NASA's asteroid hunter Lucy soars into sky with diamonds

October 16 2021, by Marcia Dunn

A United Launch Alliance Atlas V rocket carrying the LUCY spacecraft lifts off from Launch Complex 41 at the Cape Canaveral Space Force Station, Saturday, Oct. 16, 2021, in Cape Canaveral, Fla. Lucy, will observe Trojan asteroids, a unique family of asteroids that orbit the sun in front of and behind Jupiter. Credit: AP Photo/(John Raoux

A NASA spacecraft named Lucy rocketed into the sky with diamonds Saturday morning on a 12-year quest to explore eight asteroids.

Seven of the mysterious space rocks are among swarms of asteroids sharing Jupiter's orbit, thought to be the pristine leftovers of planetary formation.

An Atlas V rocket blasted off before dawn, sending Lucy on a roundabout journey spanning nearly 4 billion miles (6.3 billion kilometers). Researchers grew emotional describing the successful launch—lead scientist Hal Levison said it was like witnessing the birth of a child. "Go Lucy!" he urged.

Lucy is named after the 3.2 million-year-old skeletal remains of a human ancestor found in Ethiopia nearly a half-century ago. That discovery got its name from the 1967 Beatles song "Lucy in the Sky with Diamonds," prompting NASA to send the spacecraft soaring with band members' lyrics and other luminaries' words of wisdom imprinted on a plaque. The spacecraft also carried a disc made of lab-grown diamonds for one of its science instruments.

In a prerecorded video for NASA, Beatles drummer Ringo Starr paid tribute to his late colleague John Lennon, credited for writing the song that inspired all this.

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"I'm so excited—Lucy is going back in the sky with diamonds. Johnny will love that," Starr said. "Anyway, if you meet anyone up there, Lucy, give them peace and love from me."

The paleoanthropologist behind the fossil Lucy discovery, Donald Johanson, had goose bumps watching Lucy soar—"I will never look at Jupiter the same ... absolutely mind-expanding." He said he was filled with wonder about this "intersection of our past, our present and our

future."

"That a human ancestor who lived so long ago stimulated a mission which promises to add valuable information about the formation of our solar system is incredibly exciting," said Johanson, of Arizona State University, who traveled to Cape Canaveral for his first rocket launch.

Lucy's $981 million mission is the first to aim for Jupiter's so-called Trojan entourage: thousands—if not millions—of asteroids that share the gas giant's expansive orbit around the sun. Some of the Trojan asteroids precede Jupiter in its orbit, while others trail it.

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Despite their orbits, the Trojans are far from the planet and mostly scattered far from each other. So there's essentially zero chance of Lucy getting clobbered by one as it swoops past its targets, said Levison of Southwest Research Institute, the mission's principal scientist.

Lucy will swing past Earth next October and again in 2024 to get enough gravitational oomph to make it all the way out to Jupiter's orbit. On the way there, the spacecraft will zip past asteroid Donaldjohanson between Mars and Jupiter. The aptly named rock will serve as a 2025 warm-up act for the science instruments.

Drawing power from two huge circular solar wings, Lucy will chase down five asteroids in the leading pack of Trojans in the late 2020s. The spacecraft will then zoom back toward Earth for another gravity assist in 2030. That will send Lucy back out to the trailing Trojan cluster, where it will zip past the final two targets in 2033 for a record-setting eight asteroids visited in a single mission.

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A United Launch Alliance Atlas V rocket carrying the LUCY spacecraft soars through a cloud as it lifts off from Launch Complex 41 at the Cape Canaveral Space Force Station, Saturday, Oct. 16, 2021, in Cape Canaveral, Fla. Lucy, will observe Trojan asteroids, a unique family of asteroids that orbit the sun in front of and behind Jupiter. Credit: AP Photo/(John Raoux

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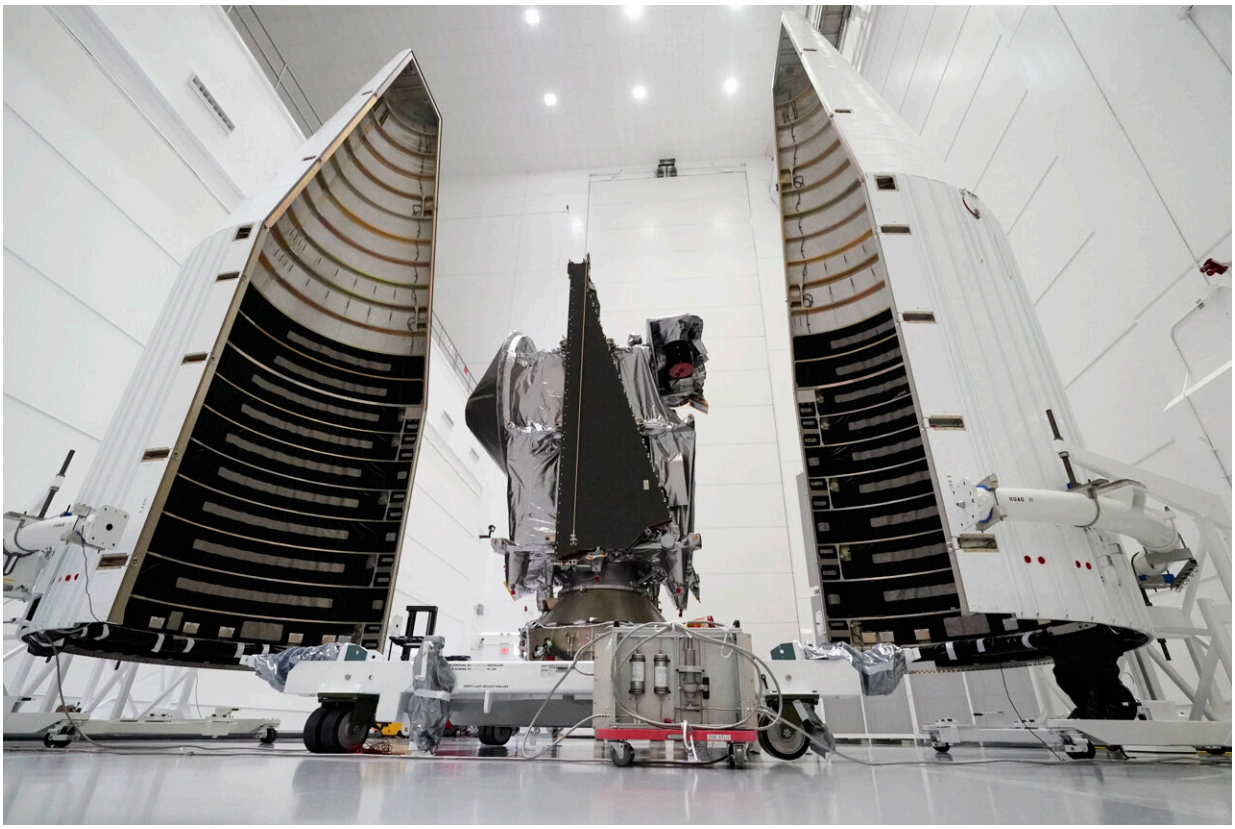
This photo released by NASA, shows a United Launch Alliance Atlas V rocket with the Lucy spacecraft aboard in this 2 minute and 30 second exposure photo

as it launches from Space Launch Complex 41, Saturday, Oct. 16, 2021, at Cape Canaveral Space Force Station in Florida. Lucy will be the first spacecraft to study Jupiter's Trojan Asteroids. Like the mission's namesake – the fossilized human ancestor, "Lucy," whose skeleton provided unique insight into humanity's evolution – Lucy will revolutionize our knowledge of planetary origins and the formation of the solar system. Credit: Bill Ingalls/NASA via AP



This Wednesday, Sept. 29, 2021 file photo shows NASA's Lucy spacecraft with its housing at the AstroTech facility in Titusville, Fla. It will be first space mission to explore a diverse population of small bodies known as the Jupiter Trojan asteroids. Credit: AP Photo/John Raoux, File

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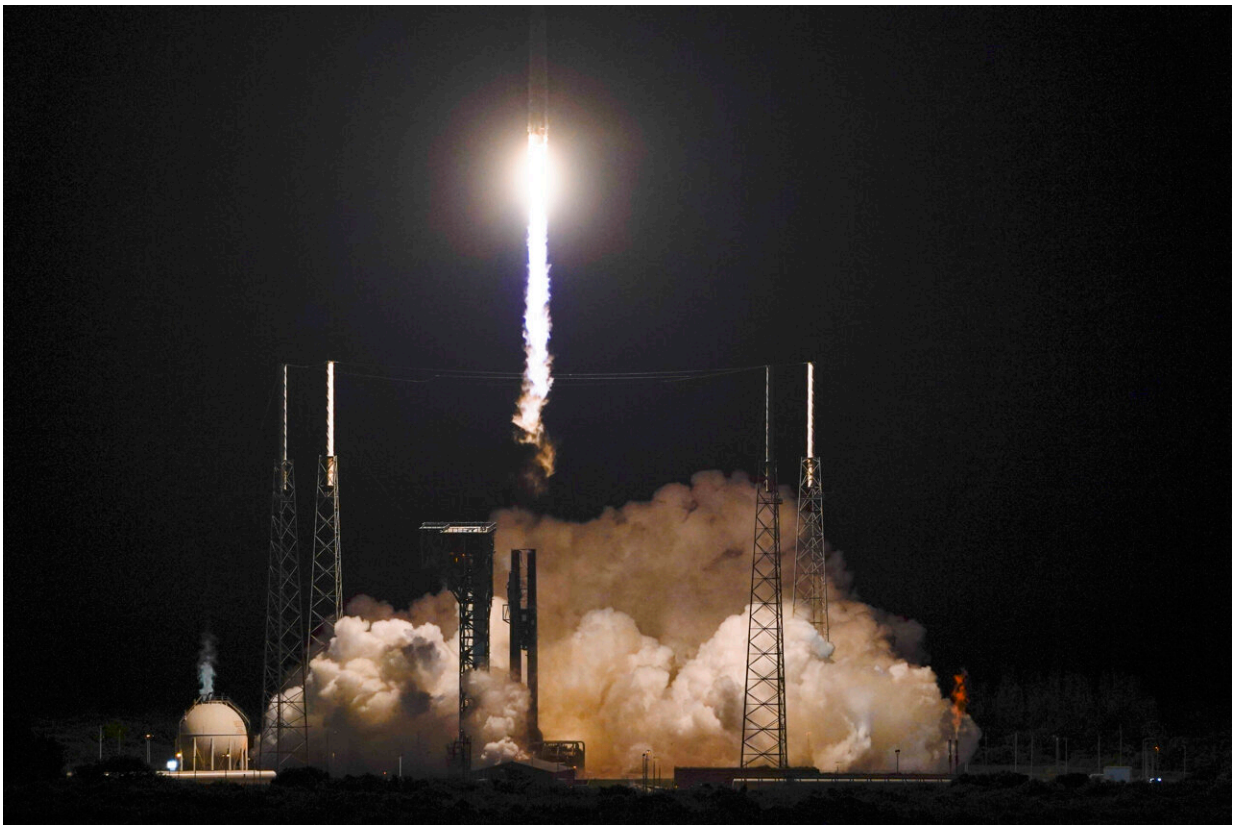

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In this photo released by NASA, a United Launch Alliance Atlas V rocket with the Lucy spacecraft stands ready to launch from Space Launch Complex 41, Saturday, Oct. 16, 2021, at Cape Canaveral Space Force Station in Florida. Lucy will be the first spacecraft to study Jupiter's Trojan Asteroids. Like the mission's namesake – the fossilized human ancestor, "Lucy," whose skeleton provided unique insight into humanity's evolution – Lucy will revolutionize our knowledge of planetary origins and the formation of the solar system. Credit: Bill Ingalls/NASA via AP

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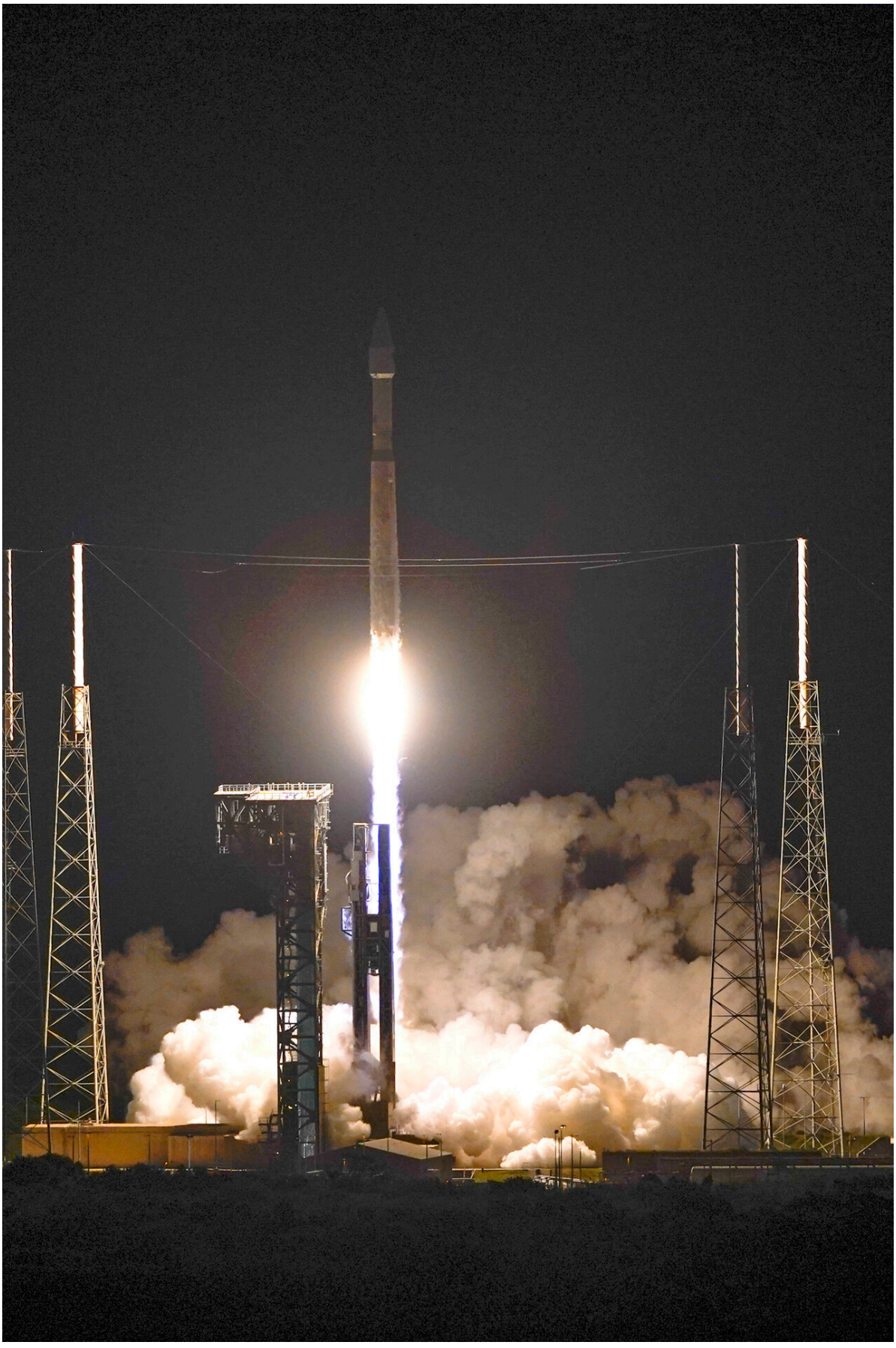

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It's a complicated, circuitous path that had NASA's science mission chief, Thomas Zurbuchen, shaking his head at first. "You've got to be kidding. This is possible?" he recalled asking.

Lucy will pass within 600 miles (965 kilometers) of each target; the biggest one is about 70 miles (113 kilometers) across.

"Are there mountains? Valleys? Pits? Mesas? Who knows? I'm sure we're going to be surprised," said Johns Hopkins University's Hal Weaver, who's in charge of Lucy's black-and-white camera. "But we can hardly wait to see what ... images will reveal about these fossils from the formation of the solar system."

NASA plans to launch another mission next month to test whether humans might be able to alter an asteroid's orbit—practice in case Earth ever has a killer rock headed this way.