Scientists face the fact of Mars methane

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There is methane on Mars, scientists have concluded from the latest data. And one group of researchers argue there may be a lot more methane being produced than previously thought.

Methane is of great interest because on Earth, almost all of it comes from living things - everything from rotting plants to bovine flatulence. But there are other possible sources of methane on Mars.

While one researcher, Vladimir Krasnopolsky at Catholic University of America, argued that those other sources are so unlikely that the methane must be biologically produced, most scientists at the American Astronomical Society's Division for Planetary Sciences meeting in Louisville, Kentucky, said they are concentrating on the non-biological mechanisms.

Whatever is creating the gas, these reports have dissipated the initial scepticism that met early reports of Martian methane over the past year.

Methane does not survive long in the Red Planet's atmosphere, so the source must be recent. One idea is that Mars was struck very recently by a comet containing frozen methane.

Though such strikes are relatively rare, Sushil Atreya of the University of Michigan, US, has calculated that gas from a comet with only 2% methane content could persist on Mars for up to 2000 years. This could produce atmospheric levels of methane comparable to the roughly 60 parts per billion detected by astrobiologist Michael Mumma at NASA's Goddard Space Flight Center, and his colleagues.

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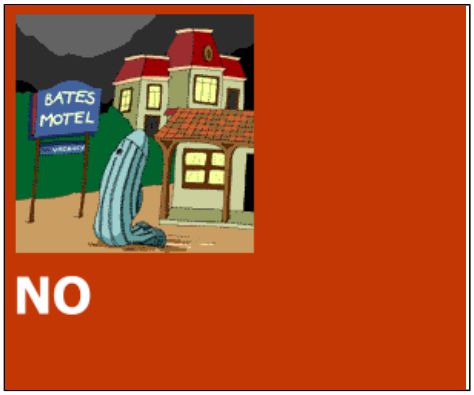

Alternatively, the gas could be buried in methane-ice mixes called clathrates, perhaps being released by geothermally melted water and bubbling up to the surface through natural pores and cracks in Mars's crust. While not a sign of life itself, it might indicate a place where life could survive.

Double lines

The existence of the methane has been largely settled by a set of detailed, high-resolution spectral observations from the 8-metre Gemini telescope, recorded by Mumma's team. They clearly identified two separate methane lines, making a much firmer case than their previous single-line detections, and similar findings of two other groups.

"It's real," say Stephen Squyres, science team leader for NASA's twin Mars rovers. The important thing now, he told **New Scientist**, is to figure out where it's coming from and where it's going."

Adding to the intrigue are new calculations by Atreya showing that dust devils and storms on Mars - known to be frequent and intense - must be producing vast quantities of hydrogen peroxide. This highly reactive oxidant was inferred to exist on Mars after the 1976

Viking experiments, but not actually detected until 2003.

All this oxidant must be destroying the methane at a very high rate, Atreya said on Friday. That could explain Mars's uneven distribution of methane - observed by Mumma's team and others - as the storms are local and temporary.

But it also implies that methane is being produced at a much higher rate than its present concentration would suggest. If so, cometary or volcanic sources become even more unlikely, and the prospect of a living source becomes slightly more plausible.

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