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### **Martian methane belch: From rocks or microbes?**

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A surprising and mysterious belch of methane gas on Mars hints at possible microbial life underground, but also could come from changes in rocks, a new NASA study found.

The presence of methane on Mars could be significant because by far most of the gas on Earth is a byproduct of life -- from animal digestion and decaying plants and animals.

Past studies indicated no regular methane on Mars. But new research using three ground-based telescopes confirmed that nearly 21,000 tons of methane were released during a few months of the late summer of 2003, according to a study published [Thursday](#) in the online edition of the journal Science.

"This raises the probability substantially that life was there or still survives at the present," study author Michael Mumma of NASA's Goddard Space Flight Center told The Associated Press.

But Mumma also said claims of life need far more evidence and this isn't nearly enough. By 2006, most of the methane had disappeared from the Martian atmosphere, adding to the mystery of the gas, he said.

The Mars belch is similar to what comes out of the waters near Santa Barbara, Calif., which comes from decaying life in the sea floor. Microbes in the Arctic and other extreme Earth environments that don't use oxygen still release methane and they have been examples of the type of life astronomers look for on other planets.

Mumma and other scientists said NASA is likely to tinker with its long-held method of looking for life on Mars by seeking water and concentrating on signs of long-gone life. Instead NASA should think about methane hotspots as a "bull's-eye" for future missions and search for present-day life below the surface, said Indiana University geologist Lisa Pratt, who spoke during a NASA press conference. She was not involved in the research.

That's because methane is not only a waste product of life, it can be a food for other life, which makes these temporary methane hotspots good places to explore, Pratt said. She said it was "slightly more plausible" that the methane came from some form of life than geological changes.

Two major geological causes of those changes are volcanic molten rock and the mixture of water, carbon dioxide and other chemicals deep underground. The molten rock explanation would have meant higher levels of sulfur dioxide, which haven't been seen, Mumma said. And the underground reaction would involve fracturing and fissures and plugged cracks; those could be there, but haven't been noticed yet, Pratt said.

There is a very slight chance that the methane came from comets or asteroids hitting Mars, but it is unlikely, said Sushil Atreya, a professor of atmospheric and space sciences at the University of Michigan, who also spoke at the press conference.

Until the study, astronomers had debated whether "whiffs of methane" on Mars were real, said Brown University geologist Jack Mustard, who wasn't part of the research. That debate is pretty much over with this paper, he said in an interview.

Now "we can start the even more contentious debate about the source," said Carnegie Institution astronomer Alan Boss, an expert on looking for life on other planets.

Mustard said he leans against believing that the methane is from life.

The methane was released in three areas in the Martian western hemisphere, near an area called Nili Fossae. That spot was considered but rejected last month as a possible landing site for NASA's next Martian rover.

NASA [may](#) reconsider using a Nili Fossae landing site in the 2011 mission, but it was going to be hard to get to, said lead NASA Mars scientist Michael Meyer.

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