

## New Comet Discovered—May Become "One of Brightest in History"

Post by Andrew Fazekas | National Geographic  
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**Next year comet 2012 S1 might outshine the moon.**



*Photograph by John Goldsmith, TWAN*

If astronomers' early predictions hold true, the holidays next year may hold a glowing gift for stargazers—a superbright comet, just discovered streaking near Saturn.

Even with powerful telescopes, comet 2012 S1 (ISON) is now just a faint glow in the constellation Cancer. But the ball of ice and rocks might become visible to the naked eye for a few months in late 2013 and early 2014—perhaps outshining the moon, astronomers say.

The comet is already remarkably bright, given how far it is from the sun, astronomer Raminder Singh Samra said. What's more, 2012 S1 seems to be following the path of the Great Comet of 1680, considered one of the most spectacular ever seen from Earth.

"If it lives up to expectations, this comet may be one of the brightest in history," said Samra, of the H.R. MacMillan Space Centre in Vancouver, Canada.

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So what makes a comet a showstopper? A lot depends on how much gas and dust is blasted off the central core of ice and rocks. The bigger the resulting cloud and tail, the more reflective the body may be.

Because 2012 S1 appears to be fairly large—possibly approaching two miles (three kilometers) wide—and will fly very close to the sun, astronomers have calculated that the comet may shine brighter, though not bigger, than the full moon in the evening sky.

(Also see "New Comet Found; May Be Visible From Earth in 2013.")

### Refugee From the Edge of the Solar System?

First spotted late last week by Russian astronomers Artyom Novichonok and Vitali Nevski of the International Scientific Optical Network (ISON), comet 2012 S1 was confirmed by the International Astronomical Union on Monday.

But while we know what 2012 S1 is, it's still unclear where it came from. Its orbit suggests the comet may be a runaway from the Oort cloud, where billions of comets orbit about a hundred thousand times farther from the sun than Earth is.

"For astronomers, these distant origins are exciting," Samra said, "because it allows us to study one of the oldest objects in the solar system still in its original, pristine condition."

(Related: "Comet Is Cosmic Snow Globe, NASA Flyby Shows.")

### New Comet Bound for Glory?

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Right now, 2012 S1 appears to be about 615 million miles (990 million kilometers) from Earth, between the orbits of Saturn and Jupiter, astronomers say.

As the sun's gravity pulls the comet closer, it should pass about 6.2 million miles (10 million kilometers) from Mars—possibly a unique photo opportunity for NASA's new Curiosity rover.

Current orbital predictions indicate the comet will look brightest to us in the weeks just after its closest approach to the sun, on November 28, 2013—if 2012 S1 survives the experience.

As the comet comes within about 1.2 million miles (2 million kilometers) of the sun, the star's intense heat and gravity could cause the ice and rubble to break apart, scotching the sky show. (Related: "Comet Seen Vaporizing in Sun's Atmosphere—A First.")

"While some predictions suggest it may become as bright as the full moon, and even visible during the day, one should be cautious when predicting how exciting a comet may get," Samra said.

"Some comets have been notorious for creating a buzz but failing to put on a dazzling display," he said. "Only time will tell."

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