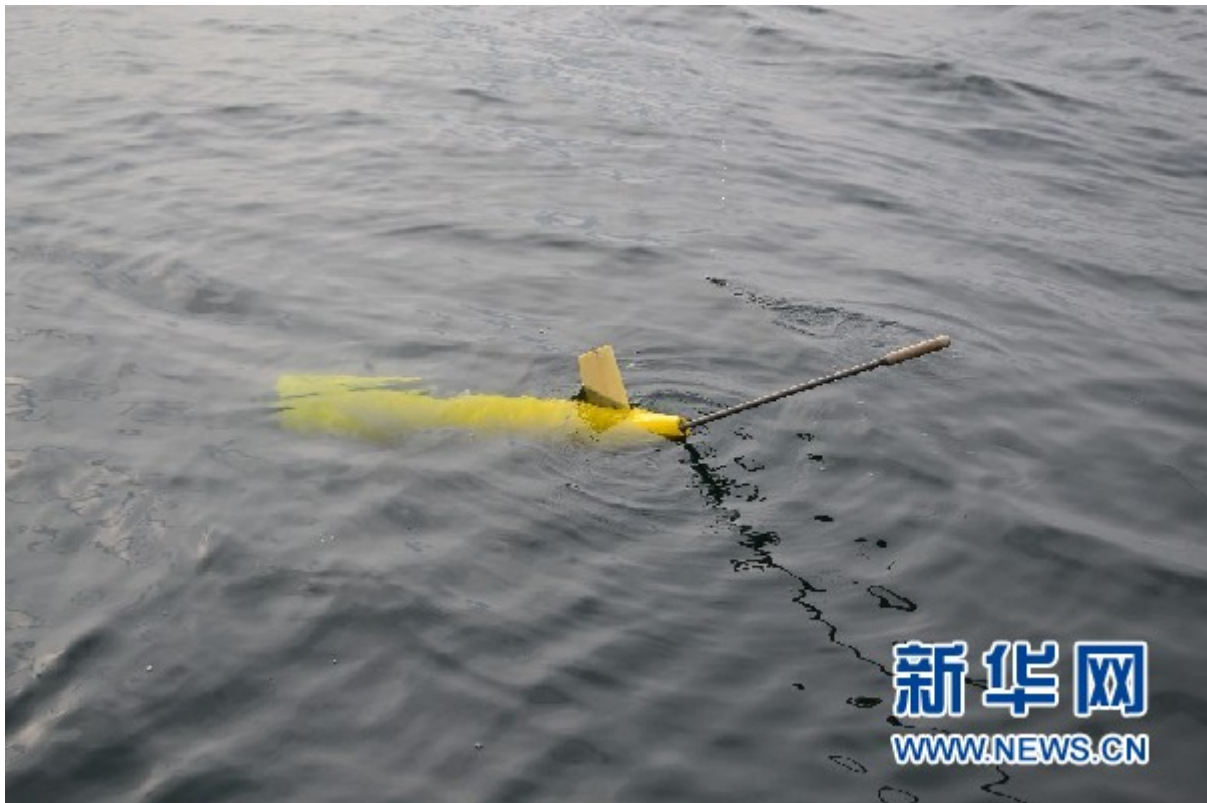


Records broken at ocean's lowest depth



Records broken at ocean's lowest depth [File photo/Xinhua]

Amid deputies attending the annual meetings of the top legislature and the top political advisory body, Chinese scientists have broken two world records at the ocean's lowest depth – the Mariana Trench, a scythe-shaped clef in the western Pacific Ocean seafloor that plunges nearly 11 kilometers deep.

China became the first country to collect the artificial seismic stratigraphy of the Challenger Deep, the deepest section of the trench measured at more than 10 kilometers, the Chinese Academy of Sciences' Institute of Geology and Geophysics said on Friday. The stratigraphy is used to study the Earth's movement, layers and geologic history.

China also set a new world diving record for underwater gliders at 6,329 meters with Hai Yi, a glider designed by the academy's Institute of Automation in Shenyang, Liaoning province, the academy said on Sunday. The previous recorder holder was a US glider at 6,000 meters.

"These experiments prove that China's deep-sea exploration technologies have reached an advanced level," the academy said in a statement.

"Data collected from these experiments are invaluable to the study of continental movement and its transformation," said Qiu Xuelin, a researcher at the academy's South China Sea Institute of Oceanology.

Both experiments were carried out by Chinese scientists onboard the academy's Explorer-I TS03 scientific surveying ship. They departed Sanya, Hainan province, en route to the Mariana Trench on Jan 15.

Upon arrival, they deployed 60 ocean-bottom seismometers to collect data for the stratigraphy on Jan 25. Some seismometers had sunk to 10,027 meters, the academy said, which is enough to submerge Qomolangma (8,850 meters), known as Mount Everest in the West.

These instruments can capture sound waves generated by earthquakes or human activities. These waves, combined with the motions of the Earth, can provide details about the geometry of the Earth's structure, said Wang Yuan, an engineer at the academy's Institute of Geology and Geophysics.

The glider is an autonomous underwater vehicle designed to survey marine conditions, such as temperature, salinity and currents, across large bodies of water.

Apart from breaking the world record, Hai Yi also completed 12 observation missions across 130 kilometers of water. The data it collected from the abyssal sea is "valuable for oceanologists studying the region", the academy said.

It took Chinese scientists 13 years to design and build the Hai Yi and its variants, it said, adding that there are more than two-dozen types, covering use in shallow sea, deep sea and abyssal sea.

China's defense budget transparent: Finance Minister

Chinese Finance Minister Xiao Jie Tuesday shrugged off concerns over China's military transparency, saying there was no opacity in the country's defense budget. "Let me be very clear, there is no such thing as opacity in China's military spending," Xiao told a press conference on the sidelines of the country's annual parliamentary session.

China's defense budgets used to be included in a report on the draft central and local budgets submitted to lawmakers for review and approval during the National People's Congress (NPC) session.

This year, however, the report available to media made no mention of the exact figure.

"We made some new changes in the way we compiled the files," Xiao said.

The minister explained that the defense budget, along with the budgets for foreign affairs and public security, was included in a draft budget submitted to lawmakers.

A finance ministry official told Xinhua Monday that the defense budget this

year would stand at 1.04 trillion yuan (about 152 billion U.S. dollars), up 7 percent year on year.

China to develop satellite-delivery rockets released from airplanes

China will develop a new generation of rockets launched from aircraft that can put satellites into space, according to Li Tongyu, the head of carrier rocket development at the China Academy of Launch Vehicle Technology.

Air-launched rockets can rapidly replace dysfunctional satellites or, in cases of disaster relief, quickly send up Earth observation satellites to assist in the effort, Li said.

Designers at the academy, which is the main developer of Chinese carrier rockets, have designed a model capable of sending a payload of about 100 kilograms into low Earth orbit and are ready to produce one if the government asks, he said. They plan to design a larger rocket that could carry 200 kg into orbit.

"The Y-20 strategic transport plane will be the carrier of these rockets. The jet will hold a rocket within its fuselage and release it at a certain altitude. The rocket will be ignited after it leaves the plane," Li said.

Large satellites will still have to be put into orbit with conventional rockets, experts said.

Delivery of the Y-20 to the Chinese Air Force began in July. It is China's first domestically developed heavy-lift transport plane and has a maximum takeoff weight of more than 200 metric tons and a maximum payload of about 66 tons, aviation experts said.

Solid-fuel rockets can be launched from planes much faster than land-based, liquid-fueled rockets, where preparation can take days, weeks or longer, in part because it takes so much time to pump in the fuel, experts said.

Each mission involving a solid-fuel rocket launched by a Y-20 would take only 12 hours of preparation to place a 200 kg satellite into a sun-synchronous orbit 700 km above Earth, according to estimates by Long Lehao, an academician of the Chinese Academy of Engineering, and other researchers at the China Academy of Launch Vehicle Technology. The estimates were in an article published in October in the Journal of Deep-Space Exploration.

Other advantages of such rockets are that they are flexible in deployment and use and do not need ground infrastructure, said Pang Zhihao, executive editor-in-chief of Space International magazine. They also are less

susceptible to bad weather and launch costs are lower than those of ground-launched rockets, he added.

The United States undertook the world's first air-launched space mission in 1990, in which a Pegasus rocket developed by the former Orbital Sciences Corp was launched from a refitted B-52 strategic bomber to send two small satellites into orbit. Since then, 43 Pegasus missions have been carried out, with the most recent in December.

Several US space companies, including Virgin Galactic and Generation Orbit Launch Services, are developing air-launched rockets.

Chinese designers have been quietly working on the concept for years. China Aerospace Science and Technology Corp, parent of Li's academy, displayed a scale model of a winged, solid-propellant, air-launched rocket in 2006 at the Sixth China International Aviation and Aerospace Exhibition in Zhuhai, Guangdong province.

Water level of nation's largest salt lake rises



A tourist practices Yoga on the bank of Qinghai Lake as a shepherd watches in Qinghai province in October.[Photo/Xinhua]

The water level of China's largest inland saltwater lake has risen over the past decade due to abundant rainfall and rising temperatures, according to a recent survey.

The average annual water level at Qinghai Lake's hydrological station in Northwest China's Qinghai province rose 1.66 meters over the past 10 years.

The rising water level is the result of increased precipitation and meltwater from nearby glaciers and highland snow, according to Dai Sheng, an engineer with the provincial climate center.

Average annual precipitation increased to 421.8 millimeters between 2005 and last year, from 358.8 millimeters between 1961 and 2004, Dai said, adding that an improved ecosystem and vegetation also helped maintain water in the Qinghai Lake basin.

The surface area of Qinghai Lake also expanded to 4,429.3 square kilometers in September, an increase of 169.7 sq km from the same period in 2004, according to a geographical survey in the province.

Qinghai Lake plays an important role in the ecological security of the Qinghai-Tibet Plateau. The lake had been shrinking since the 1950s, but the combined effects of conservation and changes in the regional climate helped turn things around from 2005 onward.

Tibet to open world's highest super-long tunnel

The Mila Mount Tunnel on the Lhasa-Nyingchi Highway is expected to be opened in September, when it will become the world's highest super-long tunnel.

The tunnel is located at the junction of Lhasa and Nyingchi in the Tibet autonomous region at an average altitude of 4,740 meters above sea level, according to the Mila Mount Tunnel Project Headquarters.

As a key section of the Lhasa-Nyingchi Highway on the National Highway 318, the two lanes of the tunnel are 5,727 meters and 5,720 meters long respectively, according to the project headquarters.

Construction of the tunnel started in April 2015, and the project is about 70 percent complete to date, it said, adding that, hampered by the natural environment at high attitude, the construction process has encountered many obstacles.

"With a lack of oxygen and temperature lows of - 30 Celsius in winter, we require highly skilled workers," said Wang Liang, chief engineer of the

project headquarters.

Wang said many workers suffered from altitude sickness during the tunnel's construction, and that much time and effort has been spent on recruiting qualified workers.

In order to overcome such difficulties, there are 15 oxygenators, an oxygen tank and five boilers on the project site, he added.

After it opens, traveling time between the cities of Lhasa and Nyingchi will be halved, Wang said.

"Driving from Lhasa to Nyingchi will take just three to four hours instead of about eight, and it will be much safer," Wang said.

"It will also have a positive impact on the social and economic development of these places, and it will make life much more convenient for local ethnic groups."