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NASA rover fails to find methane on Mars



First_panorama (NASA/JPL-Caltech/MSSS)



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On Sept. 19, NASA **announced** that its Curiosity rover on Mars has searched for methane and failed to find any. The **results** published in *Science* from the Tunable Laser Spectrometer (TLS) on Curiosity report a measured value for methane concentration of 0.18 ± 0.67 parts-per-billion by volume

(ppbv), which indicates a significant probability of no methane presence and an upper limit of only 1.3 ppbv at a 95 percent confidence level. The figure is a surprise to researchers because during the last decade, Earth-based telescopic observations reported methane concentrations of tens of ppbv.

Methane is an important chemical to search for because although microbial life can exist without methane and vice versa, there is a strong correlation between the two.

"This important result will help direct our efforts to examine the possibility of life on Mars," said Michael Meyer, NASA's lead scientist for Mars exploration. "It reduces the probability of current methane-producing Martian microbes, but this addresses only one type of microbial metabolism. As we know, there are many types of terrestrial microbes that don't generate methane."

"It would have been exciting to find methane, but we have high confidence in our measurements, and the progress in expanding knowledge is what's really important," said the

report's lead author, Chris Webster of NASA's Jet Propulsion Laboratory in Pasadena, Calif. Webster is the lead scientist for spectrometer, which is part of Curiosity's Sample Analysis at Mars (SAM) laboratory. The measurements of the Martian atmosphere were taken between October 2012 and June 2013.

"There's no known way for methane to disappear quickly from the atmosphere," said one of the paper's co-authors, Sushil Atreya of the University of Michigan. "Methane is persistent. It would last for hundreds of years in the Martian atmosphere. Without a way to take it out of the atmosphere quicker, our measurements indicate there cannot be much methane being put into the atmosphere by any mechanism, whether biology, geology, or by ultraviolet degradation of organics delivered by the fall of meteorites or interplanetary dust particles."

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