor in studying the impact of artificial nighttime lighting. It provides a crucial tool for more accurate assessment of the impact of light pollution on the environment and human health. Additionally, it supports decision-making for sustainable development goals related to lighting management and night sky protection. The research team will continue efforts to improve and refine this data, providing a more accurate and useful tool for global light pollution research.

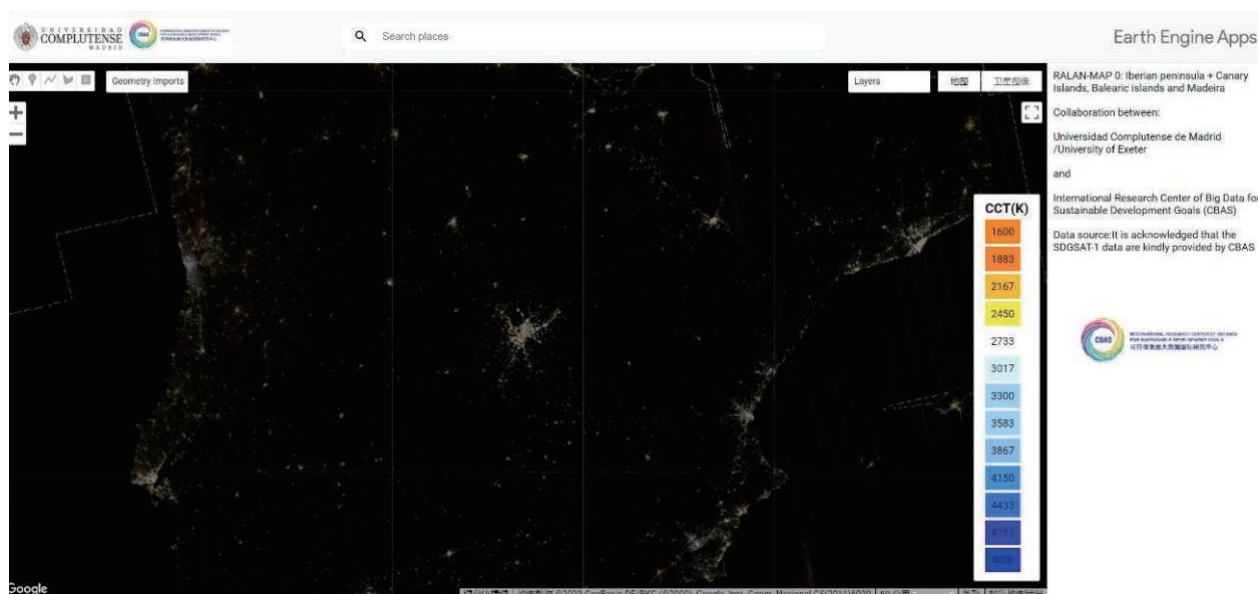
The SDGSAT-1 satellite, launched successfully on November 5, 2021, is the world's first Sustainable Development Science Satellite. Designed to meet global Sustainable Development Goals (SDGs) monitoring, assessment, and scientific research needs, the satellite carries high-performance thermal infrared, micro-light, and multi-spectral payloads. Through continuous

coordinated detection throughout the day, it achieves a detailed characterization of "human activity traces," providing data support for understanding the interaction between human activities and the natural environment as part of the SDGs.

On September 20, 2022, during the 77th session of the United Nations General Assembly, China announced the global open sharing of SDGSAT-1 satellite data, contributing to sustainable development research and decision-making worldwide. This initiative is one of the seven actions taken by China to implement the United Nations' 2030 Agenda for Sustainable Development. As of November 2023, the SDG Center has shared over 250,000 scenes of data with 85 countries and regions through the "SDGSAT-1 Open Science Program," contributing to the realization of global development initiatives and the 2030 Agenda.

Light pollution data website: <https://pmisson.users.earthengine.app/view/sdgsat-1-p-iberica>

SDGSAT-1 Open Science Program: www.sdgsat.ac.cn



SDGSAT-1 light pollution data released

Implementation of the Historic Urban Landscape (HUL) Recommendation

UNESCO has published a report, "Urban Heritage for Resilience", reflecting the results of the third consultation with the Member States on implementing the Recommendation on the Historic Urban Landscape (HUL). The consultation was conducted between June and November 2022, through which Member States informed their implementation efforts at the national (country) and local (cities and settlements) levels. A total of 187 responses from 69 countries were received, marking a significant increase from the second consultation in 2019. UNESCO also held 24 capacity-building workshops with local authorities and focal points to support them in the survey.

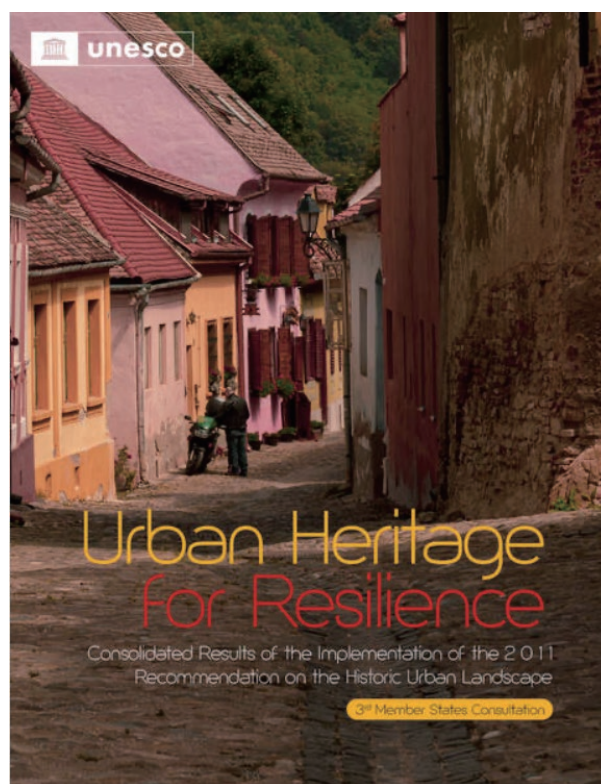
Based on the responses, the publication addresses the management of historic cities and settlements in a way that aligns with the 2030 Agenda for Sustainable Development. The report covers six areas of implementation: strengthening governance mechanisms and planning tools, inventorying local heritage values and attributes, fostering inclusive and participatory decision-making, developing equitable economic benefits, responding to climate change impacts and building capacity in the use of digital technologies for managing urban heritage.

The outcomes highlighted the HUL approach as a tool for integrating heritage conservation and management with urban development, disaster risk reduction and climate action plans at the local level. Over half of the countries worldwide face challenges in protecting their historic cities due to increasing urbanisation and economic development. Only a few selected monuments are protected by national and local authorities and one-third of the responding cities and settlements lack inventories of their historic areas. The results emphasize the need to provide training to document and preserve urban heritage and integrate it into sustainable development.

Furthermore, half of the Member States responded to have policies for stakeholder consultation in managing historic

urban areas. Around 70% of local authorities have policies to support sustainable tourism, and 60% of cities use financial tools to revitalize historic urban areas. Over two-thirds of cities encourage youth in urban heritage through educational activities, whereas less than 30% of responses indicate having policies for marginalised people, women and indigenous peoples. Enhanced policy coherence and coordination are thus identified as key recommendations for developing innovative financial strategies for urban heritage management.

The publication affirms that it is necessary to support the implementation of the 2011 Recommendation at the local level and monitor its implementation in the context of the Sustainable Development Goals.



Culture and Digital Technologies; UNESCO and Its Partners Highlighting Innovative Approaches to Cultural Projects

On 17 November 2023, a session on culture and digital technologies was organized by UNESCO in the framework of the Partnerships Hub at the sideline of the 42nd session of UNESCO's General Conference, with the support of the Kingdom of Saudi Arabia.

The session highlighted the UNESCO innovative approaches to the implementation of six different cultural projects funded by the Kingdom of Saudi Arabia, with a special focus on the Dive into Heritage project. These were presented through a panel discussion between Mr. Lazare Eloundou, Director of the World Heritage Centre, Mr Bandar Mutwali, Senior Advisor in the Saudi Ministry of Culture, Mr Olivier Van Damme, Senior Programme Specialist at UNOSAT/UNITAR, Ms Heba Abdulaziz, UNESCO Chair on World Heritage and sustainable tourism management, and Mr. Yves Ublemann, CEO of ICONEM.

Following an introduction on the importance and relevance of innovation as a means of facing new challenges in the field of culture, Lazare Eloundou, director of the World Heritage Centre highlighted the purpose of the Programme on Culture and Digital Technologies before introducing and discussing the different Saudi-funded projects. These include the Virtual Museum of Stolen Cultural Objects, the International Food Atlas and Digital Platform for safeguarding, promoting and transmitting foodways to future generations, Strengthening capacities for resilient communities through Sustainable Tourism and Heritage Safeguarding in Latin America and the Caribbean, Creation of a Sustainable Heritage Ecosystem for Socio-Economic Development in Africa, Strengthening capacities for periodic reporting under the 2003 Convention for the Safeguarding of the Intangible Cultural Heritage in Africa, and the Dive into Heritage Project, which aims to leverage the use of digital technologies for the understanding



and appreciation of World Heritage Sites and their Outstanding Values, through a dynamic blend of data, imagery and digital storytelling.

The introduction was then followed by a discussion from the different panel members, who emphasized the importance of the projects within the context of each of organizations they represented, as well as their relevance to UNESCO's key global strategies including Youth, Capacity Building and Priority Africa. They also showcased the resilience of the approaches utilized as these allowed room for adaptability while taking full advantage of the ever-evolving technologies, which is important delivering these projects' aim in promoting, safeguarding, and documenting culture and heritage in a way that is timeless and accessible, while ensuring that its value is understood, and fully contribute to achieving communities' aspirations in line with sustainable development goals. All panelist highlighted the importance of partnerships and collaborations among various stakeholders and organization while commending the Saudi Ministry of Culture for its partnership with UNESCO and for supporting these innovative projects. They also joined their voices to encourage UNESCO and its partners to continue collaborating in view of operationalizing other innovative cultural projects.



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