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China Gets Two More World Natural Heritage Sites

By LI Linxu

In an instruction on strengthening the protection, preservation and utilization of cultural and natural heritage, Chinese President Xi Jinping has urged further efforts to preserve the country's cultural and natural treasures and renew their glamour in the new era.

Two Chinese natural sites were newly added to UNESCO's World Heritage List at the 46th Session of the UNESCO World Heritage Committee.

They are the Badain Jaran Desert in Inner Mongolia autonomous region and the Migratory Bird Sanctuaries along the Coast of the Yellow Sea-Bohai Gulf of China (Phase II).

Currently, China has 15 World Natural Heritage sites and four mixed (cultural and natural) heritage sites, the leading country in the total number of World Natural Heritage sites worldwide.

The Badain Jaran Desert, located in the Alashan Plateau in the hyper-arid and temperate desert region of northwestern China, is a meeting point for three sandy regions of China.

As the country's third largest desert and second largest drifting desert, the Badain Jaran Desert is known for its high density of mega-dunes, intersected with inter-dunal lakes, displaying spectacular ongoing geological and geomorphic features of desert landscapes and landforms.

It possesses the world's tallest, stabilized sand mega-dune (relative relief of 460 m), the highest concentration of inter-dunal lakes, and the largest expanse of so-called singing sands.

The Migratory Bird Sanctuaries along the Coast of Yellow Sea-Bohai Gulf of China (Phase II), is a serial extension of the property of the same name that was already inscribed on the World Heritage List in 2019.

The Phase II includes five sites of the migratory bird sanctuaries along the coast of Yellow Sea-Bohai Gulf of China, namely an estuarine wetland in Chongming, Shanghai; the Yellow River estuary in Dongying, Shandong province; a wetland area in Cangzhou, Hebei province; a national-level nature reserve in Dalian, Liaoning province as well as the Yalu River estuary in Dandong, Liaoning province.

As part of the world's largest intertidal wetland system, this area within the Yellow Sea Ecoregion supports crucial habitats for birds migrating on the East Asian-Australasian Flyway which spans more than 20 countries from the Arctic to South-East Asia and Australasia.

The wetlands serve a unique ecological function as indispensable stopover sites for many millions of waterbirds, said UNESCO.



The Migratory Bird Sanctuaries along the Coast of the Yellow Sea-Bohai Gulf of China (Phase II) ① and the Badain Jaran Desert ②, successfully pass the review process on July 26 by the World Heritage Committee to be included on the World Heritage List by the UNESCO. (PHOTO: XINHUA)

Editor's Pick

Salt Cavern Transformed into Energy Storage Bank

By LI Linxu

Thanks to technological advances, China is transforming abandoned underground salt caverns to renewable energy storage facilities amid its green push.

Underground salt caverns, with their natural advantages of large gas storage capacity, favourable sealing effect and high safety, can provide excellent conditions for compressed air energy storage.

Salt cavern compressed air energy storage technology uses electric energy to compress air into the huge cavity formed by salt mining during low electricity demand periods, and releases air to drive an air turbine to generate electricity when needed.

China completed its first salt cavern

gas storage base in Jintan district, Changzhou city, Jiangsu province, in 2007.

In 2017, the Jintan Salt Cavern Compressed Air Energy Storage National Pilot Demonstration Project, the world's first non-supplemental combustion compressed air energy storage power plant, was approved by the National Energy Administration.

The project, jointly developed by China National Salt Industry Group, China Huaneng and Tsinghua University, has an installed power generation capacity of 60 MW and a storage capacity of 300 MWh in Phase I.

Aiming to set standards and provide solutions for energy storage in new-type electric power systems, the project's long-term target is to reach 1,000 MW, according to China National Salt

Industry Group.

Situated at approximately 1,000 meters deep under the ground, the salt cavern has a storage room of 220,000 m³, equivalent to about 105 swimming pools.

In 2022, the plant was officially put into commercial operation, marking significant progress in the R&D and application of such an advanced technology.

Besides using the peak-to-valley difference to achieve peak regulation, it can also serve as a backup station for the power grid.

Of particular note is that the plant achieved a zero-carbon breakthrough in the commercial operation of compressed air energy storage technology, setting a benchmark for new energy storage.

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Large-scale Seismic Data Processing Model Released

By Staff Reporters

DiTing, the world's first professional seismic data processing model with 100 million parameters, was released in Chengdu, Sichuan province southwest China, in late July, and will be publicly tested by the end of 2024. The one-billion parameter version is expected to complete pre-training in August 2024.

As an AI model, DiTing is based on one of the biggest data sets in the world and can be used to spot earthquake signals, monitor seismic activity and support rapid responses to earthquakes, according to its developers.

The model was developed by the National Supercomputing Center in Chengdu in cooperation with the Institute of Geophysics of the China Earthquake Administration and Tsinghua University, Xinhua reported.

Guo Li, chairman of Chengdu Supercomputing Center Operation Company, said the model with 100 million parameters can already be used to make earthquake predictions.

Chen Shi, deputy director of the Institute of Geophysics, China Earthquake Administration, said, "Based on the massive data of China earthquake observation network, the large AI model has significantly improved the accuracy and speed of seismic signal recognition." Seismology is an observational science and breakthroughs often come from a deep understanding of observational data.

Wang Jianbo, executive deputy director of the National Supercomputing Center in Chengdu, said the creation of DiTing is of great significance for breaking the performance bottleneck of small and medium seismic wave models. This can improve the ability to process seismic big

data intelligently and the level of information mining.

The computing power provided by the Center is the basis for developing the large seismic wave model.

Compared with the small seismic wave model, the training data and the number of parameters of the large model have increased significantly, by more than 100 times, leading to a substantial increase in the demand for computing power.

To this end, the Center provides key technical support for optimizing code efficiency, making the R&D process of DiTing smoother and more efficient, Wang said.

In the future, the large model could be applied in fields such as mine seismic monitoring, shale gas exploitation, urban underground space structure detection, underwater earthquake monitoring and others, according to the developers.

Hydropower Improves Cambodia's Energy Landscape

International Cooperation

By Staff Reporters

Cambodia's lower Stung Russei Chrum hydropower station, operated and constructed by China Huadian Corporation Ltd., ushered in the 10th anniversary of commercial operation in July.

Located on the Stung Russei Chrum River in Koh Kong province, it is the first hydropower station invested in and developed by China Huadian Corp in a foreign country under the "build-operate-transfer (BOT)" model. This power facility, with an installed capacity of 338,000 kilowatts and an average annual power generation of about one billion KWH, has significantly alleviated Cambodia's electricity supply shortage.

Prior to the operation of the hydropower station, Cambodia faced an electricity deficit exceeding 20 percent of national consumption, meaning it relied heavily on expensive and polluting heavy oil power generation and imported electricity. This situation severely hindered local socioeconomic development.

Koh Kong province, which depended on electricity imports from neighboring Thailand in the past, has seen substantial improvements. The establishment of power transmission lines by China Huadian Lower Stung Russei Chrum Hydro-Electric Project (Cambodia) Co., Ltd., a subsidiary of Huadian, set up a 32-kilometer transmission line from the power station to Koh Kong city to help connect it to the national grid. Consequently, local electricity prices have dropped by about 80 percent.

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WEEKLY REVIEW

New Internet-service Satellite Group Launched

A Long March-6 carrier rocket launched a new satellite group into space from the Taiyuan Satellite Launch Center in Shanxi province, north China. The 18 satellites are the first batch of the first generation of Spacesail satellites. The Spacesail Constellation will provide global users with low-latency, high-speed and ultra-reliable satellite broadband internet services.

Asymmetric Ice Sheet Melt Affects Climate Change

Researchers from the Institute of Earth Environment of the Chinese Academy of Sciences (CAS) in collaboration with their peers conducted a study that found asymmetric bipolar ice sheet melting has far-reaching effects on global climate change, including the global temperature and sea level changes.

Novel High-Capacity All-Solid-State Sulfide Batteries

Researchers from the Qingdao Institute of Bioenergy and Bioprocess Technology of CAS have developed a sulfide composite cathode material whose specific capacity is more than five times that of current ternary cathode materials. This discovery provides a new method for designing the cathode structure and contributes to the commercial application of all-solid-state lithium-sulfur batteries.

Blood Test Improves Alzheimer's Diagnosis

A research team from Lund University in Sweden has developed a new test called the Amyloid Probability Score-2 (APS2). This test detects levels of key proteins in the blood and is far more accurate than doctor assessments in spotting Alzheimer's disease in people with early-stage illness. According to the principal investigator, if used correctly, this test could be an exciting adjunct to diagnosing Alzheimer's.

New Additive Process for High-value Chemicals

Using a process that combines natural enzymes and light, researchers from the University of Illinois Urbana-Champaign have developed an eco-friendly way to precisely mix fluorine, an important additive, into chemicals called olefins-hydrocarbons used in a vast array of products. This fills a large gap in molecular chemistry and opens up new possibilities for creating better medicines and agricultural products.

New Graphic

China's Progress of Earthquake Warning

National Earthquake Early Warning Project

15,899 monitoring stations

Average time of first warning report (key warning areas) **7 seconds**

Source: China Seismological Bureau
Designed by YAO Yiliu / Science and Technology Daily

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