Progress in International Cooperation of China's Lunar and Deep Space Exploration

China National Space Administration

Feb.2023

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Management Procedures of International Cooperation on Lunar Samples and Scientific Data

Chang‘E-5 mission retrieved 1731g lunar samples in December 2020.In July and November 2021, January, April and August 2022, five batches of 198 lunar scientific research samples, whichi is totally 65104.1mg, were distributed to the Chinese scientific team.

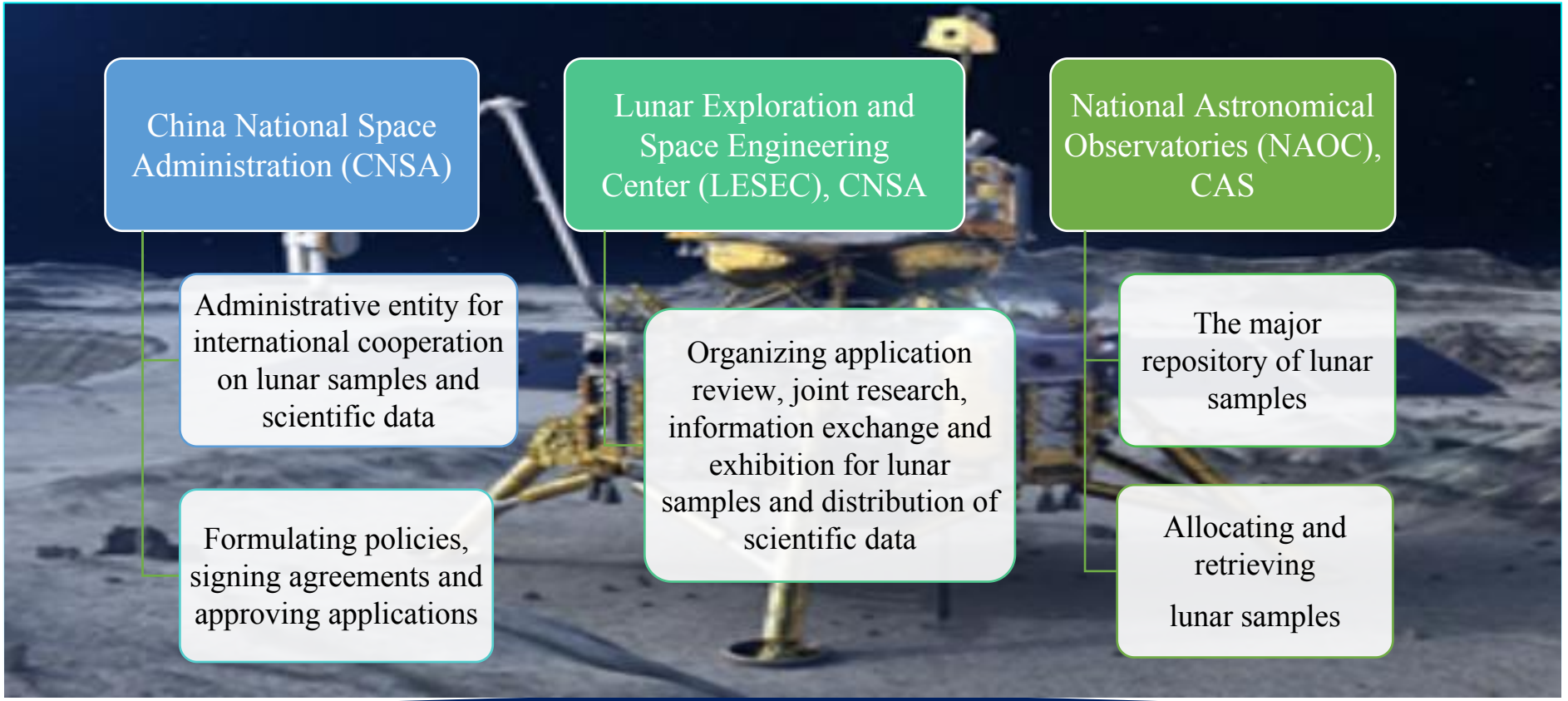
To advance the joint research and application of lunar samples and enable scientific results to be shared globally, China National Space Administration formulated and published “Management Procedures of International Cooperation on Lunar Samples and Scientific Data” which normalizes application, distribution, transportation, use and return of lunar samples and clarifies application, transmission, and the management of the scientific data.

Management Procedures of International Cooperation on Lunar Samples and Scientific Data

Welcome Applicants!

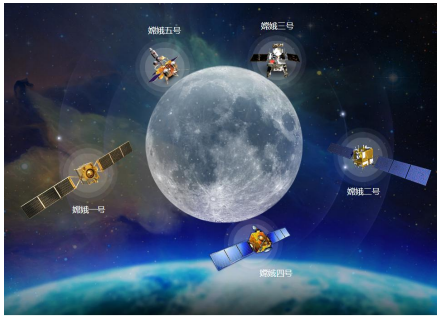
- China's Lunar and Deep Space Exploration http://www.clep.org.cn/
- Lunar and Planetary Data Release System https://moon.bao.ac.cn/
- Lunar and Deep Space Exploration Scientific Data and Sample Release System http://202.106.152.98:8081/moondata/
- China National Space Administration https://www.cnsa.gov.cn/

Management Procedures of International Cooperation on Lunar Samples and Scientific Data



Management Procedures of International Cooperation on Lunar Samples and Scientific Data

The following materials will help to obtain approval for the application of research samples

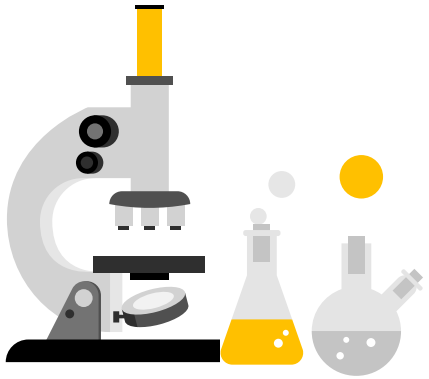


- Research proposals recommended and funded by Chinese government departments;
- Research proposals recommended and funded by foreign government departments or space agencies;
- Research proposals recommended and funded by important international organizations;
- Reprints of papers published in professional journals and directly related to research methods applied to lunar samples;
- Test data obtained from simulated lunar materials according to the research method to be applied to lunar samples; and
- Proof of meeting the relevant safety and security regulations for storage, transfer and use of lunar samples.

In principle, the borrowing period shall not exceed one year. If necessary, the loan can be renewed for a period of no more than six months.

Management Procedures of International Cooperation on Lunar Samples and Scientific Data

- Encouraging the international community to engage in scientific research, achievement transformation, application and dissemination of lunar samples and scientific data
- Open to all interested countries, international organizations, global partners and researchers
- Note that "lunar samples (or scientific data) are provided by China National Space Administration"
- If the research results of lunar samples are used, the serial number of lunar samples shall be marked



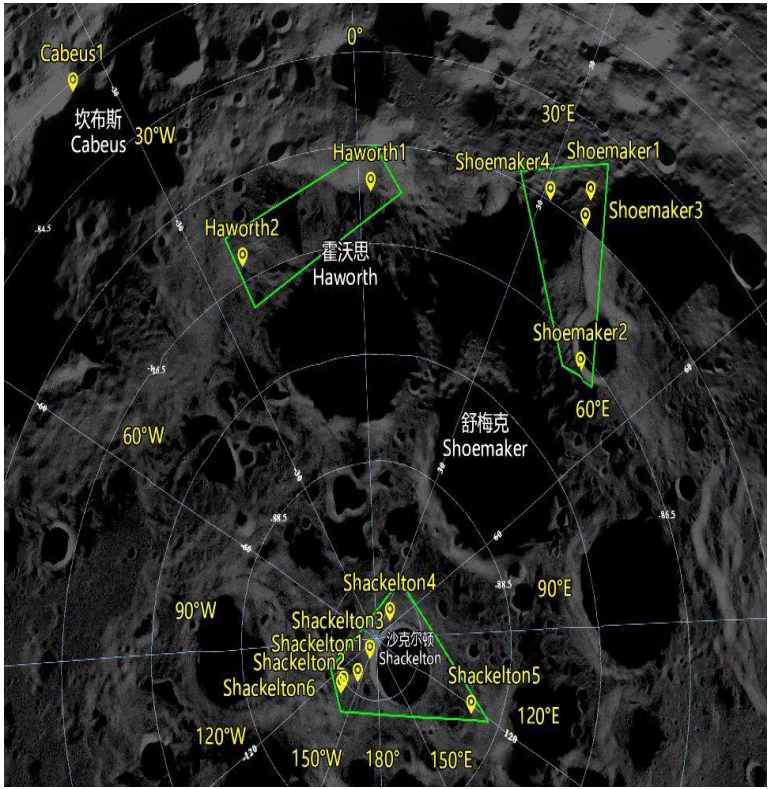
- Joint research between China and other countries
- Sample or data study
- Achievement transformation, application and dissemination

Onboard Opportunities in Chang'E-7 Mission

Chang'e-7 mission is planned to be launched around 2026, and will conduct environmental and resource survey at the south pole of the Moon to acquire remote sensing and in-situ scientific data of the whole Moon, landing area and roving area, and lay the foundation for the construction of International Lunar Research Station.

Pre-selected landing area: Lunar south pole near Shackleton Crater and Shoemaker Crater (the specific landing site is still under further investigation).

Probe system includes a probe and the "QueQiao-2" relay satellite. The probe consists of one orbiter, one lander, one rover, and one hopper. The "QueQiao-2" relay satellite will be launched around 2024, serving as relay communication for CLEP 4th phase.



Onboard Opportunities in Chang'E-7 Mission

Lander will provide a capacity of 10kg, Orbiter will provide 15kg, so 25kg will be used to carry science payload.

Lander possible piggyback position: -Y panel

Mass: 10kg, Power: ≤50w.

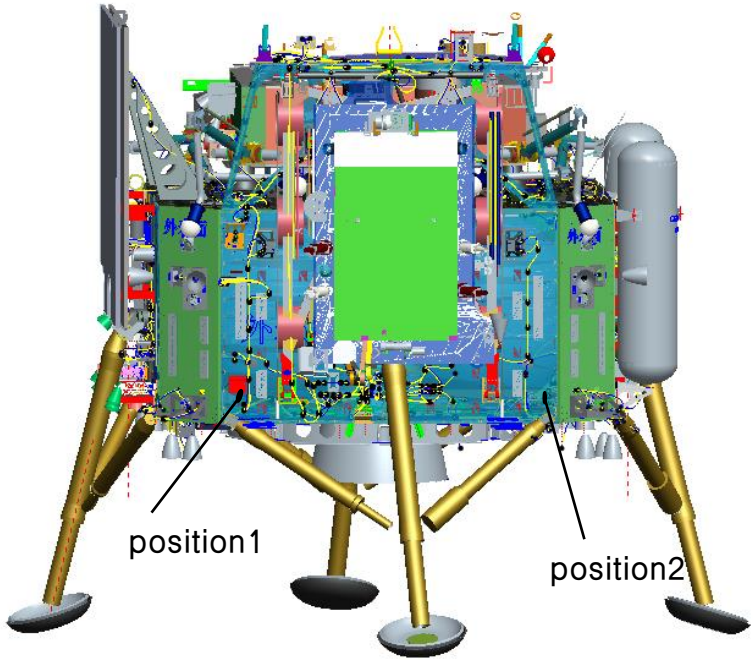
Maximum envelope size for a single unit (general): 300×150×150mm.

Environmental temperature:

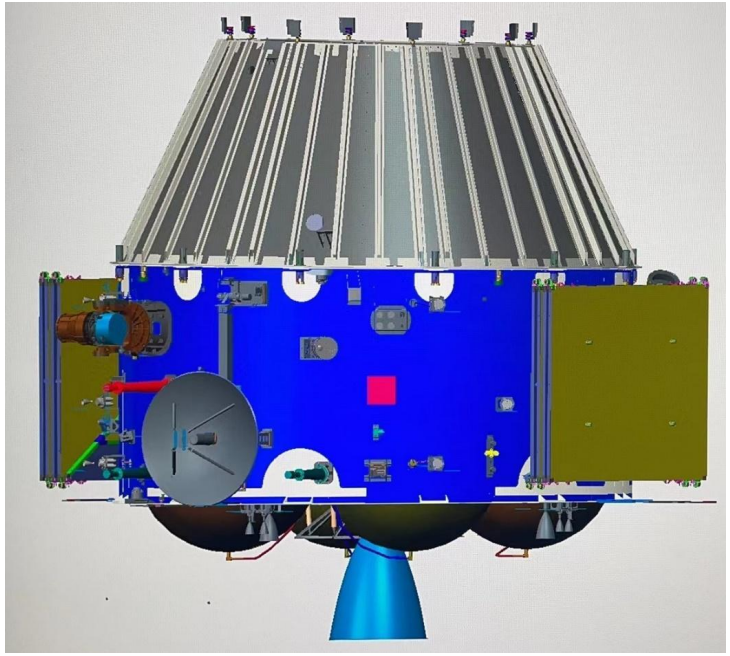
-60˚C ~ +80˚C (before landing);

-180˚C ~ +80˚C (after landing).

Active thermal control is available.



Onboard Opportunities in Chang'E-7 Mission



- Orbiter possible piggyback position: between quadrants III/IV.
- Mass: 15kg, Power: 50w.
- Maximum envelope size for a single unit (general): 300×200×200mm.
- Environmental temperature: -60°C ~ +40°C.
- Power available:

  ≤100W (Earth-Lunar transfer phase);

  ≤50W (Circumlunar flight phase).

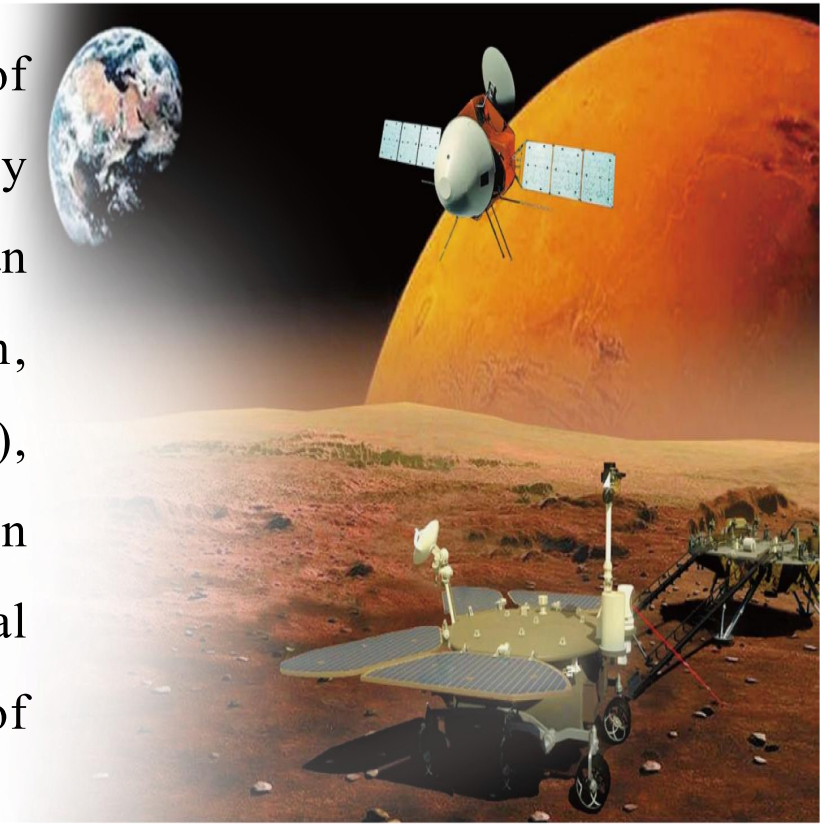
Onboard Opportunities in Chang'E-7 Mission

Preliminary selection	Apr, 2023
Collect project proposals	Jun, 2023
Finish expert review	Jul, 2023
Final confirmation of project interface and technical indicators	Sept, 2023
Sign the implementation agreement	TBD

Details on CNSA official website *www.cnsa.gov.cn* , China's *Lunar* and Deep Space Exploration website *www.clep.org.cn* .

Global Solicitation of Important Scientific Questions in Deep Space Exploration

Deep space exploration refers to the exploration of extraterrestrial objects and solar system space by launching spacecraft in space equal to or greater than the distance between the Earth and the Moon, including the Moon, planets (planetary systems), asteroids, the Sun, and the heliosphere. It is an important way for scientific research, technological innovation and the development and utilization of space resources.



Global Solicitation of Important Scientific Questions in Deep Space Exploration

The Lunar Exploration was carried out in three steps: Orbiting, Landing and Returning.

2004 — 2020

Orbiting

Chang'E 1	Chang'E 2
Lunar orbiting exploration	Explore the Moon, the L2 point, and the asteroids

Landing

Chang'e 3	Chang'e 4
Soft landing of extra-terrestrial bodies and patrol	The first far-side of the Moon landing and roving

Returning

Chang'e 5
Return 1731g sample from the moon

Global Solicitation of Important Scientific Questions in Deep Space Exploration

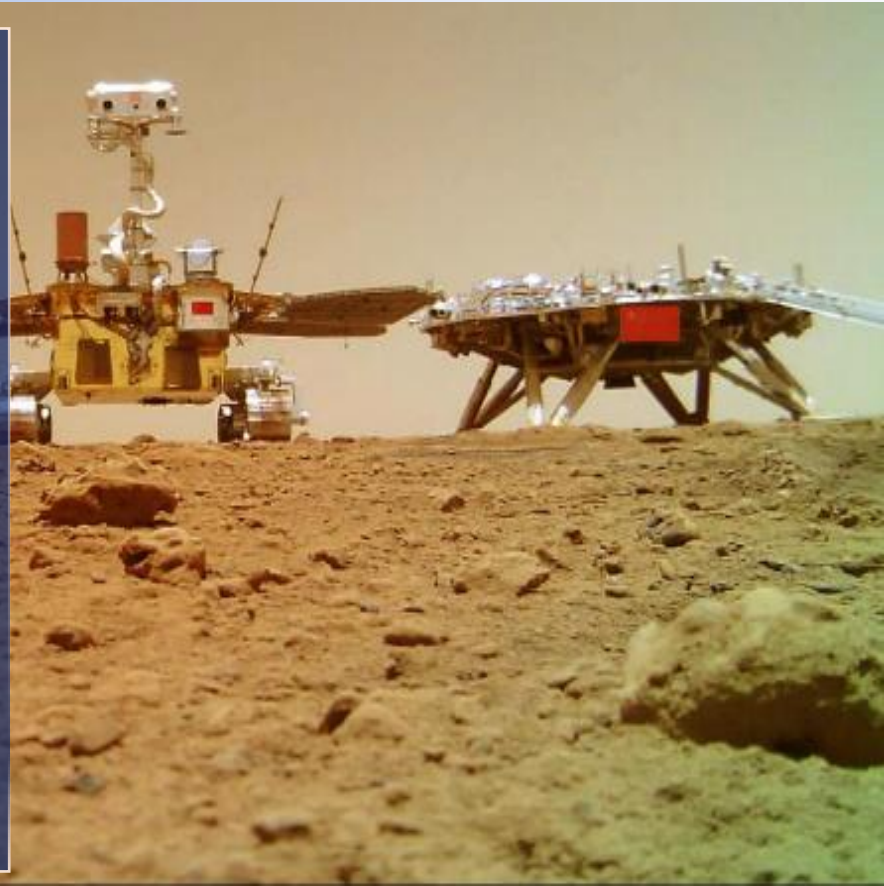
Mars exploration achieved three goals with one mission: orbiting, landing, and roving.

Tianwen-1 mission

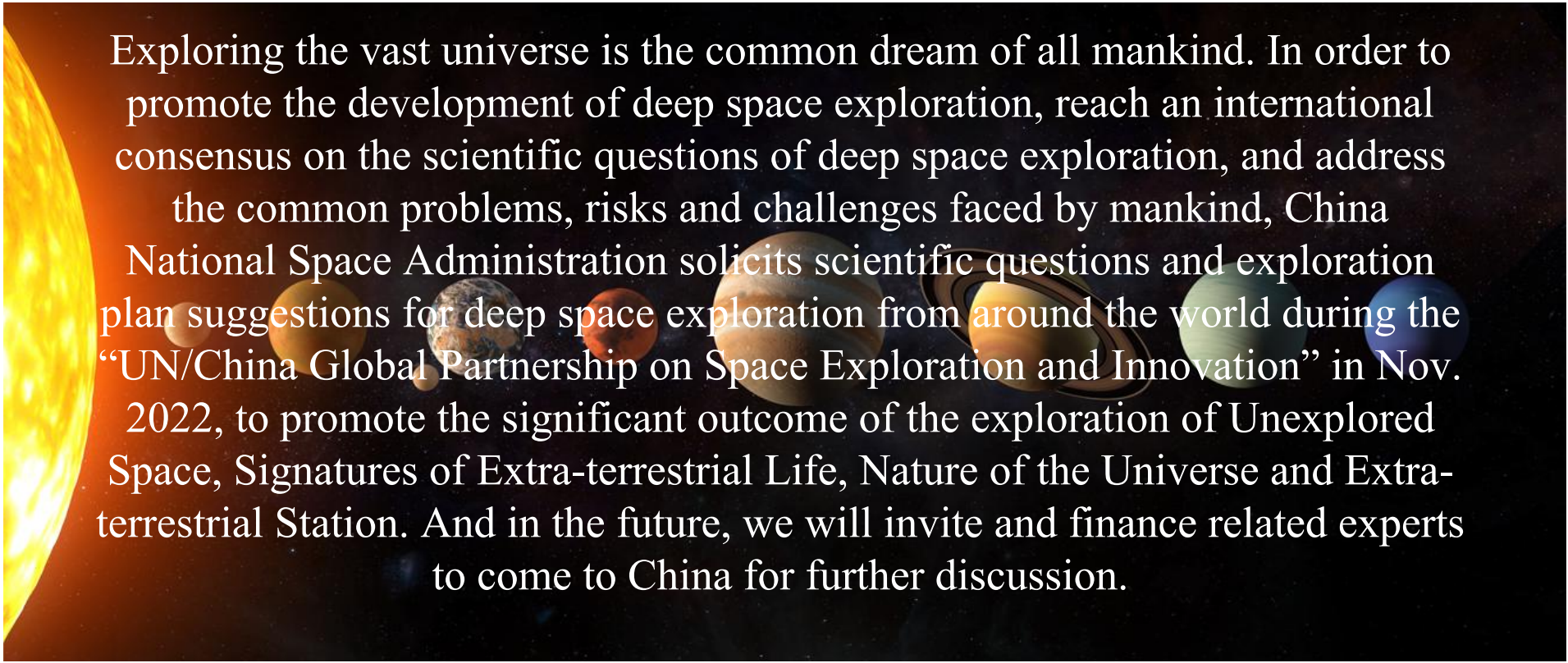
The orbiter has been in orbit for more than 800 days.

The rover Zhu Rong has traveled a total of 1,921 meters.

Until now it obtains more than 1,480GB of original scientific exploration data.



Global Solicitation of Important Scientific Questions in Deep Space Exploration



Exploring the vast universe is the common dream of all mankind. In order to promote the development of deep space exploration, reach an international consensus on the scientific questions of deep space exploration, and address the common problems, risks and challenges faced by mankind, China National Space Administration solicits scientific questions and exploration plan suggestions for deep space exploration from around the world during the "UN/China Global Partnership on Space Exploration and Innovation" in Nov. 2022, to promote the significant outcome of the exploration of Unexplored Space, Signatures of Extra-terrestrial Life, Nature of the Universe and Extra-terrestrial Station. And in the future, we will invite and finance related experts to come to China for further discussion.

Global Solicitation of Important Scientific Questions in Deep Space Exploration

- **Chang'E 6 (launched around 2024)**
  Return samples from the lunar south pole, and analysis and research on lunar soil in the polar region.
- **Chang'E 7 (launched around 2026)**
  Comprehensive exploration of the topographic features, material composition and space environment of the Moon, research on the existence of water ice on the Moon.
- **Chang'E 8 (launched around 2030)**
  A basic international lunar research station, carry out scientific experiments on in-situ extraction of lunar soil resources, and monitor the research of the Earth's climate system.

- **Tianwen-3 (launched around 2028)** Return samples from Mars, research on the landing area and evolution of Mars

- **Tianwen-4 (launched around 2030)** Jupiter and interstellar exploration, research on giant planets and their satellite systems.

- **Tianwen-2 (launched around 2025)** Return samples from asteroids, and carry out asteroid morphology analysis.


THANKS