MANOHAR PARRIKAR INSTITUTE FOR
DEFENCE STUDIES AND ANALYSES
मनोहर पर्रिकर रक्षा अध्ययन एवं विश्लेषण संस्थान

CHINA

SCIENCE AND TECHNOLOGY REVIEW

April 2024

- **China releases the first high-definition maps of the moon**
- **Scientific Collaboration Projects**
- **Scientific Research Breakthroughs and Discoveries**
- **China Science Diplomacy**

China releases the first high-definition maps of the moon

On 21 April, the Chinese Academy of Sciences (CAS), released the first complete high-definition geological atlas of the moon, titled *Geological Atlas of the Lunar Globe*. According to the Institute of Geochemistry of the CAS, the volume includes a total of 12,341 craters, 81 basins and 17 rock types of lithologies and 14 types of structures and other geological information about the lunar surface. Since 2012 a team of over 100 scientists and cartographers led by Liu Jianzhong and Ouyang Ziyuan of CAS has been working on compiling scientific exploration data obtained by several orbiters, landers and rovers.

According to Liu Jianzhong, a senior researcher at the Institute of Geochemistry, CAS, "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." By the publication of high-precision geological map of moon, it will further serve lunar exploration project in the future.

Scientific Collaboration Projects

To enhance atmospheric research, under the aegis of the Alliance of National and International Science Organisation of the Belt and Road Initiative, the Hefei Institutes of Physical Science (HFIPS) of CAS and the Brazilian Institute of Energy and Nuclear Research signed an agreement on 19 April. Under the agreement, three observation sites in Brazil will be established to "contribute to the monitoring of global atmospheric phenomena, thereby facilitating research on environmental and climate change", according to Prof. Wang Yingjian, Director of Key Laboratory of Atmospheric Optics at HFIPS.

Scientific Research Breakthroughs and Discoveries

On the scientific studies of the sources of Black Carbon (BC) in the Qinghai-Tibet Plateau, a research team led by Prof. Kang Shichang from Northwest Institute of Eco-Environment and Resources, CAS discovered that the main sources of BC are South Asia and Southeast Asia, contributing 51.1% on average annually. The study underlined that the highest concentrations are formed in spring (65.6%) and summer (20.2%). BC emissions are byproducts of the incomplete combustion of fossil fuel and biomass. Deposition of BC on snow and ice surfaces accelerates the melting of glaciers and consequently alters the hydrological process and water resources in the region.

The Modern Physics Institute (MPI) of the Chinese Academy of Sciences in Wuwei in China's Gansu Province has developed an advanced medical facility called the heavy-ion accelerator for cancer treatment, making it the fourth country in the world to possess such technology. Japan, Germany and the United States are the only other countries which have developed such medical technology. The research on the

accelerator technology was started in 2012. According to Yang Wenjie, deputy general manager of the Lanzhou Ion Therapy Co. Ltd., a company affiliated to MPI and responsible for the development and production of the heavy-ion therapy facility, the equipment has lower operation and maintenance costs compared to imported equipment, and the company can provide on-site technical upgrade services relatively easily.

China Science Diplomacy

The First China-Latin America and Caribbean States Space Cooperation Forum was held in Wuhan, China from 24-26 April. According to the China National Space Administration, over 90 delegates from 24 countries participated in the forum. In his congratulatory letter President Xi Jinping welcomed the ushering in of a new era featuring "equality, mutual benefit, innovation, openness and tangible benefits for the people." To further boost space development between China and Latin American and Caribbean countries, the Wuhan Declaration was adopted, wherein it was announced that exchanges in space science and technology would be carried out, and the application of satellite communication, navigation and remote-sensing technologies in the fields of environmental protection, meteorology and agriculture would be promoted.

From 2 to 3 April 2024, the China-Africa Internet Development Forum under the theme, "Building a Digital Innovation Partnership and Creating a Better Future for Digital Cooperation", was held in Xiamen, China. Over 400 representatives from China and 20 African countries participated in the forum. The objective of the forum was to deepen collaborations between the Chinese and African countries in Artificial Intelligence (AI), online media and building strong safeguards for cyber and data security. According to Zhuang Rongwen, head of the Cyberspace Administration of China, China is willing to promote upgraded digital cooperation with African countries for win-win results.

To boost the publication of scientific research papers, a meeting between Prof. Dou Xiankang, President of the National Natural Science Foundation of China (NSFC) and Mr. Jesse C. Wiley, Chairman of scientific journal publisher Wiley-Blackwell was held on 24 April in Beijing. In the meeting both sides exchanged views on measures to reform and enhance scientific research integration and talent cultivation. In-depth views, including on academic publishing, open science and strengthening cooperation in areas of open access, were also exchanged between the two sides. Meanwhile, in mid-April, the NSFC delegation led by Vice President Dr. Lan Yujie visited Australia and New Zealand to strengthen scientific collaboration with universities and research institutes including the Royal Society of New Zealand, Ministry of Business, Innovation and Employment New Zealand, the Australian Academy of Science, and the Australian Research Council.