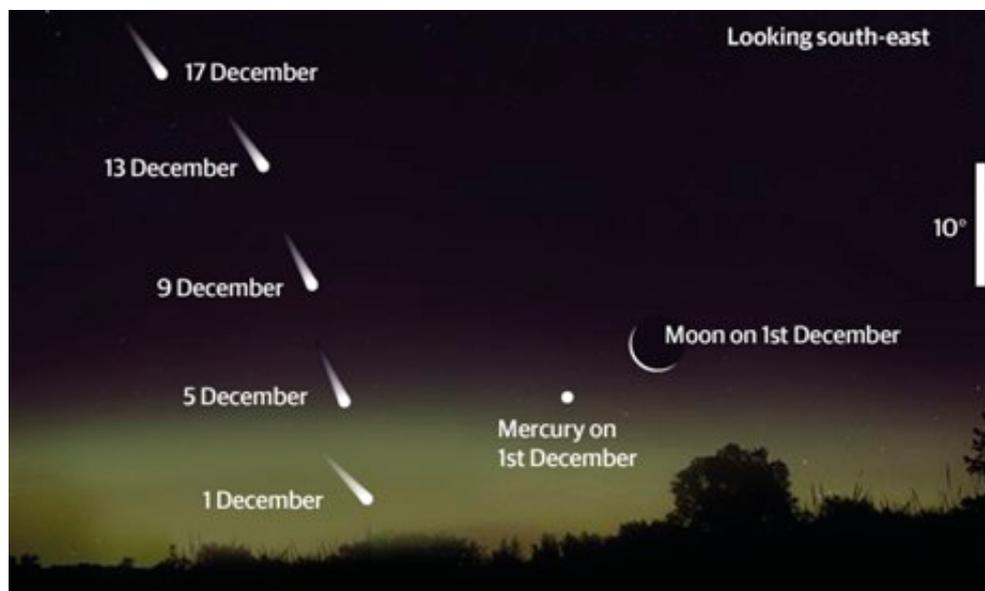


Comet Ison to light up morning skies in the run-up to Christmas

The best time to see Ison in the UK will be the first two weeks of December – if it survives a close encounter with the sun

Stuart Clark

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Comet ISON's projected position throughout December. Graphic: The Guardian.

If it survives an encounter with the sun this week, comet Ison will put on an impressive early morning display in the run-up to Christmas. But anyone hoping for a Bethlehem-style celestial sign on the big day will be disappointed. By then the comet will probably be too faint to see with a naked eye.

Ison is currently speeding towards a fiery encounter on Thursday, which could destroy it. It will pass 720,000 miles above the solar surface, 130 times closer than our planet ever reaches.

The intense sunlight will heat the comet to about 2,700C, speeding up its evaporation. In the past some comets have been seen to vaporise under such an onslaught.

Over the weekend the comet received a sudden boost in its brightness, making it easily visible to the naked eye. After a disappointing few months, its intensity shot up by a

factor of around six on Saturday, delighting stargazers and scientists.

The unexpected outburst also raised fears that it was breaking up. However, it is now clear that the comet is "still keeping it together", according to Alan Fitzsimmons, of Queen's University, Belfast.

Comet Ison was discovered on 21 September 2012 by astronomers using the international scientific optical network (ISON) telescope near Kislovodsk, Russia.

Like all comets, it is a ball of ice and dust left over from the formation of the solar system. Although no one can predict what will happen during its encounter with the sun, John Brown, at the University of Glasgow, has made a study of sungrazing comets and points out that Ison will not be passing as close to the sun as comet Lovejoy did in 2011.

Lovejoy skimmed 85,000 miles above the solar surface. It survived, but with very little of its 0.3-mile-wide nucleus left. Ison is estimated to be two miles wide, and its evaporating ices have already created a tail that stretches 8m miles through space.

"I'm not a gambling man but if I had to bet a fiver, I'd say Ison will survive," said Brown.

Even if the majority of the comet emerges, fragments could still be blasted off. This would lead to a much more spectacular tail for skywatchers to see in December's sky.

For the next few days it will be lost from view in the glare of the sun, although spacecraft will monitor its passage.

For viewers on Earth, the best time to start looking will be in the first and second weeks of December. By then the tail should be extremely well developed and Ison will appear as a ghostly fan shape in the pre-dawn sky. The comet will also be visible in the western sky at sunset. It will be more difficult to spot at this time, however, because the tail is horizontal and immersed in the twilight. Better to set the alarm clock and rise early, when it will be visible in a truly dark sky.

Fitzsimmons will be watching for both professional and personal reasons. "How Ison behaves now will reveal its chemical and physical composition," he says, "But personally I'd just love to see another bright comet over the UK. It's been 16 years since the last one, comet Hale-Bopp, and it's about time for another."

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