



Science and Technology Daily

VOL.2-NO.67

THURSDAY, NOVEMBER 3, 2022

WEEKLY EDITION

International Cooperation

MOST-ESA Dragon Programme Gets Impressive Results

By Tang Zhexiao

From 16 in Dragon 1 to 55 in Dragon 5, the number of cooperative research projects between China and Europe in Earth Observation (EO) has continued to grow.

As a joint undertaking between European Space Agency (ESA) and China's Ministry of Science and Technology (MOST), the Dragon Programme aims at stimulating bilateral scientific exchange and cooperation in EO science and technology. The National Remote Sensing Center of China (NRSCC) and the European Space Research Institution (ESRIN) of ESA are responsible for the organization and implementation of the programme.

Following 18 years of cooperation, nearly 2,000 Chinese and European scientists have been working on remote sensing of Solid Earth, Coastal Zones & Oceans, Atmosphere, Climate Change, Sustainable Agriculture and Water Resources, among others.

Breakthroughs have been made in the key technology of high-precision detection of greenhouse gases such as carbon dioxide and methane, making high-quantitative remote sensing monitoring of greenhouse gas concentrations in a wide range available.

Phase signal analysis for synthetic aperture radar interferometry, a powerful method of obtaining millimeter-accurate surface displacement measurements, has also made progress. It enables high-precision monitoring of earthquake surface deformation and urban land subsidence.

The Dragon Programme has promoted the cultivation of young scientists in remote sensing. Nearly 80 percent of Chinese experts are young and middle-aged scholars under the age of 45.

By organizing cooperative research, courses, international short-term training, as well as a series of academic seminars and other activities, a batch of young scientists have enhanced their research abilities.

Li Deren, the first Chinese scholar to win the Brock Gold Medal Award, one of the most influential awards in international photogrammetry and remote sensing, said that Dragon Programme for scientific and technological cooperation is unprecedented in terms of cooperation scale, research level and achievements, adding that it has attracted widespread attention from counterparts at home and abroad.

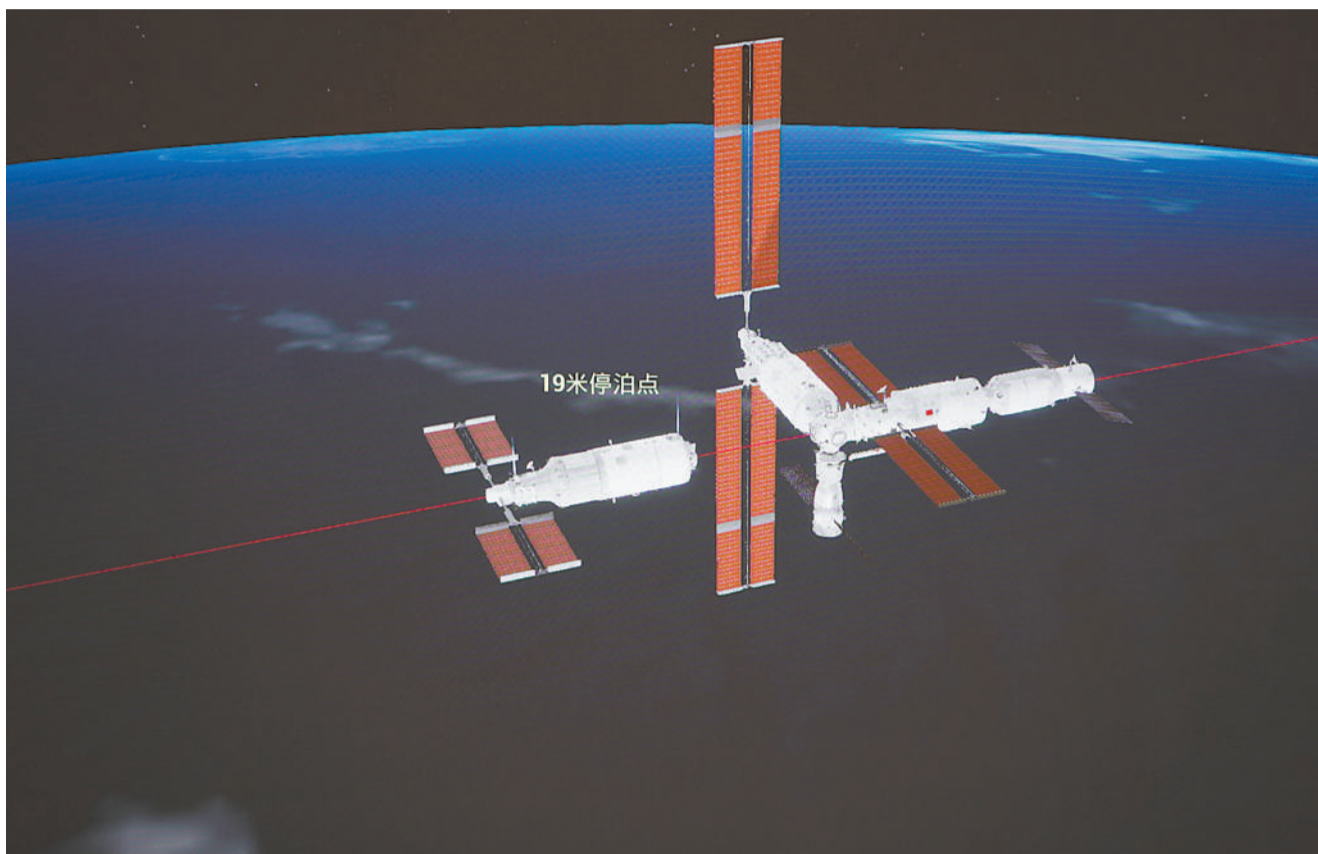
Based on the previous four phases, Dragon 5 has further expanded in terms of research fields, shared satellite data sources, and the number of scientists participating, continuing to focus on in-depth cooperation in EO application research, personnel training, academic exchanges and data sharing. Mainly covered in ten fields of EO science, the research regions of Dragon 5 involve China, Europe, Africa, the Arctic and the Antarctic.

Moreover, shared data resources are getting rich in the latest phase, with 12 kinds of in-orbit satellite data provided by China, including the newly added Jilin-1 satellite, LuoJia 1-01 satellite, China-France oceanographic satellite and Zhangheng-1 electromagnetism satellite, and 14 kinds of in-orbit satellite data provided by France.

In 2020, the first year of Dragon 5, the joint team published 246 papers, three monographs, six patents, and received six awards, achieving remarkable results, according to the recent Dragon 5 Mid-term Results Symposium.



The Dragon 5 Mid-term Results Symposium is held on October 17. (PHOTO: NATIONAL REMOTE SENSING CENTER OF CHINA)



The lab module Mengtian, carried by the Long March-5B Y4 carrier rocket, was launched from the Wenchang Spacecraft Launch Site in south China's Hainan province on October 31 and later the lab module successfully docked with China's Tiangong space station combination, according to the China Manned Space Agency. (PHOTO: XINHUA)

Editor's Pick

FAST Advances Universe Exploration

By LIN Yuchen

The Five-Hundred-Meter Aperture Spherical Radio telescope (FAST), dubbed China Sky Eye, recently captured the biggest atomic gas structure ever found in the universe, opening the door to further our understanding of universe gas evolution.

The find, published in *Nature* on October 19, was led by Xu Cong, head of an international team at Chinese Academy of Sciences (CAS), representing another major achievement of the joint efforts of Chinese and foreign scientists through FAST.

Collaborative achievements

In April, 2021, FAST officially began to open up to global astronomers, allocating over 7,000 hours for the 27 observation projects by scientists from 14 foreign countries by August 2021.

In September this year, China and U.S. astronomers, led by the National Astronomical Observatories under CAS, filmed a world first magnetic ebb and flow of a fast radio burst within the Milky Way, furthering exploration of how fast radio bursts may happen.

Additionally, an international team led by Li Di, researcher with the National Astronomical Observatories under CAS, published a study in *Nature* in October 2021, recording the largest set of fast radio burst events in history through FAST, which may help clarify the origins of the so-called mysterious signals from deep space.

The opening up of FAST contributes China's experience to the construction of a community with a shared future for humanity, and promotes international sci-tech development and the progress of human civilization.

World's best sensitivity

The gigantic FAST telescope, with its diameter of 500 meters, is 195 meters wider than the Arecibo Observatory in Puerto Rico, the second-largest telescope of its kind.

Being 2.5 times more sensitive than the Arecibo Observatory, FAST is the most sensitive spherical radio telescope in the world. It is equipped with large motors, able to change the shape of its reflective surface, allowing the telescope to scan larger swathes of the sky.

According to CAS, the telescope's exquisite sensitivity will enable astronomers to get a jumpstart on many scientific goals, like surveying evidence which would shed light on the origin and evolution of the universe, and detect thousands of new pulsars, which could assist in establishing the law of extreme objects. **See page 3**

CIIE Epitomizes China's Pursuit of High-quality Opening Up

By WANG Xiaoxia

The fifth China International Import Expo (CIIE) is around the corner. Five years on, the evolution of the CIIE is a shining example of China's continued opening-up, and a reflection of the shared opportunities and win-win cooperation for businesses from around the world.

According to statistics, at the last four CIIE, more than 1,500 new products, new technologies and new services made their debut, and tentative deals valued at more than 270 billion USD were reported.

The CIIE has played an active role in improving domestic supply, promoting industrial and consumption upgrading, and constructing new development patterns, said Sheng Qiuping, vice minister of commerce.

This year's CIIE sees unprecedented progress. Three global high-fashion giants, top 10 medical device enterprises,

top 10 medicine enterprises and top 10 vehicle enterprises will all participate in the exhibition.

Shanghai International Sister Cities Hub, launched on September 29, is a new platform to help promote products displayed at the CIIE from Shanghai's international sister cities, all year round.

"Despite the uncertainty of the external environment, the CIIE will be held offline as planned. It is this kind of certainty that gives the world even more confidence in China's sure-footedness and determination to grow with its global partners," said Pietro Brambilla, chief financial officer of L'Oreal North Asia and China.

The CIIE is not only an international trading event, but also an important engine for high-quality economic development of China and its integration into the global market.

Since the first CIIE, China has been

improving regulations while opening up, and supportive policies have been implemented, which further optimized the business environment and promoted high-quality economic development, said Dong Yu, executive vice president of the China Institute for Development Planning, Tsinghua University.

During the first eight months of 2022, 120 key projects were signed in the Hongqiao International Central Business District, where the CIIE is located, with the intended investment of 82.721 billion RMB, up 60 percent year-on-year.

From the CIIE, China International Fair for Trade in Services and China International Consumer Products Expo to the implementation of RCEP and the reduction of the negative list for foreign investment access, China has been committed to opening up at a higher level and supporting economic globalization with its own actions.

International Experts Share Views on China's Progress

By Staff Reporters

China's development in economy, politics and people's livelihoods is without precedent, Robert Walker, professor at Beijing Normal University, told Science and Technology Daily on October 27.

Walker made the comment while visiting the exhibition on China's achievements of the past decade, along with many other international experts who work and live in the country. They are impressed with China's progress in science and technology, and expressed willingness for more exchanges and cooperation.

In many sectors, China is making impressive advances, such as the 5G communication technology which brings much convenience to daily life, said Juan Cano Sanchiz, associate professor from University of Science and Technology Beijing. As an archaeologist, he told us that digital technology and robots are also changing the way people approach archaeology.

For Ross Mitchell, a U.S. geologist now working for Institute of Geology & Geophysics, Chinese Academy of Sciences (IGGCAS), he was excited to see the great findings that IGGCAS made with lunar soil samples brought back by the Chang'e-5 mission. Impressed with the great progress China has made on Moon and Mars explorations, Mitchell would like to see more cooperation between China and the U.S. in the fields of space exploration.

With regard for the people, technology makes it possible to achieve poverty alleviation and improve living standards of individuals in China, said Walker, adding that, "Technology is awesome, but it seems to me that the technology is meaningless without a focus on the people."

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WEEKLY REVIEW

More Effective Wind Turbine Set Rolls off Assembly Line

Led by China Huaneng Group, a new set of 2.7 MW wind turbines was produced on October 30. It is the first time that such turbine set adopted a tandem double turbine structure. With the same capacity, the cost drops by 10 percent and utility rate of wind energy increases by 15 percent when compared with that of a single turbine.

China Lays In-situ Scientific Experiment Station in Deep Sea

An in-situ scientific experiment station that can conduct unmanned scientific research in deep sea has been deployed recently by Chinese researchers according to the Chinese Academy of Sciences. It brings one step closer to realize long-period unmanned research in the deep sea.

Risk of Dementia and AD to Be Predicted 5 Years in Advance

Researchers from Huashan Hospital and Fudan University developed a ML-based UKB-DRP model that incorporated ten easily accessible predictors with solid predictive power for incident dementia and Alzheimer's Disease (AD) within five years, or even longer, which can be used to identify individuals at high risk of dementia and AD in the general population.

Maiden Flight of a UAV with Four Engines Successful

A domestically developed large unmanned aerial vehicle (UAV) with four engines recently completed its first flight without malfunction in southwest China's Sichuan province. The UAV has a larger loading space and capability, stronger electricity support, and higher system reliability and safety.

WECHAT ACCOUNT



E-PAPER

