

# 'Wow, here we go': NASA spacecraft hurtles toward the sun

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Parker Solar Probe on a ULA Delta IV Heavy rocket lifts off from Launch Complex 37 at Cape Canaveral Air Force Station Sunday, Aug. 12, 2018. (Malcolm Denmark/Florida Today via AP)

Embarking on a mission that scientists have been dreaming of since the Sputnik era, a NASA spacecraft hurtled Sunday toward the sun on a quest to unlock some of its mysteries by getting closer than any object sent before.

If all goes well, the Parker Solar Probe will fly straight through the wispy edges of the sun's corona, or outer atmosphere, in November. In the years ahead, it will gradually get within 3.8 million (6 million kilometers) of the surface, its instruments protected from the extreme heat and radiation by a revolutionary new carbon heat shield and other high-tech wizardry.

Altogether, the Parker probe will make 24 close approaches to our star during the seven-year, \$1.5 billion journey.

"Wow, here we go. We're in for some learning over the next several years," said Eugene Parker, the 91-year-old astrophysicist for whom the spacecraft is named.

It was Parker who accurately theorized 60 years ago the existence of solar wind—the supersonic stream of charged particles blasting off the sun and coursing through space, sometimes wreaking havoc on electrical systems on Earth.

This is the first time NASA has named a spacecraft after a living person.

As Parker and thousands of others watched, a Delta IV Heavy rocket carried the probe aloft, thundering into the clear, star-studded sky on three pillars of fire that lit up the middle-of-the-night darkness.



In this photo provided by NASA, The United Launch Alliance Delta IV Heavy rocket launches NASA's Parker Solar Probe to touch the Sun, Sunday, Aug. 12, 2018 from Launch Complex 37 at Cape Canaveral Air Force Station, Florida. (Bill Ingalls/NASA via AP)

NASA needed the mighty 23-story rocket, plus a third stage, to get the Parker probe—the size of a small car and well under a ton—racing toward the sun, 93 million miles (150 million kilometers) from Earth.

A Saturday morning launch attempt was foiled by last-minute technical

trouble. But Sunday gave way to complete success.

It was the first rocket launch ever witnessed by Parker, a retired University of Chicago professor. He said it was like looking at photos of the Taj Mahal for years and then beholding the real thing in India.

"I really have to turn from biting my nails in getting it launched, to thinking about all the interesting things which I don't know yet and which will be made clear, I assume, over the next five or six or seven years," Parker said on NASA TV.

Among the mysteries scientists hope to solve: Why is the corona hundreds of times hotter than the surface, which is 10,000 degrees Fahrenheit (5,500 degrees Celsius)? And why is the sun's atmosphere continually expanding and accelerating, as Parker theorized in 1958?



A Delta IV rocket, carrying the Parker Solar Probe, lifts off from launch complex 37 at the Kennedy Space Center, Sunday, Aug. 12, 2018, in Cape Canaveral, Fla. The Parker Solar Probe will venture closer to the Sun than any other spacecraft and is protected by a first-of-its-kind heat shield and other innovative technologies that will provide unprecedented information about the Sun. (AP Photo/John Raoux)

"The only way we can do that is to finally go up and touch the sun," said project scientist Nicola Fox of Johns Hopkins University. "We've looked at it. We've studied it from missions that are close in, even as close as the planet Mercury. But we have to go there."

A better understanding of the sun's life-giving and sometimes violent nature could also enable earthlings to better protect satellites and astronauts in orbit, along with the power grids so vital to today's technology-dependent society, said Thomas Zurbuchen, NASA's science mission chief.

Parker, the probe, will start shattering records this fall. On its very first brush with the sun, it will come within 15.5 million miles (25 million kilometers), easily beating the current record of 27 million miles (43 million kilometers) set by NASA's Helios 2 spacecraft in 1976.





The Mobile Service Tower is rolled back to reveal the United Launch Alliance Delta IV Heavy rocket with the Parker Solar Probe onboard, Saturday, Aug. 11, 2018, Launch Complex 37 at Cape Canaveral Air Force Station in Fla. A last-minute technical problem Saturday delayed NASA's unprecedented flight to the sun. Rocket maker United Launch Alliance said it would try again Sunday, provided the helium-pressure issue can be resolved quickly. Once on its way, the Parker probe will venture closer to our star than any other spacecraft. (Bill Ingalls/NASA via AP)

By the time Parker gets to its 22nd, 23rd and 24th orbits of the sun in 2024 and 2025, it will be even deeper into the corona and traveling at a record 430,000 mph (690,000 kilometers per hour). Nothing from planet Earth has ever gone that fast.

Even Fox has difficulty comprehending the mission's derring-do.

"To me, it's still mind-blowing," she said. "Even I still go, 'Really? We're

doing that?"

The 8-foot (2.4-meter) heat shield will serve as an umbrella that will shade the spacecraft's scientific instruments, with on-board sensors adjusting the protective cover as necessary so that nothing gets fried. The shield is capable of withstanding 2,500 degrees F (1,370 degrees C).



A Delta IV rocket, carrying the Parker Solar Probe, stands on launch complex 37 after the launch was scrubbed at the Kennedy Space Center, Saturday, Aug. 11, 2018, in Cape Canaveral, Fla. The Parker Solar launch has been rescheduled for early Sunday morning. (AP Photo/John Raoux)

A mission to get up close and personal with our star has been on NASA's books since 1958. The trick was making the spacecraft compact and light enough to travel at incredible speeds and durable enough to withstand the punishing environment.

"We've had to wait so long for our technology to catch up with our dreams," Fox said.

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