

# Science and Technology Daily

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## Top 10 Sci-tech News in China



1. The open-source AI model DeepSeek-R1 showed top-tier performance even under limited computational power.
2. The Experimental Advanced Superconducting Tokamak (EAST) device set a world record by maintaining a stable, long-pulse and high-confinement plasma at 100 million degrees Celsius for 1,066 seconds.
3. Superconducting quantum computer prototype Zuchongzhi 3.0 has solved the quantum random circuit sampling problem 10 trillion times faster than current supercomputers.
4. A high-precision, scalable analog matrix computing chip has been manufactured that outperforms current digital processors in energy efficiency and throughput by up to 1,000 times.
5. China's first invasive brain-computer interface clinical trial was successfully conducted, making it the second country after the U.S. to reach the clinical trial phase for invasive brain-machine interfaces.
6. Research on the Chang'e-6 mission's lunar samples revealed the history of the moon's far side, significantly advancing our understanding of the moon.
7. The long-standing plant science puzzle of how a single plant cell develops into a complete plant was solved, which offers new possibilities for genetic improvement of crops and agricultural biotechnology.
8. Large-area two-dimensional metal materials were developed for the first time, opening new possibilities in two-dimensional material research and technological innovation.
9. The Recommendations of the Central Committee of the Communist Party of China for Formulating the 15th Five-Year Plan for National Economic and Social Development has provided a strategic roadmap for China's development from 2026 to 2030, underscoring the pivotal role of sci-tech innovation as a core driver of progress.
10. China's first electromagnetic aircraft carrier "Fujian" was commissioned.

### Editor's Note:

The achievements and discoveries in science and technology have not only profoundly reshaped how we live but also given us the confidence to confront challenges and embrace the future. *Science and Technology Daily*, in collaboration with a panel of media partners and academicians, has selected the 2025 top 10 science and technology news stories from China and around the world.



①The Experimental Advanced Superconducting Tokamak (EAST) device. ②The Chang'e-6 lunar probe. ③China's first electromagnetic aircraft carrier "Fujian". ④An AI-generated image of the open-source model DeepSeek. ⑤Artistic illustration of gravitational waves produced by the merger of two black holes. ⑥Google introduces the Quantum Echoes algorithm. (XINHUA/VCG/COURTESY PHOTO)

## STI Frontier

## Xueying 601: Building an Antarctic Air Corridor

By LU Zijian & BI Wenting

On December 17, Xueying 601, also known as Snow Eagle 601, China's first polar fixed-wing plane, carried out aerial surveys, its first scientific research task during the country's 42nd Antarctic expedition.

Xueying 601's air routes, with the Zhongshan Station as the core and covering more than 20 domestic and international expedition stations, have built an air corridor for Antarctica.

### China's own Antarctic airfield

It has been 10 years since Xueying 601 officially commenced service in China's polar exploration endeavors. The aircraft has conducted eight Antarctic expedition tasks, operated for more than 1,100 days and flown for over 2,500 hours, with a total voyage distance of 800,000 kilometers, equivalent to circling the Equator 20 times.

During the first couple of years after Xueying 601 was put into operation, it relied on the airports of other countries to conduct flight tasks.

"Building our own Antarctic airfield and ensuring a controllable flight guarantee was the most urgent need of (our) polar aviation at that time," Zhao Duanran, leader of the aviation operation team of China's 42nd Antarctic expedition team, told *Science and Technology Daily*.

In 2022, China's first sled-style ice runway airport was completed. On March 11, 2023, it was inaugurated and commenced regular summer operations. On May 30, 2024, the airport was granted the four-letter code ZSSW by the International Civil Aviation Organization and named the Zhongshan Ice and Snow Airport.

It has maintained stable operations for over 300 days, with Xueying 601 completing nearly 100 safe takeoffs and landings.

### More than cargo delivery

As a fixed-wing aircraft, Xueying 601 is capable of more than quickly transiting personnel and supplies. With precision equipment, it has become an ideal air platform for transportation and scientific research at the South Pole, providing key technological support for such missions.

In January 2016, it flew over the Kunlun Station, China's southernmost research station in Antarctica, at a low altitude, and obtained valuable flight data on takeoff and landing under very high-altitude plateau conditions.

One year later, it successfully took off and landed at the station, located at an altitude of more than 4,000 meters, setting a new record for high-altitude takeoff and landing by this aircraft model. In 2023, it completed the first takeoff and landing in the Grove Mountains region in East Antarctica, opening a new channel for emergency rescue.

"We have acquired scientific observation data spanning more than 200,000 km through Xueying 601 for the past 10 years," said Cui Xiangbin, head of the Zhongshan Station for the 42nd Antarctic expedition. The data collection scope covers key regions in East Antarctica, including Princess Elizabeth Land, where the Grove Mountains are located.

Thanks to the precision scientific instruments on the plane, a series of research achievements have been made — including high-precision subglacial topography mapping of Princess Elizabeth Land, and inversion of subglacial heat flux and geological structures in the region.

These findings provide crucial support for scientists study-

## Top 10 Sci-tech News Globally



1. Chinese start-up DeepSeek's promotion of open-source development, with its R1 model enhancing reasoning in large language models through reinforcement learning.
2. The creation of an AI-based tool combined with a brain decoder that can translate a person's thoughts directly into continuous text, without requiring them to speak or process spoken language.
3. Researchers designed enzymes from scratch, using RFDiffusion to generate proteins and a machine learning network called PLACER to evaluate their active site organization.
4. Photonic computing chips outperformed traditional electronic hardware — for example, a Singaporean system achieved over two-orders-of-magnitude improvements in latency and computation time with oMAC compared to commercial GPUs.
5. The NSF-DOE Vera C. Rubin Observatory released its first images, capturing images of millions of distant stars and galaxies on an unprecedented scale.
6. An intelligent surgical robot successfully removed a gallbladder without human assistance.
7. Google introduced the Quantum Echoes algorithm that demonstrates a verifiable quantum advantage over classical computers.
8. Stephen Hawking's area theorem, proposed in 1971, was confirmed with very high precision by the gravitational wave GW250114.
9. The *Global Tipping Points Report 2025*, released by 160 international scientists, warns that Earth has reached its first climate tipping point, with rising temperatures threatening coral reefs.
10. Scientists released the first atlas of cross-species mammalian brain cell development, providing the most detailed spatiotemporal map of brain development to date.



Xueying 601. (COURTESY PHOTO)

ing subglacial environments, subglacial geological structures, the impact of ice sheet stability on sea level change, and for conducting numerical simulations of past and future ice sheet dynamics.

### Contributions to international cooperation

Xueying 601 is also key in the scientific research cooperation between China and other countries in sharing aviation scientific observation capability in key areas of the South Pole.

China is a key initiator and participant of the RINGS Action Group proposed by the Scientific Committee on Antarctic Research, and has cooperated with countries including Norway and Australia in observing the ice sheet margins of Enderby Land, a coastal region in East Antarctica.

Since the 41st Antarctic expedition started in 2024, China has sent navigation notices to multiple countries, assumed airspace management responsibilities for the Zhongshan Station, and subsequently piloted operational rules, contributing a technology-driven Chinese solution to Antarctic aviation safety.

Xueying 601's 10-year flight path epitomizes China's independent innovation in polar science and technology alongside international cooperation.

In the future, this "Polar Eagle" will continue to use science and technology as its wings and cooperation as the bridge, contributing China's scientific strength to global polar scientific research and its peaceful utilization.

## New Graphic

IN THE FIRST HALF OF 2025



Source: China Internet Network Information Center  
Designed by SONG Ziyao / Science and Technology Daily

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