



### Block on visits

Russia shuts door to officials of Britain amid escalating sanctions

WORLD, PAGE 12

Innovation helps invigorate sector of biopharma

BUSINESS, PAGE 13

### A natural talent

Photographer has trained his lens on birds, plants for over 15 years

LIFE, PAGE 17



# CHINA DAILY

香港版  
HONG KONG

中國日報

MONDAY, April 18, 2022

www.chinadailyhk.com HK \$10



Chinese astronauts (from left) Zhai Zhigang, Wang Yaping, and Ye Guangfu of the Shenzhou XIII spaceship complete their six-month space station mission, returning to Earth safely on Saturday. The mission sets a record for the duration in orbit of Chinese astronauts. 新华社

## China to send next space crew aloft in June

By ZHAO LEI  
[zhaolei@chinadaily.com.cn](mailto:zhaolei@chinadaily.com.cn)

China announced on Sunday it will send its next spaceflight crew to the Tiangong space station in June following the successful return of the three astronauts of the Shenzhou XIII mission on Saturday.

### Inside

• Editorial, page 8  
• See more, page 5

The Shenzhou XIV crew will consist of three astronauts and they will take off from the Jiuquan Satellite Launch Center in northwestern China in June to Tiangong and work there for six months, Hao Chun, head of the China Manned Space Agency, said at a news briefing held by the State Council Information Office.

Before the manned mission, the Tianzhou 4 robotic cargo spaceship

will lift off in May to transport supplies, experimental materials and fuel to the Tiangong station.

In July, the space station's first lab component — Wentian, or Quest for the Heavens — will be launched while the second lab named Mengtian, or Dreaming of the Heavens, will be sent to dock with the station in October, according to Hao.

Once they are connected with the Tiangong, the station will become complete with a T-shaped structure, he said. After the space labs, the Tianzhou 5 cargo craft and the Shenzhou XV crew are scheduled to arrive at the massive orbiting outpost, the largest space-based infrastructure the nation has ever built, he said.

After the Tiangong's completion around the end of this year, it will have three pillar sections — a core

module linked with two large space labs, weighing around 70 tons. In the long term, the station will regularly be connected with a Shenzhou spacecraft and two Tianzhou cargo ships, the China Manned Space Agency said.

By now, Tianzhou 4 and its carrier — a Long March 7 rocket — have arrived in the Wenchang Space Launch Center in Hainan province and are undergoing final tests, the agency said last week.

Huang Weifen, the chief trainer of Chinese astronauts, said at the news conference the Shenzhou XIV and XV crew teams are in "very good condition" and have had extensive training and preparations.

Both will stay in space for six months and conduct spacewalks. During the mission shift lasting up to 10 days, all of the six astronauts

will be inside the Tiangong station and work together, she said.

"The Shenzhou XIV astronauts will cooperate with ground controllers to perform the in-orbit assembly of Tiangong, making it a three-component spacecraft stack," Huang said.

Speaking about future plans, Hao said China intends to launch a large space telescope named Xuntian, or Surveying the Sky, next year to fly alongside the Tiangong station.

Furthermore, Chinese researchers are developing a new carrier rocket and a new spacecraft. Both will be used to transport astronauts.

"The new-generation manned spacecraft will be much better (than the Shenzhou series) in terms of overall capability. It will be capable of carrying seven astronauts and more cargoes," he said.

# Shenzhou XIII mission a success in testing tech for space station

Foundation laid for forthcoming in-orbit assembly of Tiangong

By ZHAO LEI  
zhaolei@china.com.cn

The Shenzhou XIII mission has concluded the technology demonstration phase in the construction of China's Tiangong space station, according to a senior space official.

Hao Chun, head of the China Manned Space Agency, told a news conference in Beijing on Sunday that the phase, which included the deployment of Tiangong's core module and two manned spaceflights, has laid a solid foundation for the in-orbit assembly of Tiangong in coming months.

"During the technology demonstration phase, we verified key technologies needed in the construction and operation of a space station, like regenerative life-support and robotic arm-enabled repositioning technologies," he said. "We have also carried out a number of scientific experiments and technological tests that resulted in world-class achievements."

In addition, the Shenzhou XII and XIII missions — both of which were crewed flights — enabled mission controllers to improve their planning and management systems and upgrade ground facilities, according to Hao.

After being in orbit for six months, the three crew members of the Shenzhou XIII mission departed Tiangong, or Heavenly Palace, and returned to Earth on Saturday morning, completing the nation's longest manned spaceflight.

Major General Zhai Zhigang, Senior Colonel Wang Yaping and Senior Colonel Ye Guangfu breathed fresh

## KEY MOMENTS IN THE SHENZHOU XIII MISSION

**Oct 16** The Shenzhou XIII spacecraft is launched by a Long March 2F carrier rocket at the Jiuquan Satellite Launch Center in Inner Mongolia, carrying three astronauts — Major General Zhai Zhigang, Senior Colonel Wang Yaping and Senior Colonel Ye Guangfu — to the Tiangong space station. The crew enters the station the same day.

**Nov 7** The crew carries out their first spacewalk, during which Wang becomes China's first female spacewalker. The operation lasts six and a half hours.

**Dec 9** The crew conducts their first science lecture from the space station for students around the world back on Earth. Almost every primary and middle school student on the Source: China Manned Space Agency

Chinese mainland watches the lecture.

**Dec 26** The astronauts perform their second spacewalk, spending nearly six hours outside of the space station.

**Feb 1** The crew spends Spring Festival, or Chinese Lunar New Year, inside the orbiting station, becoming the first Chinese people to celebrate the country's most important traditional festival in outer space.

**Mar 23** The astronauts give their second science lecture.

**April 16** The Shenzhou XIII mission comes to an end with the crew safely coming back to Earth at the Dongfeng Landing Site in Inner Mongolia.

air for the first time after their half-year space journey when ground recovery personnel opened the hatch of their reentry capsule at 10:03 a.m. The capsule touched down at the Dongfeng Landing Site in the Inner Mongolia autonomous region at 9:56 a.m. after flying nine hours in a reentry trajectory.

They were then carried out one by one by ground workers and placed onto chairs in front of the capsule.

"I am feeling very good. We want to report to the motherland and the people that we have successfully completed the Shenzhou XIII mission. We wish to thank President Xi Jinping for his care and attention. We thank all the Chinese people for their support and encouragement. Our gratitude also goes to all those involved in our mission who accompanied us day and night," Zhai, the mission commander, told China Central Television during a live broadcast.

"It is the power and strength of our country that built us the advanced space station. I am proud of my great motherland," he said.

Wang, the first Chinese woman to board Tiangong and the first female Chinese spacewalker, told the State

broadcaster that she was very happy to return to the motherland and wants to tell her young daughter that "mom has come back after reaching for the stars".

Carrying the crew, the Shenzhou XIII spacecraft undocked from Tiangong at 12:44 a.m. on Saturday.

In the last hours of their stay inside the Tiangong, the astronauts worked with ground controllers to configure the station, transmit some experimental data back to Earth and sort out materials, according to the agency.

Zhai and his crewmates spent 183 days in an orbit about 400 kilometers above the Earth after their Shenzhou XIII spacecraft was launched on Oct 16 by a Long March 2F carrier rocket from the Jiuquan Satellite Launch Center in Inner Mongolia. The crew set a record for China's longest spaceflight, almost doubling the previous record of 92 days created by their peers in the Shenzhou XII mission who were onboard Tiangong from mid-June to mid-September last year.

Due to the Shenzhou XIII mission, Wang has spent more time in space than any other Chinese astronaut — a total of 198 days in orbit.

During their space journey, the astronauts carried out two spacewalks that totaled more than 12 hours. They mounted components on the station's robotic arm and used it to practice extravehicular maneuvers, verified the arm's capabilities and its compatibility with the crew's needs, examined the safety and performance of support devices for extravehicular activity and also tested the functions of their extravehicular suits.

Wang took part in the first spacewalk on Nov 7, becoming the first female Chinese spacewalker.

The crew members also conducted two science lectures for Chinese students. In those lectures livestreamed worldwide by China Media Group, the astronauts showed viewers how they live and work inside the gigantic space station and demonstrated phenomena only possible in microgravity, including "disappearing buoyancy" and a "water ball".

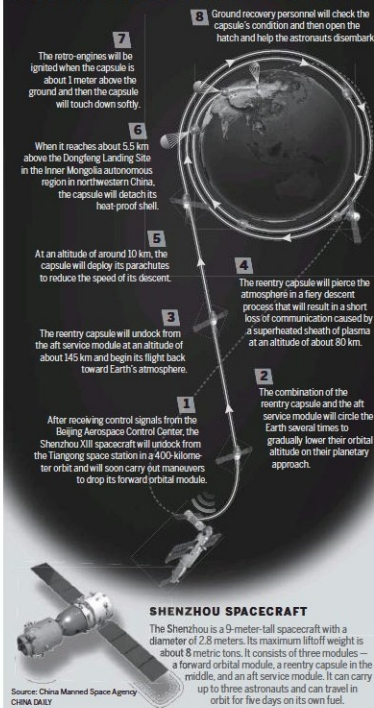
In one experiment, Wang used a toy figurine of Bing Dwen Dwen, the popular mascot of the 2022 Beijing Winter Olympic Games, to display how objects float in a weightless environment.

The Shenzhou XIII's space-based lessons marked the start of the Tiangong Class series, China's first extraterrestrial lecture series that aims to popularize space science and inspire youngsters to pursue their "science and space dreams" according to the manned space agency.

The classes were also special to Wang, as she was the one who gave the nation's first space-based lecture inside an experimental space station module to more than 60 million Chinese students during the Shenzhou X mission in June 2013. That lecture made China the second country, following the United States, to deliver a lesson to schoolchildren from space.

In early February, the Shenzhou

## SHENZHOU XIII MISSION



**SHENZHOU SPACECRAFT**  
The Shenzhou is a 9-meter-tall spacecraft with a diameter of 2.8 meters. Its maximum lift-off weight is about 8 metric tons. It consists of three modules — a forward orbital module, a reentry capsule in the middle, and an aft service module. It can carry up to three astronauts and can travel in orbit for five days on its own fuel.

XIII astronauts spent Spring Festival, or Chinese Lunar New Year, inside the orbiting station, becoming the first Chinese people to celebrate the country's most important traditional festival in outer space. They appeared in a live broadcast and sent their best wishes to Chinese people. Several days before their return, Zhai and his crewmates recorded a video in which they answered questions solicited from students across the United States who were curious about their lives and tasks on board.

## China's space program reaches new heights

At 9:57 a.m. on Saturday, the reentry module carrying the astronauts Zhai Zhigang, Wang Yaping and Ye Guangfu touched down safely at the designated landing site in North China's Inner Mongolia autonomous region; the three Shenzhou XIII astronauts having completed their six-month space mission.

During their time in space, they made many breakthroughs for China's space program. In terms of the mission, it was the longest so far, and Wang was the first Chinese female astronaut to conduct a spacewalk. The astronauts also carried out the docking of a cargo spacecraft by remotely controlling the Tianhe space station module's mechanical arm. They also successfully undocked the cargo spacecraft and docked with it again, fully demonstrating the arm's functional ability.

From all aspects, it is fair to say that the Shenzhou XIII mission has been a success. Even the astronauts' return to the Earth witnessed some major breakthroughs for China's space endeavors.

In terms of speed, it set a record. The Shenzhou XII return capsule spent over 24 hours revolving around the Earth 11 times before returning on Sept 17, 2021. This time Shenzhou XIII shortened the orbiting time to about 9 hours, going around the Earth five times. Behind the shorter return time is the improved efficiency of the command center, which during that time has to calculate all the parameters involved, confirm them, and make strategies for the whole process.

The search and rescue team on the Earth also

demonstrated its enhanced capabilities. According to reports, the Dongfeng Landing Site has a search zone of tens of thousands of square kilometers, which includes desert, salt flats, as well as wetlands, which makes it challenging to pinpoint where the reentry module has landed. Yet the team finished the job of recovering the three astronauts hours earlier than expected.

Besides concluding the Shenzhou XIII mission in a safe manner, the return of the crew also signaled that the Chinese space station has finished verifying its key technologies.

To build a space station and enable astronauts to live in it for quite some time is a key step in China's manned space missions. Since 2021, five flight missions have been launched to test and verify the key technologies of China's space station. The sixth has now been completed, and has confirmed that the space station meets all the required standards for operation.

2022 is a key year for China's space station. Two experimental modules, two manned spaceflights carrying six astronauts, and two cargo spaceflights will be launched this year, finishing the construction process of China's space station.

With its space station advancing step by step, the future for China's space program shines brighter than ever, and it will make new contributions to humankind's endeavors in space. China welcomes all countries to conduct in-depth exchanges and cooperation with it on the peaceful utilization of space based on equality and mutual benefit.