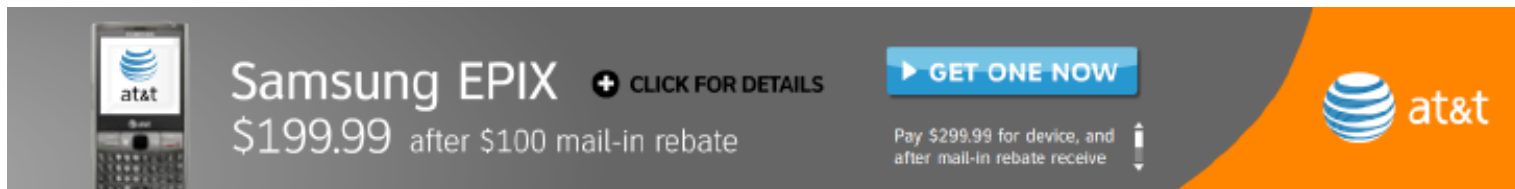



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Methane plumes spotted on Mars may be a sign of life

By Dan Vergano, USA TODAY

Mysterious methane plumes spotted on Mars indicate there may be unforeseen volcanic vents — or perhaps microbes — under the surface of the Red Planet, NASA scientists said Thursday.

Spotted in the Martian summer of 2003, three plumes of methane (better known on Earth as natural gas) dispersed to cover the entire planet, They dissipated within three years, says study leader Michael Mumma of NASA's Goddard Spaceflight Center in Greenbelt, Md.

But Mars has not yet yielded its secrets. Scientists do not yet know if the invisible gas is the product of an interaction between rock and ice or if is released by microbial life, Mumma says.

The regions in which the plumes are most concentrated show chemical signs of past exposure to water, so ancient methane could be stored in ices below the surface and melting in the Martian summer, says team scientist Geronimo Villanueva of Catholic University of America in Washington, D.C. However, there are no signs of fractures in the planet's surface or quake activity that would lead to such releases.

"The evidence we have here is for an active process," says NASA Mars science chief Michael Meyers. "We don't know if these plumes are biological or geological."

The team used three telescopes on Earth to chemically analyze the Martian atmosphere from 1999 to 2006. They have since shifted the search to look for "biogenic" trace gases that would be emitted by microbes.

"We have evidence here that we need to think about the possibilities in terms of life on Mars," says astrobiologist Lisa Pratt of Indiana University in Bloomington, who spoke at a NASA briefing on the study.

The central plume in 2003 released almost 21,000 tons of methane into the planet's atmosphere. On Earth, about 10% of methane results from geologic processes, with the rest a byproduct of fermentation and other biological events.

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NASA's strategy on Mars has been to "follow the water" in the search for ancient life there, says biologist Joe Miller of the University of Southern California, who was not part of the study. "I think the proper future strategy for NASA and the European Space Agency should be 'follow the methane'," he says.



The study team has spotted signs of methane in other seasons on Mars, Villanueva says, and hopes to release the data after completing more analyses.

Past studies had indicated that methane on Mars would take several hundred years to dissipate, but the other surprise of the study was the discovery that the gas dissipated relatively quickly, in just a few years, says planetary scientist Sushil Atreya of the University of Michigan in Ann Arbor, who also spoke at the briefing. "That means something is destroying the methane quite rapidly." Scientists don't know what that something might be, although chemical agents have been suggested.

Martian methane was also described in a 2004 report on observations by the European Space Agency's Mars Express orbiter. Detailed in a *Science* magazine study, the new finding ties the plumes to the "Syrtis Major" extinct volcano region on Mars's northern hemisphere, recently discarded as a possible landing site, but under reconsideration, for the space agency's 2011 \$2.3 billion Mars Science Laboratory.

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