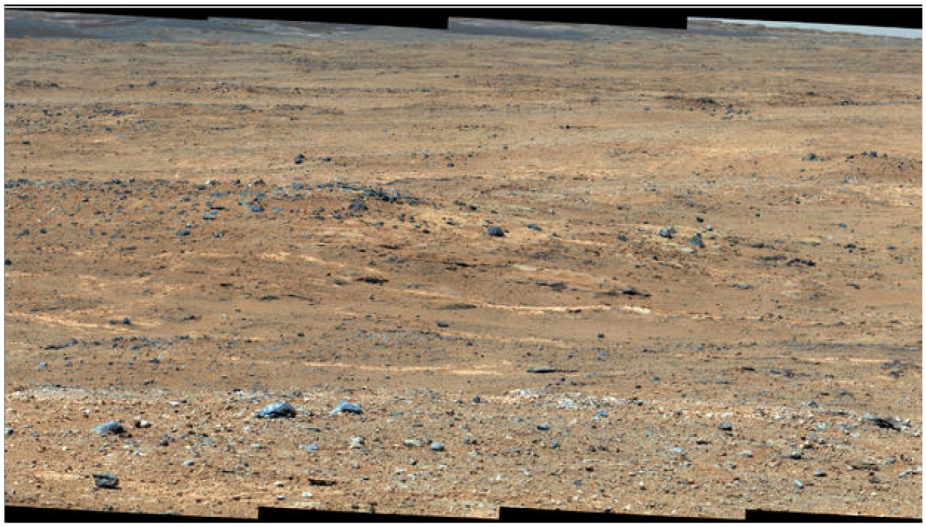
By **WILLIAM HARWOOD** / **CBS NEWS** / *September 19, 2013, 11:08 PM*

Curiosity unable to detect methane on Mars



This Sept. 7, 2013 image provided by NASA, taken by NASAâ / **AP PHOTO/NASA**

After repeatedly sniffing the thin atmosphere of Mars, NASA's Curiosity rover has not detected any clear signs of methane, contradicting earlier, long-distance observations that indicated the ubiquitous hydrocarbon, a possible by-product of microbial life, was present in measurable quantities.

While methane can be produced by non-biological means, the earlier observations had raised hopes in some quarters that Mars might harbor some form of recognizable life to this day.

But Curiosity's high-precision measurements would seem to cool those hopes.

"This important result will help direct our efforts to examine the possibility of life on Mars," Michael Meyer, NASA's lead scientist for Mars exploration, said in a statement. "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."

Using a tunable laser spectrometer, Curiosity sampled the martian atmosphere six times between October 2012 and June 2013, but was unable to detect any measurable methane. Given the sensitivity of the instrument, any methane in the atmosphere would have to be at concentrations less than 1.3 parts per billion, much less than earlier estimates based on observations from Earth and from Mars orbit.

Chris Webster, the lead scientist for the spectrometer at NASA's Jet Propulsion Laboratory, said he was confident Curiosity's measurements were accurate.

"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," he said in NASA's statement. "We measured repeatedly from Martian spring to late summer, but with no detection of methane."

Methane, a molecule made up of one carbon atom and four hydrogen atoms, is the most abundant hydrocarbon in the solar system. Remote observations indicated possible concentrations of up to 45 parts per billion in the martian atmosphere.

But those observations do not synch up with Curiosity's. The Mars rover could, in theory, detect concentrations amounting to 10 to 20 tons of methane being pumped into the martian atmosphere per year, NASA said in its release. That's 50 million times less than the amount of methane that enters Earth's atmosphere ever year.

"Methane is persistent," Sushil Atreya, a researcher at the University of Michigan, said in the NASA news release. "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."

But not everyone has given up hope. Robert Zubrin, president of the Mars Society, told The New York Times that martian life might still exist in sub-surface aquifers.

"If it had found methane, that would have been killer," he told the Times. "Yes, it's disappointing in that we didn't get a pony for Christmas. But it doesn't mean there aren't ponies out there."