

New Scientist

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Space exploration

Lunar invasion

Both government and commercial activity on the moon are set to increase in 2025

Leah Crane

AROUND a dozen landers are aiming for touchdown on the lunar surface next year, with the goal of developing the technology necessary to build a permanent human presence there.

This fusillade of launches is part of an ongoing campaign to ramp up exploration of the moon, fuelled in part by NASA's Commercial Lunar Payload Services (CLPS) programme. This involves funding spacecraft from private companies, which carry a combination of NASA's own science instruments and payloads from other customers.

"Longer term, [CLPS] is playing a big role in ushering in new commercial lunar technologies," says Jana Spruce at Firefly Aerospace, a launch company based in Texas. "We're seeing a broad range of interest from commercial companies, universities and research

institutes looking to demonstrate technologies that can help build the foundation of lunar infrastructure, unlock the moon's resources and support research for a lasting presence on the moon."

Firefly's Blue Ghost lander is expected to launch in mid-January, making it the first of the year's many lunar jaunts. It will carry a variety of instruments, ranging from X-ray cameras and a lunar navigation system to a drill to measure heat transmission.

Time for the sequel

Following close on its heels will be IM-2, another CLPS mission, by Intuitive Machines. In 2024, the company became the first private firm to achieve a successful landing on the moon, and this next mission promises to be just as thrilling. Its primary purpose is to drill near the south pole of the

"WE WANT TO UNLOCK THE MOON'S RESOURCES FOR A LASTING LUNAR PRESENCE"

Clockwise from main image: Intuitive Machines' Odysseus spacecraft captured the lunar surface in 2024; Firefly's Blue Ghost lander is being prepared for launch in January; SpaceX wants to land its Starship rocket on the moon

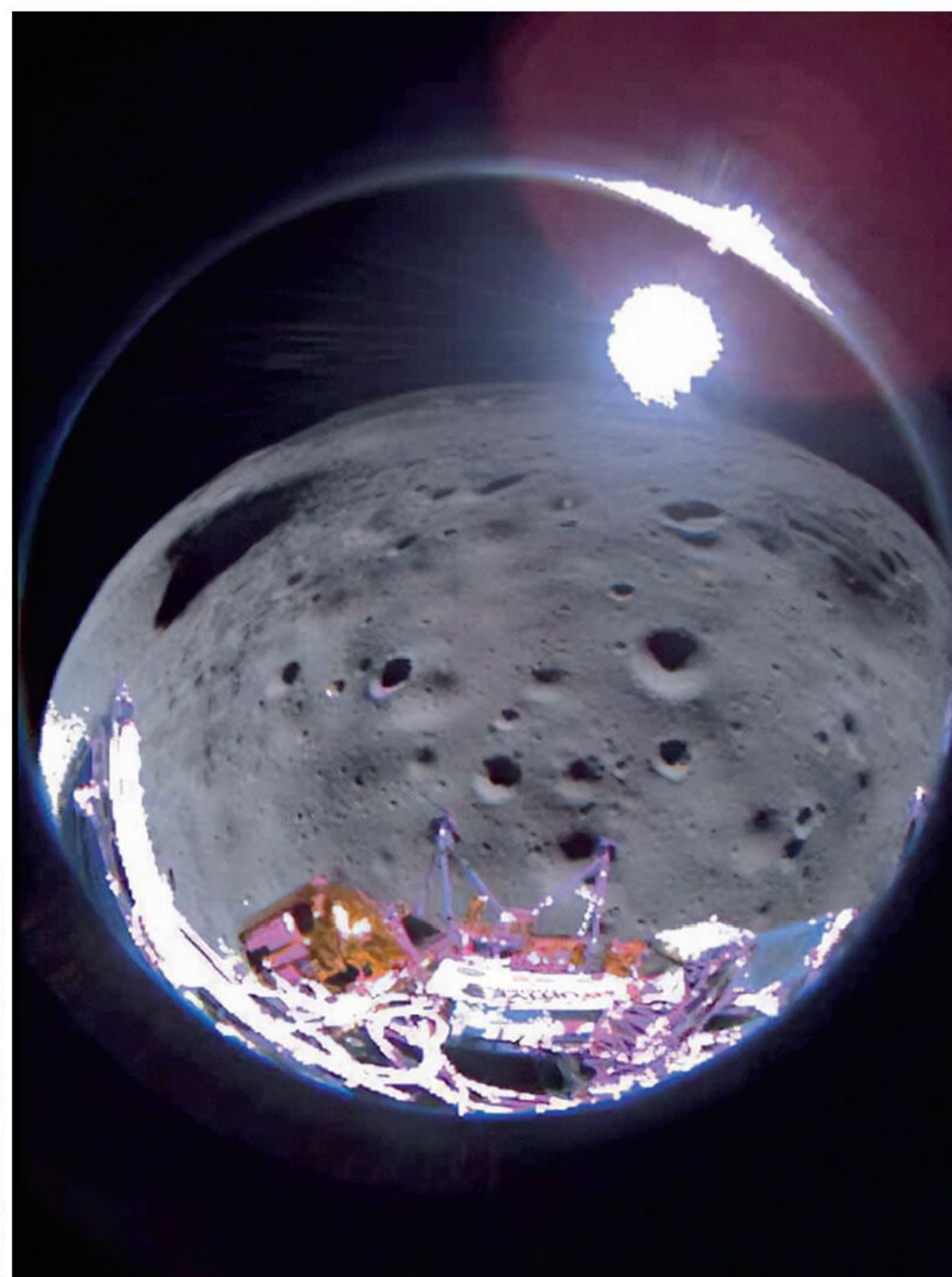
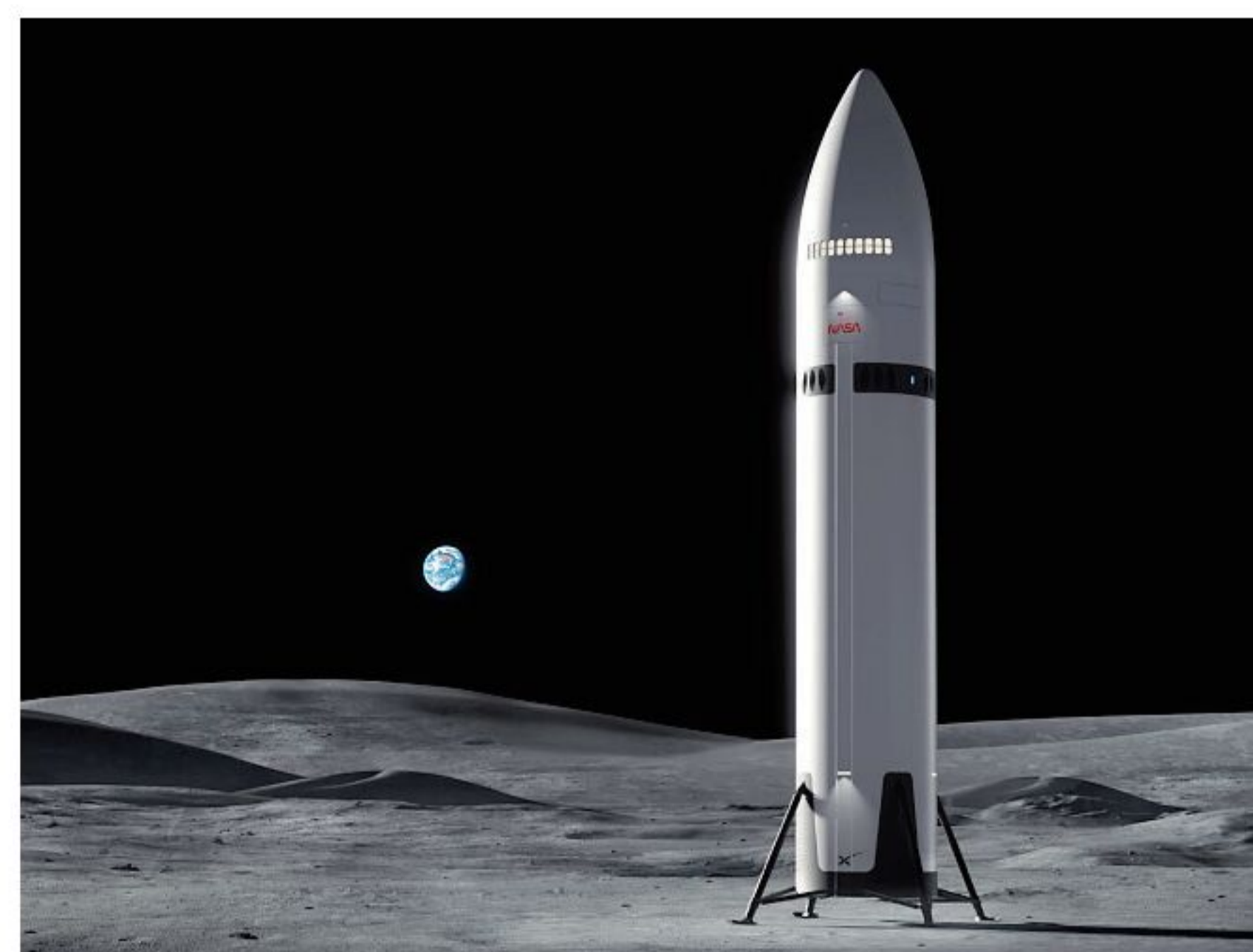
moon to collect and analyse samples of buried ice that may be useful for future missions. It will also carry several other small spacecraft, including a tiny "hopper" rover to explore hard-to-reach areas of the moon, another small rover to collect samples for NASA, and a satellite to facilitate communications between all the spacecraft and operators on Earth.

"We're eager to collect science data that will provide hi-res maps of water, minerals and thermophysical properties to guide the next generation of landed missions," says Bethany Ehlmann at the California Institute of Technology, leader of a team that will work on mapping the moon through the Lunar Trailblazer orbiter, which will also be part of the IM-2 mission.

Later in the year, Intuitive Machines will send yet another lander, IM-3, to a strange magnetic feature called a lunar swirl. A few more CLPS missions are planned for the year as well.

Israeli company SpaceIL is also taking another shot at the moon in 2025 with Beresheet 2 – a follow-up to the first Beresheet mission, which crashed on the moon in 2019. This second attempt will include two landers in the hope of exploring two separate regions on the lunar surface, along with an orbiter.

Sadly, 2025 won't see a crewed launch to the moon as NASA's Artemis II mission – which aims to take four crew members around the moon and back to Earth without landing – has been delayed until 2026. The closest we will get is a planned uncrewed landing of SpaceX's Starship Human Landing System there, the same spacecraft intended to shuttle astronauts to the lunar surface in 2027 as part of NASA's Artemis III mission. ■



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SPACE X; FIREFLY AEROSPACE

INTUITIVE MACHINES/UP/SHUTTERSTOCK