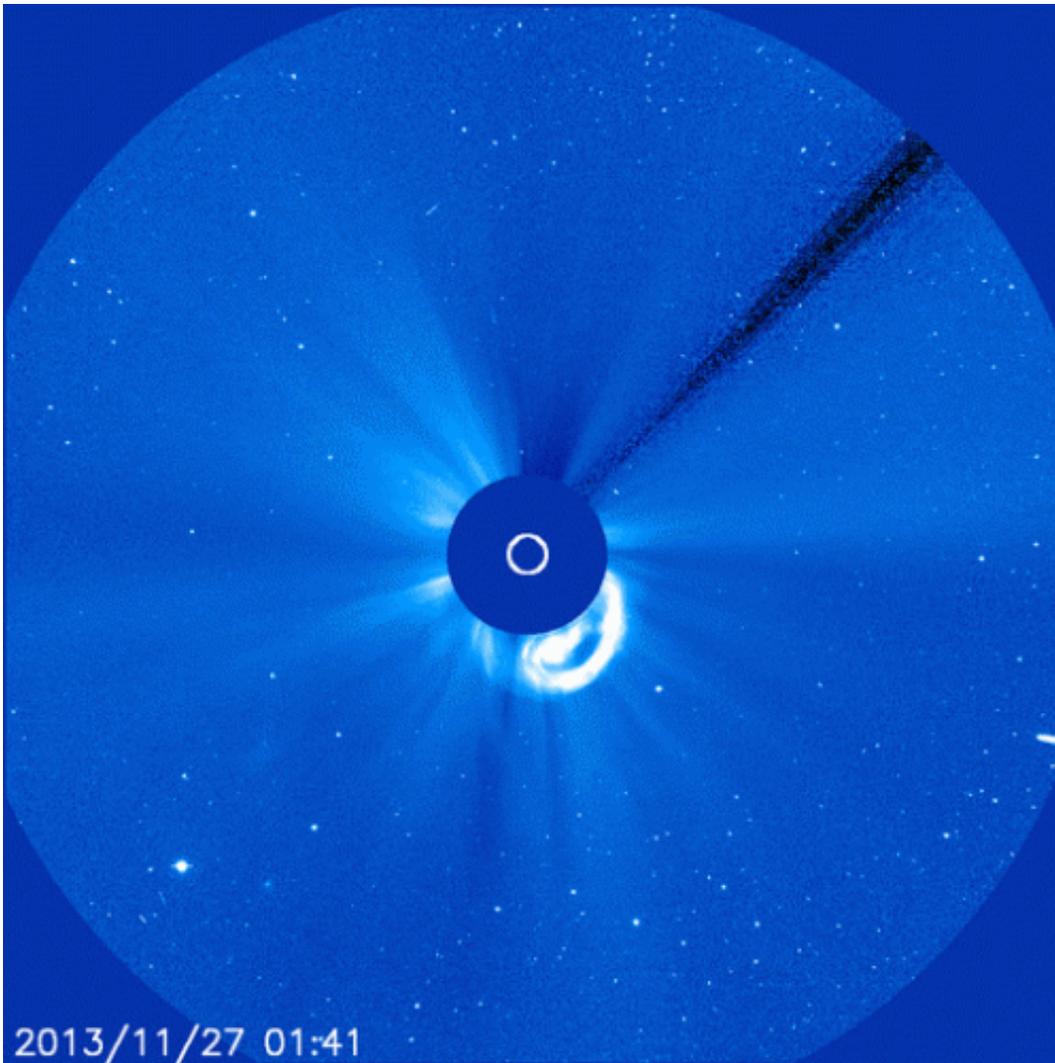


# What happened to comet ISON?

December 5 2013, by Tony Phillips

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A movie from the Solar and Heliospheric Observatory shows Comet ISON's Thanksgiving Day flyby of the sun.

Astronomers have long known that some comets like it hot. Several of the greatest comets in history have flown close to the sun, puffing themselves up with solar heat, before they became naked-eye wonders in the night sky.

Some comets like it hot, but Comet ISON was not one of them.

The much-anticipated flyby of the [sun](#) by Comet ISON on Thanksgiving Day 2013 is over, and instead of becoming a Great Comet...

"Comet ISON fell apart," reports Karl Battams of NASA's Comet ISON Observing Campaign. "The fading remains are now invisible to the human eye."

At first glance this might seem like a negative result, but Battams says "rather than mourn what we have lost, we should perhaps rejoice in what we have gained—some of the finest data in the history of cometary astronomy."

On the morning of Nov. 28th, expectations were high as ISON neared perihelion, or closest approach to the sun. The icy comet already had a riotous tail 20 times wider than the full Moon and a head bright enough to see in the pre-dawn eye with the unaided eye. A dose of [solar heat](#) could transform this good comet into a great one.

During the flyby, more than 32,000 people joined Battams and other solar scientists on a Google+ Hangout. Together they watched live images from a fleet of solar observatories including the twin STEREO probes, the Solar Dynamics Observatory, and SOHO. As Comet ISON approached the sun it brightened and faded again.

"That might have been the disintegration event," says Matthew Knight of NASA's Comet ISON Observing Campaign.

Cameras onboard the Solar Dynamics Observatory followed the comet all the way down to perihelion and saw ... nothing.

"We weren't sure what was happening," recalls Knight. "It was such a roller coaster of emotions."

The researchers were surprised again when a fan-shaped cloud emerged from the sun's atmosphere. No one knows for sure what was inside. Possibilities include a remnant nucleus, too small for SDO to detect, or a "rubble pile" of furiously vaporizing fragments. By the end of the day, Comet ISON was nothing but a cloud of dust.

"It's disappointing that we didn't get a spectacular naked eye comet," says Knight, "but in other ways I think Comet ISON was a huge success. The way people connected with Comet ISON via social media was phenomenal; our Comet ISON Observing Campaign website earned well over a million hits; and I had trouble downloading images near perihelion because NASA's servers were swamped."

"So maybe ISON was the 'Comet of the New Century,'" he says.

Battams agrees: "The comet may be dead, but the observing campaign was incredibly successful." Since its discovery in Sept. 2012, Comet ISON has been observed by an armada of spacecraft, studied at wavelengths across the electromagnetic spectrum, and photographed by thousands of telescopes on Earth. For months at a time, uninterrupted, someone or some spacecraft had eyes on the comet as it fell from beyond the orbit of Jupiter to the doorstep of the sun itself. Nothing was missed.

The two astronomers hope that the wealth of data will eventually allow them and their colleagues to unravel the mystery of exactly what happened to Comet ISON.

"This has unquestionably been the most extraordinary [comet](#) that Matthew and I, and likely many others, have ever witnessed," says Battams. "The universe is an amazing place and it has just amazed us again."

Provided by NASA

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