

Japan launches rocket carrying lunar lander and X-ray telescope to explore origins of universe

September 7 2023, by Yuri Kageyama



An HII-A rocket blasts off from the launch pad at Tanegashima Space Center in Kagoshima, southern Japan Thursday, Sept. 7, 2023. Credit: Kyodo News via AP

Japan launched a rocket Thursday carrying an X-ray telescope that will explore the origins of the universe as well as a small lunar lander.

The launch of the HII-A rocket from Tanegashima Space Center in southwestern Japan was shown on [live video](#) by the Japan Aerospace Exploration Agency, known as JAXA.

"We have a liftoff," the narrator at JAXA said as the rocket flew up in a burst of smoke then flew over the Pacific.

Thirteen minutes after the launch, the rocket put into orbit around Earth a satellite called the X-Ray Imaging and Spectroscopy Mission, or XRISM, which will measure the speed and makeup of what lies between galaxies.

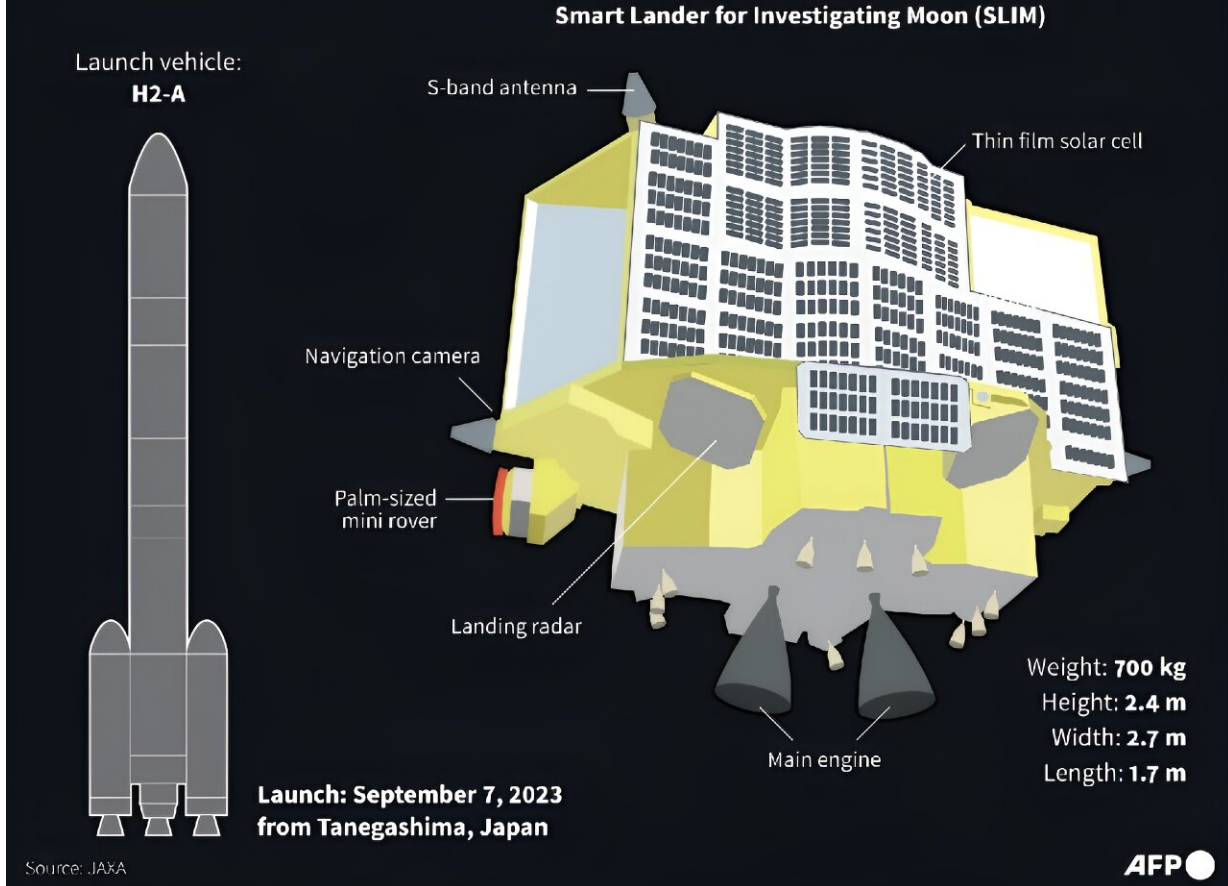
That information helps in studying how [celestial objects](#) were formed, and hopefully can lead to solving the mystery of how the universe was created, JAXA says.

In cooperation with NASA, JAXA will look at the strength of light at different wavelengths, the temperature of things in space and their shapes and brightness.

Japan's 'Moon Sniper' mission

Mission: To investigate the Moon's formation by examining exposed pieces of the lunar mantle

Landing accuracy: Aims to land within 100 m of a specific target on the Moon



Graphic on Japan's Smart Lander for Investigating Moon (SLIM), or 'Moon Sniper', which aims to land within 100 meters of a specific lunar target.

David Alexander, director of the Rice Space Institute at Rice University, believes the mission is significant for delivering insight into the properties of hot plasma, or the superheated matter that makes up much of the universe.

Plasmas have the potential to be used in various ways, including healing wounds, making computer chips and cleaning the environment.

"Understanding the distribution of this hot plasma in space and time, as well as its dynamical motion, will shed light on diverse phenomena such as [black holes](#), the evolution of chemical elements in the universe and the formation of galactic clusters," Alexander said.



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Also aboard the latest Japanese rocket is the Smart Lander for Investigating Moon, or SLIM, a lightweight lunar [lander](#). The Smart Lander won't make [lunar orbit](#) for three or four months after the launch and would likely attempt a landing early next year, according to the space agency.

The lander successfully separated from the rocket about 45 minutes after the launch and proceeded on its proper track to eventually land on the [moon](#). JAXA workers applauded and bowed with each other from their observation facility.



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JAXA is developing "pinpoint landing technology" to prepare for future lunar probes and landing on other planets. While landings now tend to be off by about 10 kilometers (6 miles) or more, the Smart Lander is designed to be more precise, within about 100 meters (330 feet) of the intended target, JAXA official Shinichiro Sakai told reporters ahead of the launch.

That allows the box-shaped gadgetry to find a safer place to land.

The move comes at a time when the world is again turning to the challenge of going to the moon. Only four nations have successfully landed on the moon, the U.S., Russia, China and India.

Last month, [India landed a spacecraft](#) near the moon's south pole. That came just days after Russia failed in its attempt to return to the moon for the first time in nearly a half century. A Japanese private company, called ispace, crashed a lander in trying to land on the moon in April.



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An H2A rocket sits at launch pad at Tanegashima Space Center in Kagoshima, southern Japan Monday, Aug. 28, 2023. The rocket was to blast off Monday morning, but the lift-off was postponed due to strong winds, according to Kyodo News. Credit: Kyodo News via AP



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Japan's space program has been marred by recent failures. In February, the H3 [rocket launch](#) was aborted for a glitch. Liftoff a month later succeeded, but the [rocket](#) had to be destroyed after its second stage failed to ignite properly.

Japan has started recruiting astronaut candidates for the first time in 13 years, making clear its ambitions to send a Japanese to the moon.

Going to the moon has fascinated humankind for decades. Under the U.S. Apollo program, astronauts Neil Armstrong and Buzz Aldrin walked on the moon in 1969.

The last NASA human mission to the moon was in 1972, and the focus on sending humans to the moon appeared to wane, with missions being relegated to robots.

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