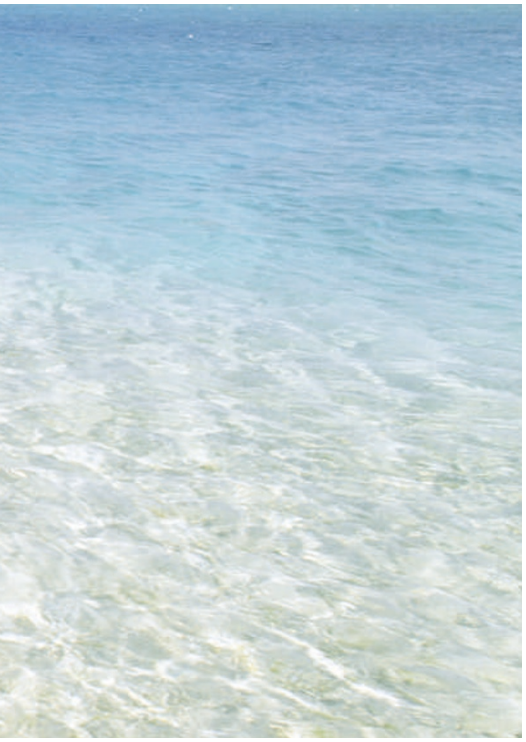


could be smaller than the data suggest.

But assuming the trend is real, what caused the cooling and where did the heat go? Aerosols, volcanic activity and small changes in ocean circulations and convection processes may all play a role, says King. But the simplest explanation is that less sunlight has reached the ocean surface as cloud coverage has increased.

Global cloud coverage has increased by 1–2% since 1999 according to data from the International Satellite Cloud Climatology Project, presumably because of global warming and increased evaporation. Other factors — such as cloud albedo (the extent to which cloud reflects solar radiation) or cloud-top temperature — might have changed in the same period, says William Rossow, a cloud expert at the Goddard Institute. "It is completely insufficient to look for a simple explanation of a short-term temperature change," he says, "as the climate system is much more complex."

The heat itself could be hidden at greater depths in the ocean, or — more likely, says Schmidt — it may have escaped into the atmosphere and out into space. Yet a corresponding change in Earth's radiation budget has not been observed.

"The system's internal variability might well be larger than we thought," says Levitus. "This is exciting news, but food for global-warming sceptics it is not." ■

Quirin Schiermeier

Asteroid fly-by eludes study

On 3 July, an asteroid zipped past Earth at a distance of some 400,000 kilometres — slightly farther away than the Moon. In theory, something that close ought to be easy to study. But astronomers have struggled to map the size and shape of the space rock — and now say they know why they found it so difficult.

The rock, dubbed 2004 XP14, is one of more than 800 'near-Earth asteroids' that have been identified in orbits that come perilously close to our planet. This particular rock is unlikely to hit us, but astronomers hoped their observations would help establish how diverse such asteroids are and so better quantify the threat they pose.

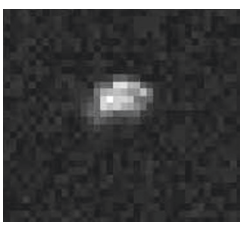
But the data obtained by the team proved surprisingly hard to analyse. "The asteroid rotates slowly, so its appearance in the images, due to rotation, hardly changed at all," says Lance Benner, an astronomer at NASA's Jet Propulsion Laboratory in Pasadena, California, who led the effort to image the asteroid.

That's unusual. "Most near-Earth asteroids are very fast rotators," says Vishnu Reddy, a graduate student at the University of North Dakota who also observed the object.

Benner and his colleagues imaged 2004 XP14 using a 70-metre radio antenna at the Goldstone Complex in California. At 260 metres across, the asteroid was a lot smaller than earlier predictions of up to 880 metres. This, together with its rotation rate of roughly one turn every 500 hours, meant that the images the team received barely changed during recording sessions of up to 2 hours. As a result, the researchers could not build the detailed picture of the rock that they wanted.

Earth may be safe from 2004 XP14, but there are plenty more asteroids out there that might collide with us. Having identified three-quarters of the candidates 1 kilometre or more in diameter, NASA plans to widen its search to include objects as small as 150 metres across. And in July, the International Astronomical Union formed a committee to keep it up to date about asteroids that may pose a serious threat to our planet. ■

Heidi Ledford



L. BENNER, JET PROPULSION LAB.

Blip on the horizon: radar imaging of the asteroid 2004 XP14 proved to be more difficult than expected.