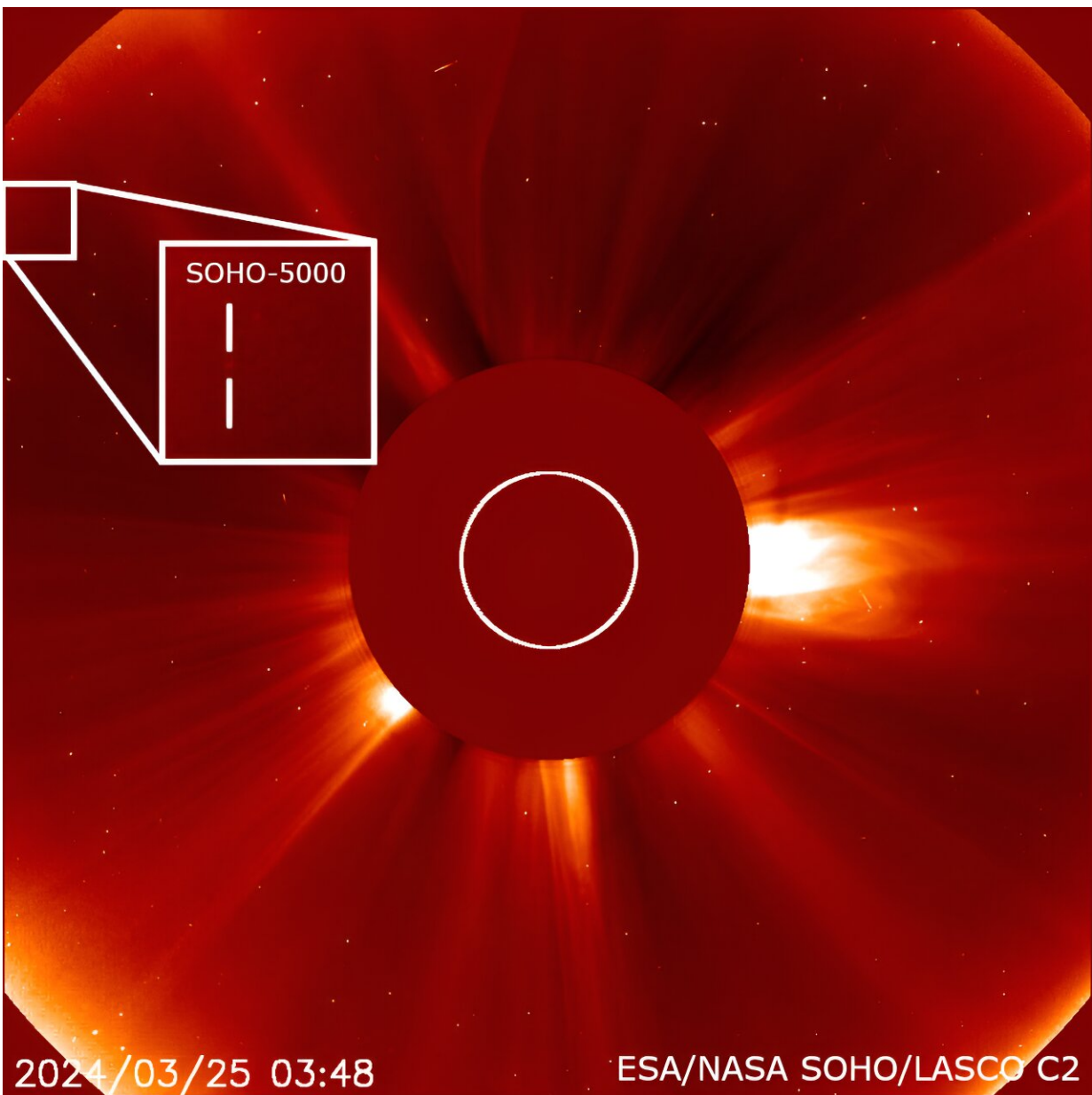


ESA, NASA Solar Observatory discovers its 5,000th comet

March 27 2024, by Vanessa Thomas



The 5,000th comet discovered with the Solar and Heliospheric Observatory (SOHO) spacecraft is noted by a small white box in the upper left portion of this image. A zoomed-in inset shows the comet as a faint dot between the white vertical lines. The image was taken on March 25, 2024, by SOHO's Large Angle and Spectrometric Coronagraph (LASCO), which uses a disk to block the bright Sun and reveal faint features around it. Credit: NASA/ESA/SOHO

On March 25, 2024, a citizen scientist in the Czech Republic spotted a comet in an image from the Solar and Heliospheric Observatory (SOHO) spacecraft, which has now been confirmed to be the 5,000th comet discovered using SOHO data. SOHO has achieved this milestone over 28 years in space, even though it was never designed to be a comet hunter.

The comet is a small body made of ice and rock that takes only a few years to orbit the sun. It belongs to the "Marsden group" of comets. This group is thought to be related to comet 96P/Machholz (which [SOHO observes](#) when Machholz passes near the sun every 5.3 years) and is named for the late scientist Brian Marsden who first recognized the group using SOHO observations. Only about 75 of the 5,000 comets discovered with SOHO belong to the Marsden group.

A joint mission of ESA (European Space Agency) and NASA, SOHO launched in December 1995 to study the sun and the dynamics in its [outer atmosphere](#), called the corona. A [science instrument](#) on SOHO called the Large Angle and Spectrometric Coronagraph (LASCO), uses an artificial disk to block the blinding light of the sun so scientists can study the corona and environment immediately around the sun.

This also allows SOHO to do something many other spacecraft cannot—see comets flying close to the sun, known as "sungrazing" comets or "sungrazers."

Many of these comets only brighten when they're too close to the sun for other observatories to see and would otherwise go undetected, lost in the bright glare of our star. While scientists expected SOHO to find some comets during its mission serendipitously, the spacecraft's ability to spot them has made it the most prolific comet-finder in history—discovering more than half of the comets known today.

In fact, soon after SOHO launched, people around the world began spotting so many comets in its images that mission scientists needed a way to keep track of them all. In the early 2000s, they launched the NASA Sungrazer Project, which allows anyone to report comets they find in SOHO images.

SOHO's 5,000th comet was found by Hanjie Tan, a sungrazer Project participant who is originally from Guangzhou, China, and is currently pursuing a [doctoral degree](#) in astronomy in Prague, Czech Republic. Tan has been participating in the Sungrazer Project since he was 13 years old and is one of the [project's](#) youngest comet discoverers.

"Since 2009, I've discovered over 200 comets," Tan said. "I got into the Sungrazer Project because I love looking for comets. It's really exciting to be the first to see comets get bright near the sun after they've been traveling through space for thousands of years."

Most of the 5,000 comets discovered using SOHO have been found with the help of an international cadre of volunteer [comet](#) hunters—many with no formal scientific training—participating in the Sungrazer Project.

"Prior to the launch of the SOHO mission and the sungrazer Project, there were only a couple dozen sungrazing comets on record—that's all we knew existed," said Karl Battams, a space scientist at the U.S. Naval Research Lab in Washington, D.C., and the principal investigator for the

sungrazer Project. "The fact that we've finally reached this milestone—5,000 comets—is just unbelievable to me."

The vast number of comets discovered using SOHO has allowed scientists to learn more about sungrazing comets and groups of comets that orbit the sun. Comets discovered by the Sungrazer Project have also helped scientists learn more about the sun by watching the comets plunge through our star's atmosphere like small solar probes.

"The statistics of 5,000 comets, and looking at their orbits and trajectories through space, is a super unique dataset—it's really valuable science," Battams said. "It's a testament to the countless hours the project participants have put into this. We absolutely would never have reached this milestone if it wasn't for what the project volunteers have done."

Provided by NASA's Goddard Space Flight Center

Citation: ESA, NASA Solar Observatory discovers its 5,000th comet (2024, March 27) retrieved 27 April 2024 from <https://phys.org/news/2024-03-esa-nasa-solar-observatory-5000th.html>

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