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## Curiosity Rover Finds No Methane on Mars--Yet

Living organisms produce more than 90 percent of the methane found in Earth's atmosphere, so scientists are keen to see if the gas is present in Mars' air. The hunt continues

By [Mike Wall](#) and [SPACE.com](#)



NASA's [Mars](#) rover Curiosity has detected no methane in its first analyses of the Martian atmosphere — news that will doubtless disappoint those who hope to find life on the Red Planet.

Living organisms produce more than 90 percent of the methane found in Earth's atmosphere, so scientists are keen to see if Curiosity picks up any of the gas in Mars' air. But the 1-ton rover has come up empty in the first atmospheric measurements taken with its [Sample Analysis at Mars](#) instrument, or SAM, researchers announced today (Nov. 2).

"The bottom line is that we have no detection of methane so far," Chris Webster, of NASA's Jet Propulsion Laboratory in Pasadena, Calif., told reporters today.

"But we're going to keep looking in the months ahead since Mars, as we all know, may yet hold surprises for us," added Webster, who is instrument lead for SAM's Tunable Laser Spectrometer. [[Mars Methane: Could It Mean Life? \(Video\)](#)]



NASA's Mars rover Curiosity used its Mars Hand Lens Imager (MAHLI) to snap a set of 55 high-resolution images on Oct. 31, 2012. Researchers stitched the pictures together to create this full-color self-portrait.

Image: NASA/JPL-Caltech/Malin Space Science Systems

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[Curiosity Rover Finds No Methane on Mars--](#)

## Methane mystery

Scientists have detected [methane in Mars' atmosphere](#) before, using a variety of instruments on the ground and in space. But measured concentrations of the gas have been quite low, ranging from 10 to 50 parts per billion or so.

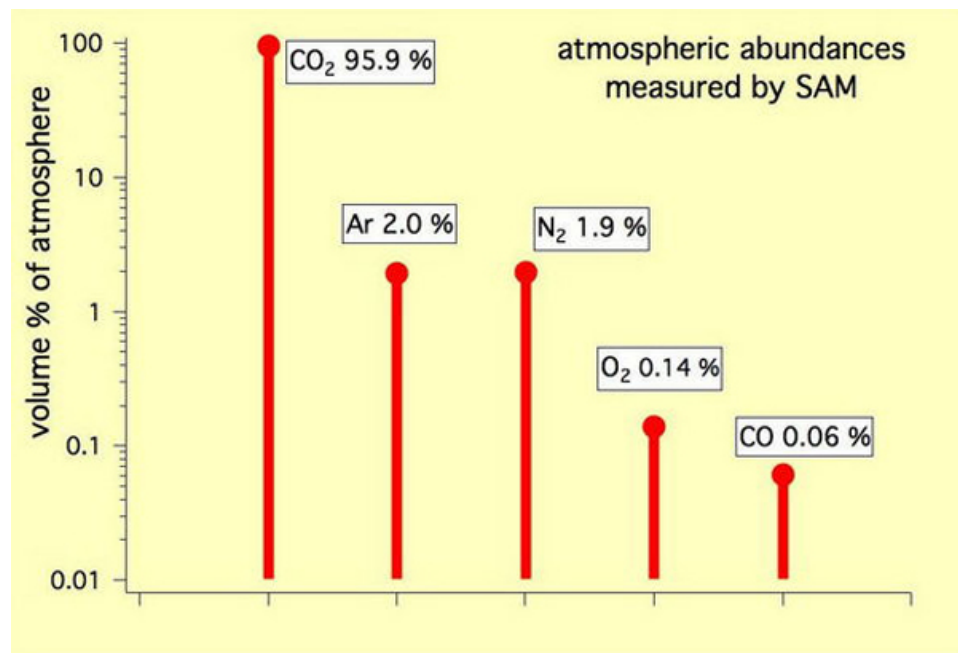
The lack of a detection by SAM does not necessarily mean these previous observations are wrong, researchers said. Methane concentrations may vary somewhat by region and over time.

"At this time, we don't have a positive detection of methane on [Mars](#)," said Sushil Atreya of the University of Michigan, a SAM co-investigator. "But that could change over time, depending on how methane is produced and how it is destroyed on Mars."

Possible non-biological sources of methane include comet strikes, degradation of interplanetary dust motes by ultraviolet light and [water](#)-rock interactions, researchers said. And the gas can be destroyed by photochemical reactions in the atmosphere or absorbed by the Martian surface.

Scientists believe that Mars' methane "sinks" are quite efficient, removing the gas from the atmosphere every few hundred years. That means any methane present in the Red Planet's air was likely generated recently.

"Stay tuned," Atreya said. "The story of methane has just begun."



This graph shows the percentage abundance of five gases in the atmosphere of Mars, as measured by the Quadrupole Mass Spectrometer instrument of the Sample Analysis at Mars instrument suite on NASA's Mars rover in October 2012.

CREDIT: NASA/JPL-Caltech, SAM/GSFC

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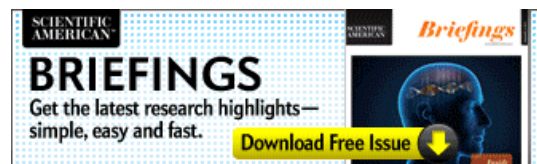
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The new atmospheric measurements — based primarily on a few sniffs Curiosity took at a site called Rocknest — could also help scientists better understand how the Red Planet may have lost much of its original atmosphere, researchers said. Mars' air is currently just 1 percent as thick as that of Earth.

In measurements of atmospheric carbon dioxide, SAM detected a roughly 5 percent increase in heavy carbon isotopes, compared to estimated isotopic compositions at the time Mars formed. (Isotopes are versions of an element that have different numbers of neutrons in their atomic nuclei.)

This suggests that the top of Mars' atmosphere was likely lost to interplanetary space at some point, researchers said.

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Just an aside...as a geologist I can say you'd get some push back if by stating that living organisms produce more than 90% of the methane in Earth's atmosphere. That's an educated guess.

Anyways, few biologists expect to find any current living organisms on Mars and, unfortunately from the soil samples so far, we've landed in a poor area for any detection of past life. Doesn't mean we can rule past life out but Curiosity was a dart that hit a discouraging site.

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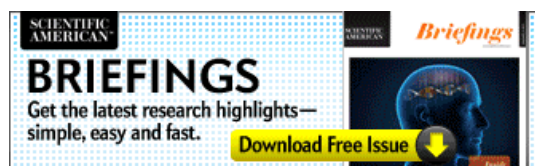
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