

Japan's space agency finds ample soil, gas from asteroid

December 15 2020, by Mari Yamaguchi



This photo provided by the Japan Aerospace Exploration Agency (JAXA), shows

soil samples, seen inside a container of the re-entry capsule brought back by Hayabusa2, in Sagamihara, near Tokyo, Tuesday, Dec. 15, 2020. Officials from Japan's space agency said Tuesday they have found more than the anticipated amount of soil and gases inside a small capsule the country's Hayabusa2 spacecraft brought back from a distant asteroid this month, a sample-return mission they praised as a milestone for planetary research. (JAXA via AP)

Officials from Japan's space agency said Tuesday they have found more than the anticipated amount of soil and gases inside a small capsule the country's Hayabusa2 spacecraft brought back from a distant asteroid this month, a mission they praised as a milestone in planetary research.

The Japan Aerospace Exploration Agency said its staff initially spotted some black particles sitting on the bottom of the capsule's sample catcher when they pulled out the container on Monday. By Tuesday, scientists found more of the soil and gas samples in a compartment that stored those from the first of Hayabusa's two touchdowns on the asteroid last year.

"We have confirmed a good amount of sand apparently collected from the asteroid Ryugu, along with gases," JAXA Hayabusa2 project manager Yuichi Tsuda said in a video message during an online news conference. "The samples from outside of our planet, which we have long dreamed of, are now in our hands."

Tsuda called the successful return of the asteroid soil and gas samples "a major scientific milestone."

The pan-shaped capsule, 40 centimeters (15 inches) in diameter, was dropped by Hayabusa2 from space to a predetermined spot in a sparsely populated Australian desert on Dec. 6 at the end of its six-year round trip

to Ryugu, more than 300 million kilometers (190 million miles) from Earth.



This photo provided by the Japan Aerospace Exploration Agency (JAXA) shows soil samples, seen inside a container of the re-entry capsule brought back by Hayabusa2, in Sagami-hara, near Tokyo, Tuesday, Dec. 15, 2020. Officials from Japan's space agency said Tuesday they have found more than the anticipated amount of soil and gases inside a small capsule the country's Hayabusa2 spacecraft brought back from a distant asteroid this month, a sample-return mission they praised as a milestone for planetary research.(JAXA via AP)

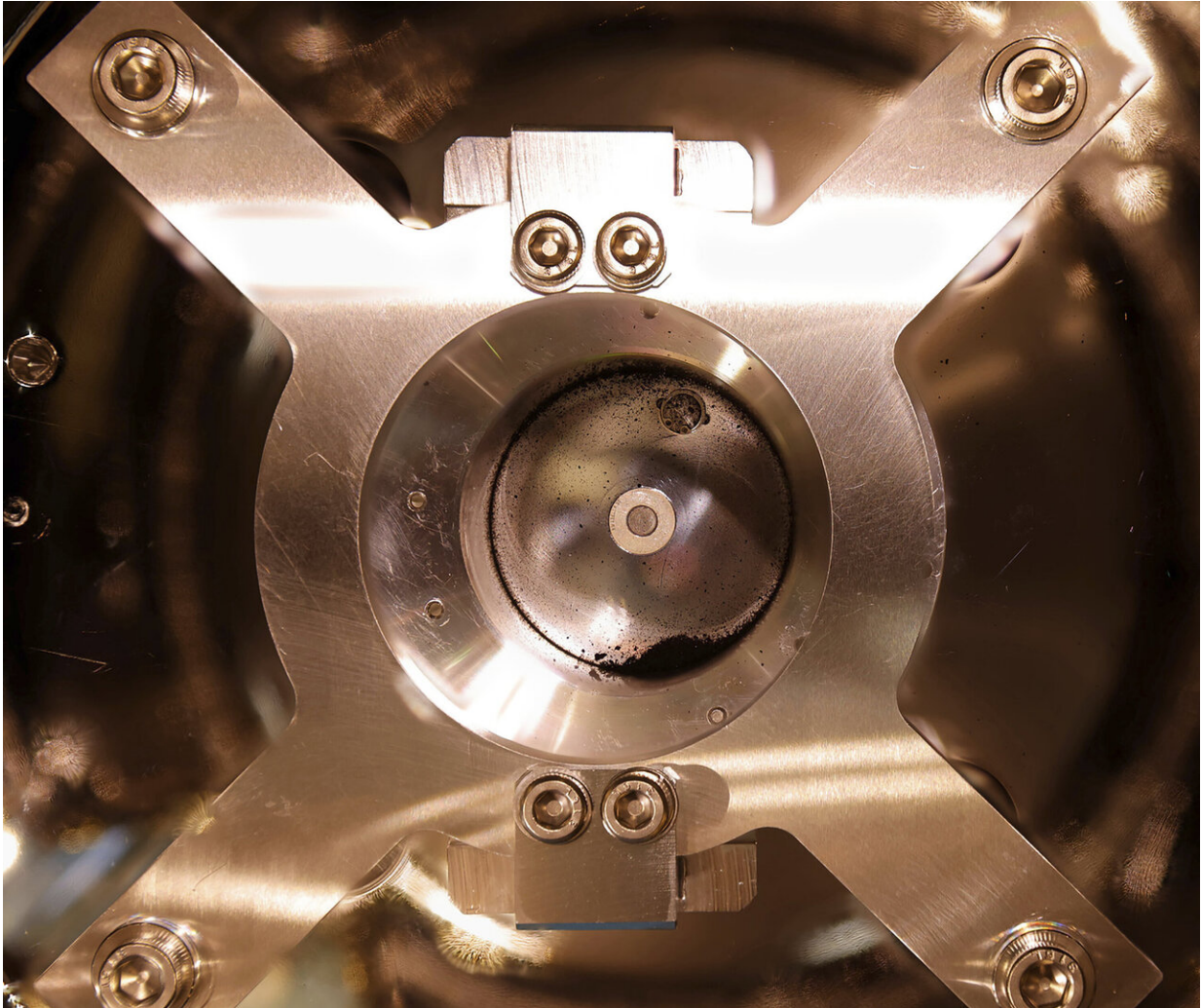
The capsule arrived in Japan last Tuesday for research that scientists hope will provide insight into the origins of the solar system and life on

Earth.

Hiroataka Sawada, a JAXA scientist, was the first to look inside the capsule's sample-catcher. Sawada said he was "almost speechless" with joy when he found that the samples inside included some that were, as expected, dust size, but also some the size of pebbles.

Soil samples in photos shown in Tuesday's presentation looked like heaps of dark coffee grounds mixed with granules.

Sawada said the tightly sealed capsule successfully brought back asteroid gases that are clearly different from the air on Earth—a first sample-return of gases from outer space. Kyushu University scientist Ryuji Okazaki said that gases could be related to minerals in asteroid soil and that he hopes to identify the gaseous samples and determine their age.



In this photo provided by the Japan Aerospace Exploration Agency (JAXA), soil samples are seen on the bottom of the capsule's sample-catcher, brought back by Hayabusa2, in Sagami-hara, near Tokyo, Tuesday, Dec. 15, 2020. Officials from Japan's space agency said Tuesday they have found more than the anticipated amount of soil and gases inside a small capsule the country's Hayabusa2 spacecraft brought back from a distant asteroid this month, a sample-return mission they praised as a milestone for planetary research.(JAXA via AP)

Scientists are hoping samples from the asteroid's subsurface can provide information from billions of years ago that are unaffected by space

radiation and other environmental factors. JAXA scientists say they are particularly interested in organic materials in the samples to learn about how they were distributed in the solar system and if they are related to life on Earth.

Sei-ichiro Watanabe, a Nagoya University earth and environment scientist working with JAXA, said having more sample material to work with than expected is great news as it will expand the scope of studies.

The samples were gathered from two touchdowns that Hayabusa2 made last year on Ryugu. The landings were more difficult than expected because of the asteroid's extremely rocky surface.

The first landing collected samples from Ryugu's surface and the second from underground. Each was stored separately. JAXA said it will look into another compartment, used for a second touchdown, next week, and will continue an initial examination ahead of the later studies of the material.



In this Dec. 8, 2020, file photo, Japan Aerospace Exploration Agency (JAXA) Hayabusa2 project manager Yuichi Tsuda speaks during a press conference after a capsule containing asteroid soil samples returned to Japan, in Sagami-hara, near Tokyo. Officials from Japan's space agency said Tuesday, Dec. 15, they have found more than the anticipated amount of soil and gases inside a small capsule the country's Hayabusa2 spacecraft brought back from a distant asteroid this month, a mission they praised as a milestone for planetary research. (Yu Nakajima/Kyodo News via AP, File)



This Monday, Dec. 14, 2020, photo released by the Japan Aerospace Exploration Agency (JAXA), shows black grains, right, thought to be from Ryugu are inside the sample container of the re-entry capsule of Hayabusa2, in Sagami-hara, near Tokyo. Japan's space agency said Monday it has confirmed the presence of black soil samples inside a capsule that the spacecraft Hayabusa2 brought back from a distant asteroid last week. (JAXA via AP)

Following studies in Japan, some of the samples will be shared with NASA and other international space agencies for additional research beginning in 2022.

Hayabusa2, meanwhile, is now on an 11-year expedition to another

asteroid to try to study possible defenses against meteorites that could fly toward Earth.

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