

"Long before it's in the papers"

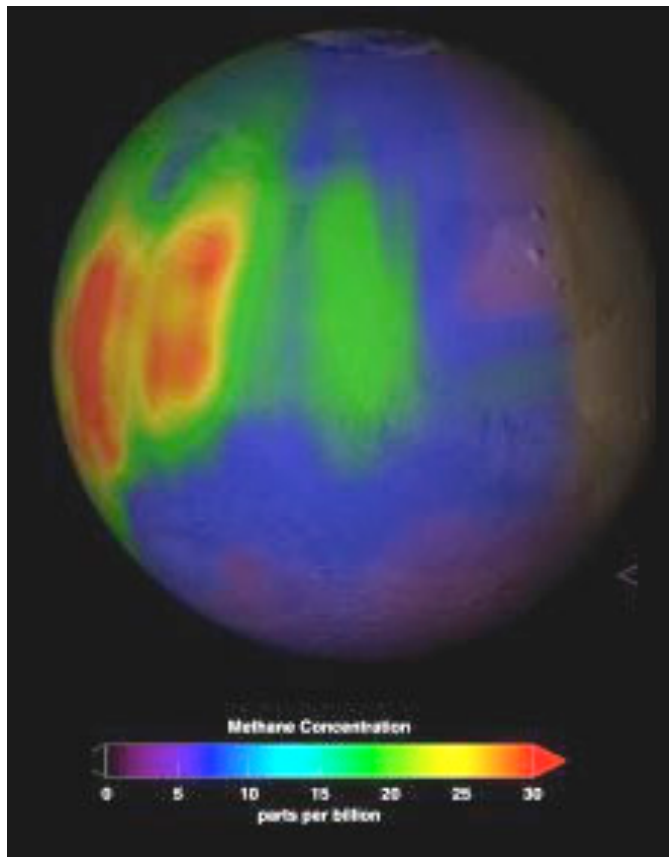
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Life on the Red Planet? Methane results boost hopes

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Courtesy Imperial College London
and World Science staff

Very little methane gas can come to Mars from meteorites, scientists have found. That leaves microbes, they say, as one of just two remaining possible explanations for methane's abundance on the red planet.

Methane, sometimes also called marsh gas, is a flammable, odorless gas produced by a range of bacteria. The gas consists of carbon atoms each of which has four smaller hydrogen atoms clinging to it.



Methane concentrations in the northern Martian atmosphere. Red shows areas of higher concentration (up to about 30 parts per billion); violet-blue indicates lower concentration. (Image courtesy NASA)

Scientists analysing data from telescopic observations and unmanned space missions have found that Mars has methane that is constantly replenished by an unknown source. Without this replenishment, methane would quickly vanish from Mars because a chemical reaction in the atmosphere, caused by sunlight, destroys it.

Researchers had thought meteorites might be responsible for Martian methane because when the rocks enter the planet's atmosphere they undergo intense heat, causing a chemical reaction that releases methane and other gases.

But the new study, by researchers from Imperial College London, found that the volumes of methane that could be released in this way are too low to explain the methane hanging around the Martian atmosphere. Previous studies had also ruled out that the methane might be delivered through volcanic activity.

This leaves only two plausible theories, according to the Imperial College researchers: either reactions between volcanic rock and water create the methane, or microbes do so, probably as a byproduct of their metabolism.

“As Sherlock Holmes said, eliminate all other factors and the one that remains must be the truth. The list of possible sources of methane gas is getting smaller and excitingly, extraterrestrial life still remains an option,” said study co-author Mark Sephton.

The findings are published Dec. 9 in the research journal *Earth and Planetary Science Letters*.

The team say their study will help NASA and European Space Agency scientists who are planning a joint mission to Mars in 2018 to search for the source of methane. Now these agency scientists can focus on just two options, the researchers said.

The team used a technique called Quantitative Pyrolysis-Fourier Transform Infrared Spectroscopy to reproduce the same searing conditions experienced by meteorites as they enter the Martian atmosphere. The team heated the meteorite fragments to 1000 degrees Celsius and measured the gases released using an infrared beam.