New Scientist

SPECIAL ISSUE

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Astronomy

Visitor from the outer reaches

A green comet usually found on the outskirts of the solar system has made its closest pass by Earth since the Stone Age, reports **Leah Crane**

A RARE green comet hailing from the outermost edges of the solar system passed by Earth this week, and is now heading back into the black.

This lump of ice usually dwells in the Oort cloud, a belt of icy objects that orbit up to 100,000 times as far from the sun as Earth. But on 1 February, it came within about 45 million kilometres of our planet – about 120 times the distance between Earth and the moon.

The comet, called C/2022 E3, takes about 50,000 years to complete its orbit around the sun, so its last pass by Earth was in the Stone Age, when our ancestors still coexisted with Neanderthals.

Those early humans may have been able to see C/2022 E3 in the sky, and it was possible to spot with the naked eye on this pass, too. Reports of sightings have come in from areas across the northern hemisphere, mostly from regions with little light pollution to obscure the fuzzy-looking comet. Sadly, it isn't visible in the southern hemisphere.

It can be seen near the constellation Boötes, just to the east of the Little Dipper, and it should remain visible until the middle of February using a telescope, binoculars or a camera with the option for an extended exposure. After that, it will slip away, back towards the Oort cloud.

C/2022 E3 was first spotted by astronomers using the Zwicky Transient Facility in California in March 2022, when it passed within the orbit of Jupiter. Its coma – the cloud of gas surrounding the main body, or nucleus, of the comet – appears green because of sunlight hitting carbon gas. It isn't just any carbon, though – it is a relatively rare type called diatomic carbon, which consists of two carbon atoms bound together.

The green glow of comet C/2022 E3 as seen on 29 January from the UK

Once the strange comet leaves Earth's neighbourhood, some observations have hinted that it might be travelling fast enough to leave the solar system altogether. Others suggest it may have its orbit bumped around by the gravity of the planets, so that it won't pass by again for millions of years. ▮