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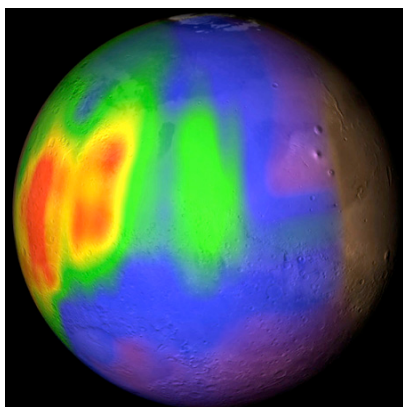
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A gassy summer. High methane concentrations (reds and yellows) appear during martian summer in localized plumes.

CREDIT: NASA

to contend with interference from methane and other trace gases in Earth's atmosphere.

At today's press conference, astronomer Michael Mumma of NASA's Goddard Space Flight Center in Greenbelt, Maryland, declared success. "We've eliminated most of the gremlins that were bothering us," he said. The biggest problem was working out how to reliably remove terrestrial contamination from the team's spectra. "We've done a lot of work that makes the current results robust," Mumma says. Planetary scientist Sushil Atreya of the University of Michigan, Ann Arbor, agrees. Measuring martian methane "is really at the ragged edge of things," he says, but "I think the detection is pretty solid."

Beyond detection, the observations reveal that the methane averages 33 parts per billion in the summer but essentially disappears afterward. About 0.6 kilograms of methane emerge each second in the summer, Mumma said, which is comparable to the emissions from a natural oil seep near Santa Barbara, California. Perhaps, he said,

Mars Has Methane, But Life?

By Richard A. Kerr
ScienceNOW Daily News
15 January 2009

It's taken 5 years, but planetary scientists are finally confident that they have detected methane on Mars. At a press conference today at NASA headquarters in Washington, D.C., and in a paper published online today in *Science*, researchers announced that all the painstaking observations, analysis, and reanalysis now reveal summertime plumes of the gas from three regions on the planet. On Earth, methane is a byproduct of living bacteria, but whether that's what's producing the gas on Mars is anyone's guess.

The first news of martian methane claims came in 2004 (*Science*, 26 March 2004, p. 1953). But the early data--from spacecraft and ground-based telescopes--were controversial. Spacecraft were not detecting all of the spectroscopic signatures of the gas, for example, and ground-based observers had

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the martian methane is continually produced beneath the surface but only released when summer warming breaks an icy seal on the surface.

The source? No one can say. Methane-generating bacteria might be living off hydrogen produced by rock, as studies kilometers down in South African gold mines have shown. Or, purely inorganic reactions between water and rock rich in the mineral olivine could do it, as found in hot springs near the Mid-Atlantic Ridge. Either way, the methane could have been produced ages ago, noted Mumma's colleague Geronimo Villanueva of Goddard, and been trapped in deep ice until warming released it. The next chance for nailing down the methane's origins may come in 2011 when the Mars Science Laboratory rover launches with the ability to measure the isotopic composition of the gas.



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