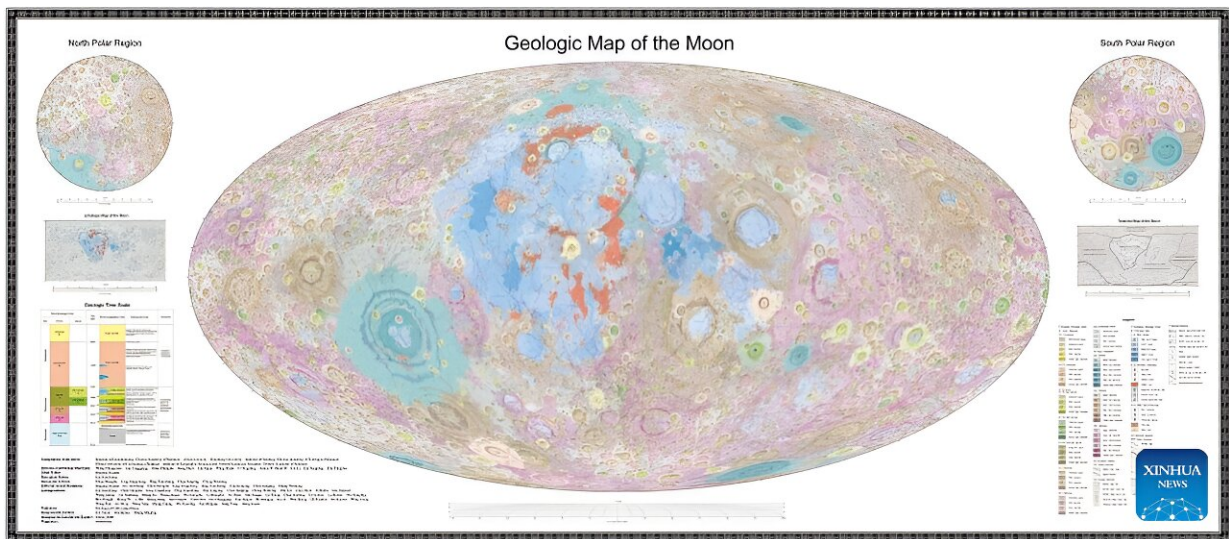


# China publishes world's first high-definition lunar geologic atlas

May 6 2024, by Chen Na



This page is the Geologic Map of the Moon. Credit: Chinese Academy of Sciences/Handout via Xinhua

China has released a geologic atlas set of the global moon with a scale of 1:2.5 million, which is the first complete high-definition lunar geologic atlas in the world, providing basic map data for future lunar research and exploration.

This geologic atlas set, available in both Chinese and English, includes the Geologic Atlas of the Lunar Globe and the Map Quadrangles of the Geologic Atlas of the Moon, according to the Institute of Geochemistry

of the Chinese Academy of Sciences (CAS).

"The geologic atlas of the moon is of great significance for studying the evolution of the moon, selecting the site for a future lunar research station and utilizing [lunar resources](#). It can also help us better understand the Earth and other planets in the solar system, such as Mars," said Ouyang Ziyuan, who is a CAS academician and a well-known lunar scientist.

"The world has witnessed significant progress in the field of lunar exploration and scientific research over the past decades, which have greatly improved our understanding of the moon. However, the lunar geologic maps published during the Apollo era have not been changed for about half a century, and are still being used for lunar geological research.

"With the improvements of lunar geologic studies, those old maps can no longer meet the needs of future scientific research and lunar exploration," said Liu Jianzhong, a senior researcher from the Institute of Geochemistry of the CAS.



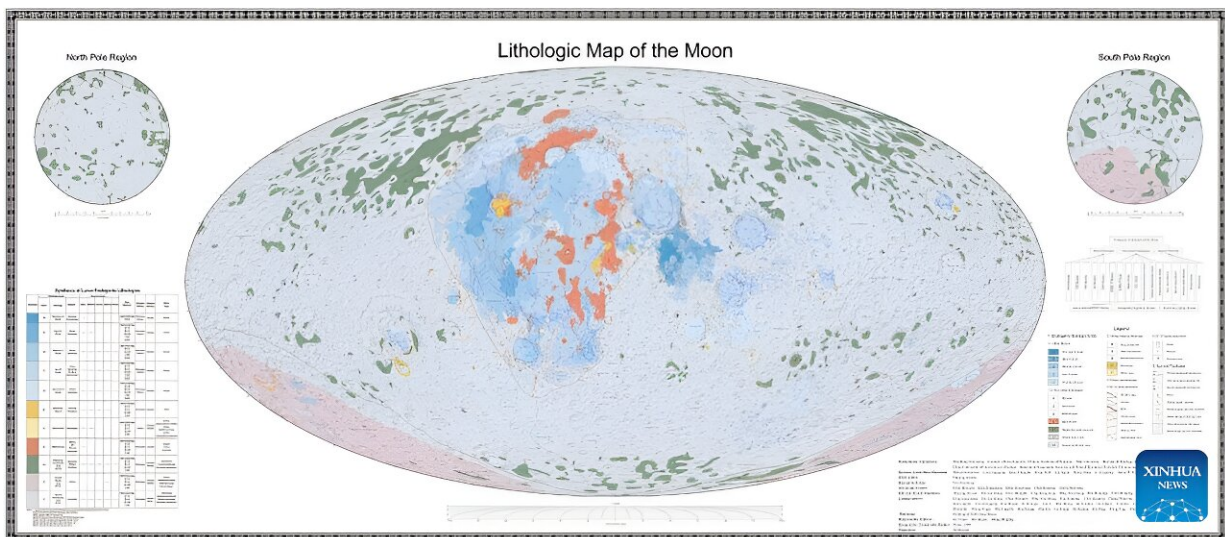
China Sunday released a set of geologic atlas of the global moon with a scale of 1:2.5 million, which is the first complete high-definition lunar geologic atlas in the world, providing basic map data for future lunar research and exploration. This photo shows the set of Geologic Atlas of the Lunar Globe. Credit: Chinese Academy of Sciences/Handout via Xinhua

Since 2012, Ouyang Ziyuan and Liu Jianzhong have led a team of scientists and cartographers from relevant research institutions in compiling this atlas.

With a comprehensive and systematic understanding of the origin and evolution of the moon, the team compiled the atlas based on scientific exploration data gained from China's Chang'e lunar exploration program and other research results from both Chinese and international missions, Liu said.

This atlas set not only provides basic data and scientific references for the formulation and implementation of scientific goals in China's lunar exploration program, but also fills the blank in China's compilation of geologic maps of the moon and planets, contributing to the study of the origin and evolution of the moon and the solar system, Liu said.

Based on the perspective of lunar dynamic evolution, Chinese researchers creatively established an updated lunar geological time scale, objectively depicting the geological evolution of the moon, and clearly showing the characteristics of lunar tectonic and magmatic evolution.





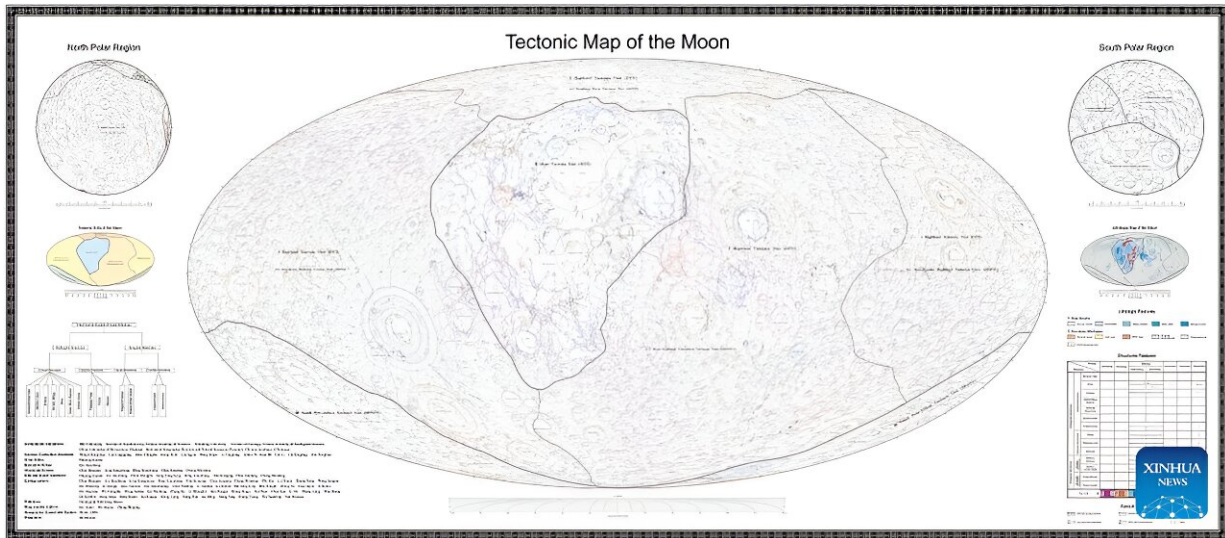
Lithologic Map of the Moon. Credit: Chinese Academy of Sciences/Handout via Xinhua

A total of 12,341 [impact craters](#), 81 impact basins, 17 types of lithologies and 14 types of structures all over the moon are mapped in the atlas.

This atlas set has been integrated into the digital lunar cloud platform built by Chinese scientists, and will serve lunar [scientific research](#), [science education](#), as well as landing site selection, lunar resource exploration and path planning for China's future lunar [exploration](#) projects, Liu said.

He mentioned that China's upcoming Chang'e-6 mission is expected to collect samples in the Apollo Basin within the South Pole-Aitken Basin on the far side of the [moon](#), which means materials ejected from ancient terrain may be collected in the process.

"Our map can provide a macroscopic geologic background to improve the purpose and efficiency of the sample research," Liu explained.



Tectonic Map of the Moon. Credit: Chinese Academy of Sciences/Handout via Xinhua

The compilation of this map was an immense task, which required the organization and cooperation of many well-informed researchers over many years to be able to achieve a consistent and complete result, commented Gregory Michael, a senior scientist from the Free University of Berlin in Germany.

"This map, in particular, is the first on a global scale to utilize all of the post-Apollo era data. It builds on the achievements of the international community over the last decades, as well as on China's own highly successful Chang'e program.

"It will be a starting point for every new question of lunar geology, and become a primary resource for researchers studying lunar processes of all kinds," Michael added.

Provided by Chinese Academy of Sciences

Citation: China publishes world's first high-definition lunar geologic atlas (2024, May 6)  
retrieved 12 May 2024 from <https://phys.org/news/2024-05-china-publishes-world-high-definition.html>

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