

Space

World's oldest stars map

Moon rocks show 'volcanic activity'

BEIJING, Oct 19, (AP) — Moon rocks brought back to Earth by a Chinese robotic spacecraft last year have provided new insights into ancient lunar volcanic activity, a researcher said Tuesday.

Li Xianhua said an analysis of the samples revealed new information about the moon's chemical composition and the way heat affected its development.

Li said the samples indicate volcanic activity was still occurring on the moon as recently as 2 billion years ago, compared to previous estimates that such activity halted between 2.8 billion and 3 billion years ago.

"Volcanic activities are a very important thing on the moon. They show the vitality inside the moon, and represent the recycling of energy and matter inside the moon," Li told reporters.

China in December brought back the first rocks from the moon since missions by the US and former Soviet Union in the 1970s.

On Saturday, China launched a new three-person crew to its space station, a new milestone in a space program that has advanced rapidly in recent years.

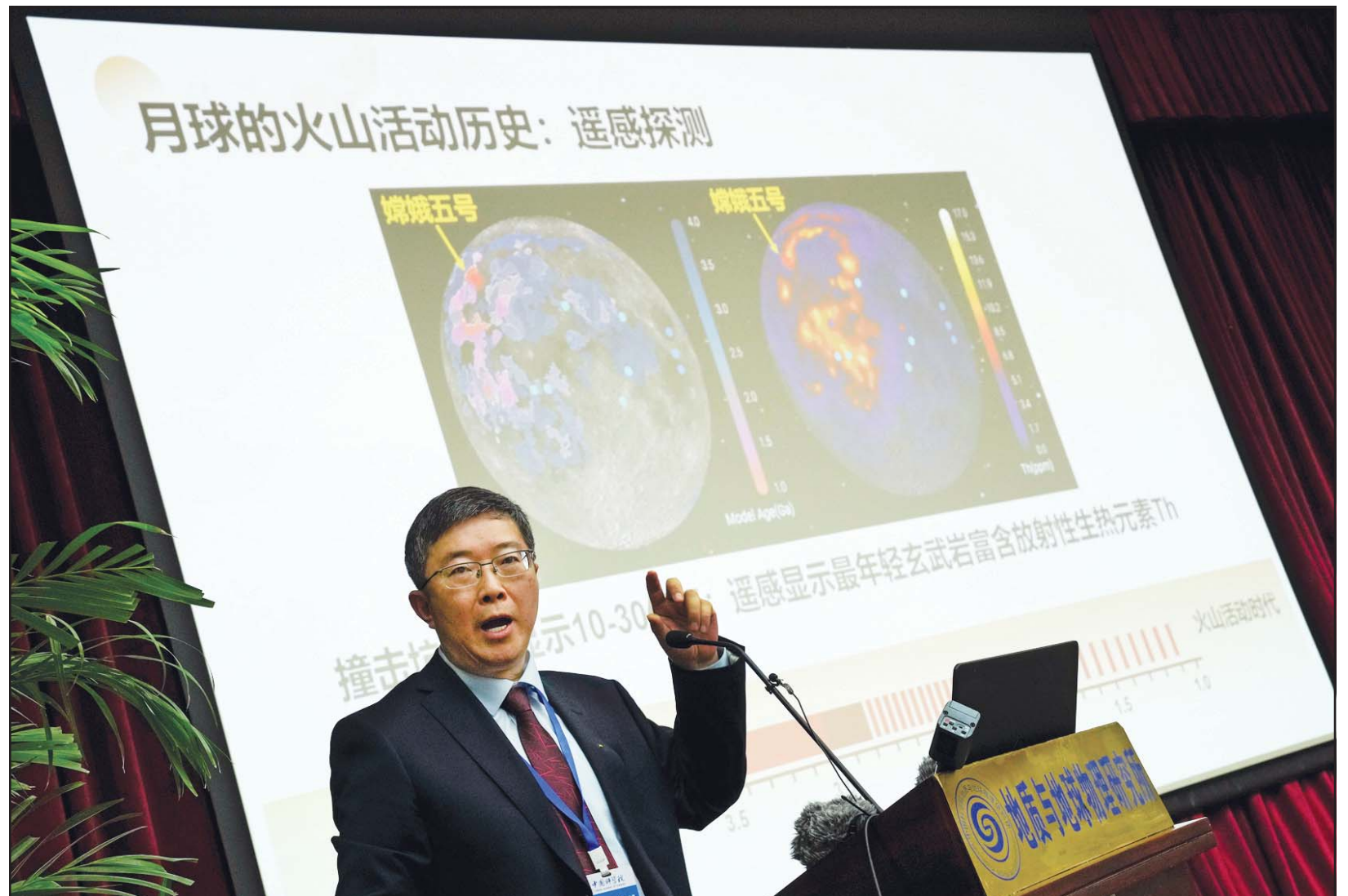
China became only the third country after the former Soviet Union and the United States to put a person in space on its own in 2003 and now ranks among the leading space powers.

Alongside its crewed program, it has expanded its work on robotic exploration, retrieving the lunar samples and landing a rover on the little-explored far side of the moon. It has also placed the Tianwen-1 space probe on Mars, whose accompanying Zhurong rover has been exploring for evidence of life on the red planet.

China also plans to collect soil from an asteroid and bring back additional lunar samples. The country also hopes to land people on the moon and possibly build a scientific base there. A highly secretive space plane is also reportedly under development.



Li



Li Xianhua speaks near a screen showing the volcano activities on the moon during a press briefing on Chang'e 5 Moon Mission, at the Chinese Academy of Sciences in Beijing, Tuesday, Oct. 19. Moon rocks that a Chinese robotic space craft brought back to Earth last year have provided new insights into ancient lunar volcanic activity, a researcher said Tuesday. (AP)

Tested

The military-run Chinese space program has also drawn controversy. China's Foreign Ministry on Monday brushed off a report that China had tested a hypersonic missile two months ago. A ministry spokesperson said it had merely tested whether a new spacecraft could be reused.

Meanwhile, China said Monday its launch of a new spacecraft was merely a test to see whether the vehicle could be reused.

The launch involved a spacecraft rather than a missile and was of "great significance for reducing the use-cost of spacecraft and could provide a convenient and affordable way to make a round trip for mankind's peaceful use of space," Foreign Ministry spokesperson Zhao Lijian said.

China's space program is run by its military and is closely tied to its agenda of building hypersonic missiles and other technologies that could alter the balance of power with the United States.

"China will work together with other countries in the world for the peaceful use of space and the benefit of mankind," Zhao said.

Zhao's comments on the test conducted in August came days after China launched a second crew to its space station. Their six-month mission, when completed, will be China's longest crewed space mission and the three-person crew will set a record for the most time spent in space by Chinese astronauts.

Alongside its space program, China's expansion into hypersonic missile technology and other advanced fields has raised concerns as Beijing becomes increasingly assertive over its claims to seas and islands in the South China Sea and East China Seas and to large chunks of territory along its disputed high-mountain border with India.

US State Department spokesman Ned Price would not comment on intelligence about the August test but noted the US remained concerned about China's expansion of its nuclear capabilities, including delivery systems for nuclear devices.

These developments underscore that (China), as we said before, is deviating from its decades-long nuclear strategy based on minimum deterrence," Price told reporters Monday in Washington.

He said the US was engaging with China about its nuclear capabilities and would continue to maintain the US's deterrent capabilities against threats to the United States and its allies.

US ally Japan, one of China's chief regional rivals, said it would boost its defenses against what it interpreted as a new offensive Chinese weapon.

Chief Cabinet Secretary Hirokazu Matsuno on Monday called it a "new threat" that conventional equipment would have difficulty dealing with. He said Japan will step up its detection, tracking and shooting-down capability of "any aerial threat."

China appears to be rapidly pushing development of hypersonic nuclear weapons to gain strike capability that can break through missile defenses, Matsuno said.

He criticized China for increasing its defense spending, particularly for nuclear and missile capabilities, without explaining its intentions.

"China's rapidly expanding and increased military activity at sea and airspace has become a strong security concern for the region including Japan and the international society," Matsuno said.

Also:

LONDON: The British Museum will display what it says is the world's oldest surviving map of the stars in a major upcoming exhibition on the Stonehenge stone circle.

The 3,600-year-old "Nebra Sky Disc," first discovered in Germany in 1999, is one of the oldest surviving representations of the cosmos in the world and has never before been displayed in the UK, the London museum said Monday.

The 30 centimeter (12 inch) bronze disc features a blue-green patina and is decorated with inlaid gold symbols thought to represent the sun, the moon and constellations.

The "World of Stonehenge" exhibition planned for next year will be the first time the disc has been loaned out from Germany for 15 years. The UK is only the fourth country the disc has travelled to after it was discovered buried in the ground in eastern Germany.

It will feature alongside an extremely rare 3,000-year-old sun pendant described by the British Museum as the most significant piece of Bronze Age gold ever found in Britain.

"The Nebra Sky Disc and the sun pendant are two of the most remarkable surviving objects from Bronze Age Europe," said Neil Wilkin, the exhibition's curator.

"While both were found hundreds of miles from Stonehenge, we'll be using them to shine a light on the vast interconnected world that existed around the ancient monument, spanning Britain, Ireland and mainland Europe," he added. "It's going to be eye-opening."

The exhibition aims to share a wider history of the mythology and cosmology surrounding the 4,500-year-old Stonehenge in southern England. Hundreds of artefacts from across Britain and Europe telling the story of Stonehenge will also be displayed.

The exhibition runs from Feb. 17 to July 17, 2022.



This image courtesy of the State Office for Heritage Management and Archaeology Saxony-Anhalt shows the Nebra Sky Disc. The British Museum will display what it says is the world's oldest surviving map of the stars in a major upcoming exhibition on the Stonehenge stone circle. The 3,600-year-old 'Nebra Sky Disc,' first discovered in Germany in 1999, is one of the oldest surviving representations of the cosmos in the world and has never before been displayed in the UK, the London museum said Monday. (AP)

Discovery

Humpback chub reclassified: The humpback chub, a rare fish found only in the Colorado River basin, has been brought back from the brink of extinction after decades of protection, though work must continue to ensure its survival, federal authorities said Monday in reclassifying the species from endangered to threatened status.

The fish, which gets its name from a fleshy bump behind its head, was first listed as endangered in 1967, its habitat severely disrupted by dam construction. Its numbers also declined with the introduction of predatory, non-native aquatic species.

Its change in status formally takes effect Nov 17 under a rule published Monday in the Federal Register by the US Fish and Wildlife Service.

Environmentalists oppose the endangered status delisting. They argue the humpback chub's future remains in peril as a mega drought, largely attributable to climate change, diminishes flows in the Colorado River basin, which includes seven Southwestern US states and Mexico.

Jen Pelz, Wild Rivers Program director at the environmental group WildEarth Guardians, said in a statement that it was "perplexing that the (US Interior Department) would be going to so much trouble to reclassify these endangered fish at a time when so much uncertainty exists regarding climate change and the ability to continue to fund the suite of heroic measures it undertakes annually for these species to survive." (AP)

No sign eruption close to end:

There is no sign that a volcanic eruption on the Spanish island of La Palma is coming to an end, four weeks after it began, officials said Sunday.

The volcano on one of the Canary Islands off northwest Africa has so far destroyed more than 1,800 buildings, mostly homes, though prompt evacuations have helped avoid casualties on the island of some 85,000 people.

Canary Islands President **Ángel Víctor Torres** said scientists monitoring the eruption that began Sept 19 have seen no indications that the eruption is abating, as rivers of lava continue flowing slowly toward the sea.

"We are at the mercy of the volcano," Torres told reporters. "It's the only one who can decide when this ends."

Some 7,000 people have had to leave their homes. The volcano has produced a constant rumble and roar, with dozens of minor earthquakes most days, and has covered a wide area with volcanic ash. The ash plume is several kilometers (miles) high. (AP)

Idaho to reimburse hunters: Idaho officials will make available up to \$200,000 to be divided into payments for hunters and trappers who kill wolves in the state through next summer.

The Idaho Department of Fish and Game late last month entered into an agreement with a nonprofit hunting group

Coronavirus

'Campaign a missed opportunity to target new variants'

Why boosters weren't tweaked?

NEW YORK, Oct 19, (AP) — More COVID-19 booster shots may be on the way — but when it's your turn, you'll get an extra dose of the original vaccine, not one updated to better match the extra-contagious delta variant.

And that has some experts wondering if the booster campaign is a bit of a missed opportunity to target delta and its likely descendants.

"Don't we want to match the new strains that are most likely to circulate as closely as possible?" Dr. Cody Meissner of Tufts Medical Center, an adviser to the Food and Drug Administration, challenged Pfizer scientists recently.

"I don't quite understand why this is not delta because that's what we're facing right now," fellow adviser Dr. Patrick Moore of the University of Pittsburgh said last week as government experts debated whether it's time for Moderna boosters. He wondered if such a switch would be particularly useful to block mild infection.

The simple answer: The FDA last month OK'd extra doses of Pfizer's original recipe after studies showed it still works well enough against delta — and those doses could be rolled out right away. Now the FDA is weighing evidence for boosters of the original Moderna and Johnson & Johnson vaccines.

"It's less churn and burn on the manufacturing" to only switch formulas when it's really necessary, said FDA vaccine chief Dr. Peter Marks.

But Pfizer and Moderna are hedging their bets. They're already testing experimental doses customized to delta and another variant, learning how to rapidly tweak the formula in case a change eventually is needed — for today's mutants or a brand new one. The tougher question for regulators is how they'd decide if and when to ever order such a switch.

What we know so far:

Current vaccines are working even against delta

Vaccines used in the US remain strongly effective against hospitalization and death from COVID-19, even after the delta variant took over, but authorities hope to shore up waning protection against less severe infection and for high-risk populations. Studies show an extra dose of the original formulas revs up virus-fighting antibodies that fend off infection, including antibodies that target delta.

Might a delta-specific booster work even better?

Vaccines target the spike protein that coats the coronavirus. Mutations in that protein made delta more contagious but to the immune system, it doesn't look all that different, said virus expert Richard Webby of St. Jude Children's Research Hospital.

That means there's no guarantee a delta-specific booster would protect any better, said University of Pennsylvania immunologist John Wherry. Waiting for studies to settle that question — and if necessary, brewing updated doses — would have delayed rolling out boosters to people deemed to need them now.

Still, because delta is now the dominant version of the virus worldwide

Powell's age and cancer bout left him vulnerable to COVID

NEW YORK, Oct 19, (AP) — Despite getting vaccinated against COVID-19, Colin Powell remained vulnerable to the virus because of his advanced age and history of cancer, highlighting the continued risk to many Americans until more of the population is immunized.

Powell, a four-star general who became the first Black secretary of state and chairman of the Joint Chiefs of Staff, died Monday from complications of COVID-19. Powell, 84, had been treated over the past few years for multiple myeloma, a blood cancer that impairs the body's ability to fight infections — and to respond well to vaccines.

The COVID-19 vaccines are highly effective against hospitalization and death, and the unvaccinated are about 11 times more likely to die from the coronavirus. But they are not perfect, and experts stress that widespread vaccination is critical to give an added layer of protection to the most vulnerable.

"The more people that are vaccinated, the less we have viral spreading in the community, the less chances of people like him getting infected to begin with," said Dr. Mangala Narasimhan, chief of critical care at Northwell Health in New York.

Moreover, people with weakened immune systems because of

illnesses like cancer — or cancer treatments — don't always get the same level of protection from vaccinations as healthier people. Several studies have found as few as 45% of people with multiple myeloma may develop protective levels of coronavirus-fighting antibodies after getting the vaccine.

Age also is a risk, especially months after someone is first vaccinated. The Centers for Disease Control and Prevention has tracked dips in protection, especially among older Americans who were among the first people vaccinated last winter. The reduced protection is the result of either waning immunity or the extra-contagious delta variant.

Dr. Ed Lifshitz, medical director of the Communicable Disease Service at New Jersey's Health Department, took issue with those who might point to Powell's death to argue against getting vaccinated. "My answer is really just the opposite," he said. "The way that you help those who are most vulnerable is by not letting the virus get to them in the first place, and the best way to do that is to go out there and get vaccinated."

The U.S. government has authorized an extra dose of the Pfizer or Moderna vaccines for people with weakened immune systems to try to improve their response.

it almost certainly will be a common ancestor for whatever evolves next in a mostly unvaccinated world, said Trevor Bedford, a biologist and genetics expert at the Fred Hutchinson Cancer Research Center.

A delta-updated vaccine would "help to provide a buffer against those additional mutations," he said. Bedford is paid by the Howard Hughes Medical Institute, which also supports The Associated Press Health and Science Department.

Tweaking the recipe

The Pfizer and Moderna vaccines are made with a piece of genetic code called messenger RNA that tells the body to make harmless copies of the spike protein so it's trained to recognize the virus. Updating the formula merely requires swapping out the original genetic code with mRNA for a mutated spike protein.

Both companies first experimented with tweaked doses against a mutant that emerged in South Africa, the beta variant, that has been the most vaccine-resistant to date, more so than the delta variant. Lab tests showed the updated shots produced potent antibodies. But the beta variant didn't spread widely.

Now the companies have studies underway of fully vaccinated people who agreed to test a booster dose tweaked to match delta. Moderna's studies also include some shots that combine protection against more than one version of the coronavirus — much like today's flu vaccines work against mul-

iple influenza strains.

The mRNA vaccines are considered the easiest kind to tweak but some other vaccine makers also are exploring how to change their recipes if necessary.

Why study updated shots if they're not yet needed?

Moderna's Dr. Jacqueline Miller told an FDA advisory panel last week the company is studying variant-specific boosters now to learn if they offer advantages, and to be ready if they're needed.

And Penn's Wherry said it is critical to carefully analyze how the body reacts to updated shots because the immune system tends to "imprint" a stronger memory of the first virus strain it encounters. That raises questions about whether a subtly different booster would prompt a temporary jump in antibodies the body's made before — or the bigger goal, a broader and more durable response that might even be better positioned for the next mutations to come along.

No rules yet for making a switch "What is the tripping point?" asked Webby, who is part of a World Health Organization network that tracks influenza evolution. "A lot of what is going to need to go into that decision making is just going to be learned by experience, unfortunately."

Bedford said now is the time to decide what drop in vaccine effectiveness would trigger a formula change, just as is done with flu vaccines every year.

to reimburse the expenses for a proven kill.

The agreement follows a change in Idaho law aimed at killing more wolves that are blamed for attacking livestock and reducing deer and elk herds. Montana this year also expanded when, where and how wolves can be killed.

The US Fish and Wildlife Service, at the request of environmental groups concerned about the expanded wolf killing in the two states, last month announced



Torres



Pelz

a yearlong review to see if wolves in the U.S. West should be relisted under the Endangered Species Act.

Idaho has managed wolves since they were taken off the list in 2011. State wildlife managers had been incrementally increasing wolf harvest during that time, but not fast enough for lawmakers, who earlier this year passed the law backed by some trappers and the powerful ranching sector. (AP)