



EU CBAM  
DISRUPTS  
GLOBAL TRADE  
ORDER

PAGE 3 | INSIGHTS



SCIENCE SERVES  
SOCIETY,  
PROGRESS IN  
HUMAN DIGNITY

PAGE 4 | LIFE IN CHINA

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## Editor's Note:

Scientific and technological cooperation is a crucial pillar of the Belt and Road Initiative (BRI). To give our readers a closer look at how such cooperation works in practice, we will share stories about several BRI joint laboratories.

## A Tale of Two Museums

— China-Greece Belt and Road Joint Laboratory on Cultural Heritage Conservation Technology

By LI Linxu & WANG Xiaolong

During his state visit to Greece in 2019, Chinese President Xi Jinping and then President of Greece Prokopis Pavlopoulos visited the Acropolis Museum in Athens.

Xi said that China and Greece, both boasting abundant cultural heritages, can strengthen cooperation in the preservation and restoration of important historical and cultural heritages.

At that time, a museum staff member demonstrated advanced laser restoration technology for cultural relics to the guests. The staff member was Costas Vasiliadis. Six years later, he, now head of the Conservation Department and Casts at the Acropolis Museum, still remembers the scene vividly.

"I demonstrated laser cleaning on a philosopher's bust and introduced the contemporary approach of the Acropolis Museum and of the Institute of Electronic Structure & Laser (IESL) to conservation," Vasiliadis told *Science and Technology Daily*.

"What remains particularly memorable for me is the genuine and engaged interest shown by both presidents in the practical aspects of conservation," Vasiliadis added. "The visit was also decisive in strengthening our cooperation with the Palace Museum."

Ten months later, the China-Greece Belt and Road Joint Laboratory on Cultural Heritage Conservation Technology was launched for establishment. Its Chinese leading unit is the Palace Museum, and the Greek leading unit is IESL under the Foundation for Research and Technology-Hellas (FORTH).

"The mutual attraction between two ancient civilizations, the shared need for cultural heritage conservation, and a wonderful serendipity naturally brought the Chinese and Greek sides together." When discussing the process of their acquaintance and cooperation, Zhao Guoying, former deputy director of the Palace Museum and director of the joint lab, recounted the details with great clarity.

She vividly remembers the scene of her team's first visit to the IESL in 2023. "That day, under a blue sky with white clouds, the Greek side specially hoisted the Chinese national flag in front of the pristine FORTH building to welcome the arrival of the Chinese delegation," recalled Zhao.

During the subsequent symposium, all Greek partners attended, and all parties engaged in in-depth discussions on the development of the joint lab and cooperation in conservation technologies. *See page 4*



The Palace Museum (left) in Beijing, China and the Parthenon Temple (right) in Athens, Greece. Led by China's Palace Museum and Greece's IESL under the Foundation for Research and Technology-Hellas, the China-Greece Belt and Road Joint Laboratory on Cultural Heritage Conservation Technology is established to strengthen cooperation in cultural heritage conservation. (PHOTO: VCG)

## STI Frontier

## Harmonious Coexistence of Subways and Springs

Edited by WANG Xiaoxia

Building subways is nothing new, but building subways through a karst spring area is a formidable challenge.

Jinan in eastern China is called the "City of Springs" for its roughly 1,200 natural artesian springs. However, its karst geology also makes it one of the most fragile environments for underground construction.

It took more than 30 years to construct subway lines in the city while protecting its springs, from conception to reality.

### Priority for spring protection

Jinan conceived of building a subway as early as the 1980s. In the 1990s, a professional institution was established to conduct investigations and research.

However, in 2002, experts from the Chinese Academy of Sciences, the Chinese Academy of Engineering and other institutions suggested, after detailed discussions, that the rail transit project should be delayed.

Also, at that time, the iconic Baotu Spring in downtown Jinan stopped flowing.

ing and the protection of springs became the priority. Hence the rail transit plan was put on hold.

Subsequently, as China's spring protection knowledge and technology advanced, the construction of a subway in Jinan was taken up again. In 2009, the survey and design team of the project proposed building the subway by circumventing the karst aquifers of the springs.

In July 2015, construction of Jinan's first subway line began in its western urban area. After three and a half years, it started running. Built far from the cluster of springs, the first line provided experience for the following lines passing through the urban area.

### Empowered by technology

A series of technical difficulties had to be resolved, such as passing under the Beijing-Shanghai High-speed Railway and crossing the Jining-Hefei Expressway Bridge. It had also to be ensured that tunneling in the karst area with "water-rich high-strength limestone" could be done safely. Once these challenges were overcome, the project was fast-tracked.

With the accumulation of technolo-

gy and experience, lines 1, 2 and 3 of the first-phase project were completed, forming an H-shaped rail transit network around the main urban area. The second phase, based on a deeper understanding of the geological structure, has entered the core area of the city. Line 4 is the first metro line close to the spring cluster.

The Quancheng Park Station on Line 4 is the only one above ground to avoid the aquifer. If the groundwater level rises during the rainy season, the excess water would flow into the diversion channel beneath the station floor, explained Li Hu, general manager of Jinan Subway.

To analyze the geological characteristics of the area, the project team have accumulated geological data and hydrological conditions since the 1950s and 1960s and established an intelligent four-dimensional geological platform for the spring area.

While crossing the karst spring area, a new type of "anti-dynamic water sealing material" was used to quickly solidify and block the leakage point when encountering sudden water gushing.

*See page 2*

## New Graphic

AS OF DECEMBER 31, 2025 ►►

748

generative AI services  
had completed filing in China



446  
were added in 2025

Source: Cyberspace Administration of China  
Designed by SONG Zilyan / Science and Technology Daily

## AI Explores More Possibilities in Space

Edited by WANG Xiaoxia

With the explosion of AI, the demand for computing power has grown exponentially. However, ground data centers, being constrained by energy consumption and heat dissipation, are facing increasingly severe development bottlenecks.

Sending AI and computing power into space, and building data centers in space are seen as the ultimate solution to the global computing power supply problem. In 2025, the curtain on space computing power construction was lifted, and the vision of sending data centers "into space" was gradually achieved through the concerted efforts of all par-

ties in the industry.

In May 2025, the Three-Body Computing Constellation led by China's Zhejiang Laboratory was successfully launched and entered into orbit. The 12 in-orbit computing satellites are all equipped with on-board intelligent computing systems and inter-satellite communication systems. They are able to carry out in-orbit computing and interconnection of satellites throughout the orbit cycle, and finally establish an integrated space-ground computing network.

In July, geospatial company GEOVIS and supercomputer maker Sugon signed a cooperation agreement to jointly develop high-end space computing chips and

modules to support the computing services in space and reduce the delay caused by the transmission of satellite data to the ground.

In November, the Zero-Carbon Space Computing Center independently developed by Chengdu-based Adaspace Technology Co., Ltd., was recognized as one of the top 10 outstanding achievements at the 2025 World Internet Conference.

Globally, tech giants including Google, SpaceX and NVIDIA have all entered the space computing field and are making advances.

The rise of space computing power is not only a technological revolution but also the opening of a trillion-dollar market.

*See page 3*

## Innovation Pathway

### Yangtze Belt Epitomizes Rivers as Shared Growth Engines

By LIN Yuchen & GUAN Jingjing

Rivers are both the arteries of Earth and vital channels of economic development.

China's State Council Information Office held a press briefing on January 5, reviewing 10 years of the development of the Yangtze River Economic Belt, in which ecological protection and high-quality growth have advanced in tandem.

The Yangtze River Economic Belt has followed a development path with environmental protection and green growth at its core. This strategic orientation has reshaped the relationship between development and conservation along China's longest river, turning ecological constraints into drivers of transformation. Today, the results are increasingly visible.

The "green index" of the Yangtze continues to rise.

More than 96 percent of the monitored sections along the river now report good water quality. Native fish species have increased, the population of the finless porpoises, listed as critically endangered by the International Union for Conservation of Nature, has rebounded to over 1,000, and rare species such as the Chinese sturgeon have resumed migration between the river and sea. Major lakes including Poyang and Dongting have seen eutrophication curbed, with aquatic ecosystems gradually recovering.

At the same time, innovation has become the core engine of this "golden economic belt."

In 2024, the Yangtze River Economic Belt generated over 63 trillion RMB in GDP, growing 5.4 percent year on year and accounting for nearly half of the national economic output.

In the first 11 months of 2025, its 11 provinces and municipalities recorded 19.12 trillion RMB in foreign trade, representing 46.4 percent of China's total. Ecological gains and economic performance are no longer in tension, but increasingly reinforcing one another. *See page 2*

## WEEKLY REVIEW

Taionauts Conduct Key Training, Experiments in Space Station

The Shenzhou-21 crew aboard China's Tiangong space station recently completed a series of crucial in-orbit training exercises and advanced scientific experiments. This has laid the groundwork for future missions and scientific discovery.

Low-cost, Eco-friendly Pigment Developed Using Rare Earths

Chinese scientists have recently developed a low-cost, eco-friendly rare-earth pigment that addresses the problems associated with traditional pigments, such as toxicity and environmental pollution. It could lead the next generation of pigment technology.

NASA Launches Exoplanet-observing Mission

NASA launched a new satellite mission, codenamed Pandora, into low Earth orbit on January 11 to study the atmosphere of exoplanets and their host stars. The mission's observations are expected to determine whether a planet's atmosphere contains hazes, clouds or water, or whether apparent signals of these substances actually arise from the star.

100-meter Lava Fountain Observed at Philippines' Mayon Volcano

The Philippine Institute of Volcanology and Seismology on January 13 reported a short-lived incandescent lava fountain that shot up to about 100 meters from the summit crater of Mayon Volcano on Luzon Island.

WECHAT ACCOUNT



E-PAPER

