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# Mars rover to move south after testing

Data, images obtained by Zhurong will be accessible to global researchers

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China's Mars rover Zhurong will continue moving southward to explore the Red Planet, focusing on key scientific issues, such as potential locations of water and ice, as well as volcanic activities, according to a project leader.

Liu Jianjun, chief designer of the Tianwen 1 mission's scientific system, said on Saturday that mission planners decided the rover would move south out of scientific considerations.

"Tianwen 1's landing site is on the southern part of the Utopia Planitia, near what many scientists believe was a shoreline of an ancient Martian ocean. The site is believed to have been covered by water, so heading southward is in the direction of the land," he said. "Scientists are convinced that this route will enable Zhurong to find some interesting geographical features, such as mud volcanoes and troughs, to observe and survey. This will help them to deepen their knowledge of water, ice and volcanoes on Mars and find answers to as yet unsolved questions."

In the first days after touching down on Mars on May 15, Zhurong tested its scientific equipment and transmitted data back to Earth for ground controllers' assessment and analysis, Liu said.

"Zhurong spent some days on testing because it is China's first Mars rover and we didn't know whether it would work as planned, so we had to check and analyze its data to make sure it operated well," the planetary geologist said. "After that, we will produce standard data products and give them to scientists for formal research."

According to Liu, all six pieces of scientific equipment mounted on Zhurong — including a multispectral camera, ground-penetrating

radar and a meteorological sensor — have started operating. He noted that data and images obtained by Zhurong will be first provided to Chinese scientists and then will be accessible to researchers from around the world.

Sun Zezhou, head designer of the Tianwen 1 probe, said Zhurong's condition is better than what designers expected, largely thanks to the weather on the Red Planet in recent days.

"The temperature and sunlight have been better than our expectation, and this has allowed Zhurong to carry out its tasks at a faster pace than we predicted," he said on Saturday. "We think it could work longer than its three-month designed life expectancy."

Sun, a senior designer at the China Academy of Space Technology, said the rover has been programmed to enter dormancy under extreme conditions, like lengthy sandstorms, and then reactivate itself.

The 240-kilogram Mars rover is the core component of China's Tianwen 1 mission, the country's first interplanetary foray and also is the sixth rover on the Red Planet, following five from the United States. The 1.85-meter-tall robot is now hundreds of millions of kilometers from Earth.

The rover's six wheels, powered by four solar panels, can move it at 200 meters an hour on the Martian surface.

Tianwen 1, named after an ancient Chinese poem, was launched by a Long March 5 heavy-lift carrier rocket on July 23 from the Wenchang Space Launch Center in Hainan province, beginning the nation's first mission to another planet.

The spacecraft traveled more than 470 million km and carried out several trajectory maneuvers before entering the orbit of Mars on Feb 10.

## Next stop Jupiter as country's interplanetary ambitions grow

By ZHAO LEI

Barely a month after China landed its first rover on Mars, the country's scientists already have plans to explore Jupiter, the largest planet in our Solar System.

Zhang Rongqiao, an official at the China National Space Administration and chief planner of the Tianwen 1 Mars mission, told reporters at a news conference at his administration's Beijing headquarters on Saturday that China will not be content with the success of its first Mars expedition, but will continue its interplanetary adventures.

"A major highlight of our future plans for interplanetary exploration is a Jupiter mission. Humankind still lacks comprehensive knowledge of the Jovian system, and has conducted only a handful of operations there," he said. "Therefore the gas giant is full of opportunity for science and discovery."

In addition to its scientific value, an expedition to Jupiter will lead to the development of new inventions and technologies, Zhang added.

"Such a mission will require us to develop new technologies for longer-lived spacecraft, better tracking and controlling and improved energy sources," he explained. "In sum, it will push forward our space exploration capabilities considerably."

Zhang did not provide detailed information on the planned mission, its schedule or method of exploration.

Although Jupiter has been known since ancient times, the first detailed observations were made by Galileo Galilei in 1610, using a small telescope.

The first spacecraft to visit Jupiter was the United States' Pioneer 10, back in 1973. Since then, the planet has been visited by several passing probes and orbiters.

The most recent Jovian mission was launched by NASA in August 2011. The spacecraft, named Juno, began to travel in a polar orbit of the gas giant in July 2016, and has been conducting an investigation of Jupiter's atmosphere, deeper structure and magnetosphere for clues to the planet's origin and evolution.