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## Mars' Atmospheric Chemistry is Still Kicking, Says Rover Data

Mars is a dead world. It may have once been home to water and life, but experts have been fairly certain that the Red Planet is now nothing more than a grave frozen in time - a snapshot of what would happen to Earth if it was ever [stripped of its atmospheric protections](#). However, new data from NASA's Curiosity rover has revealed that the planet is still a bit active, at least on a chemical level.

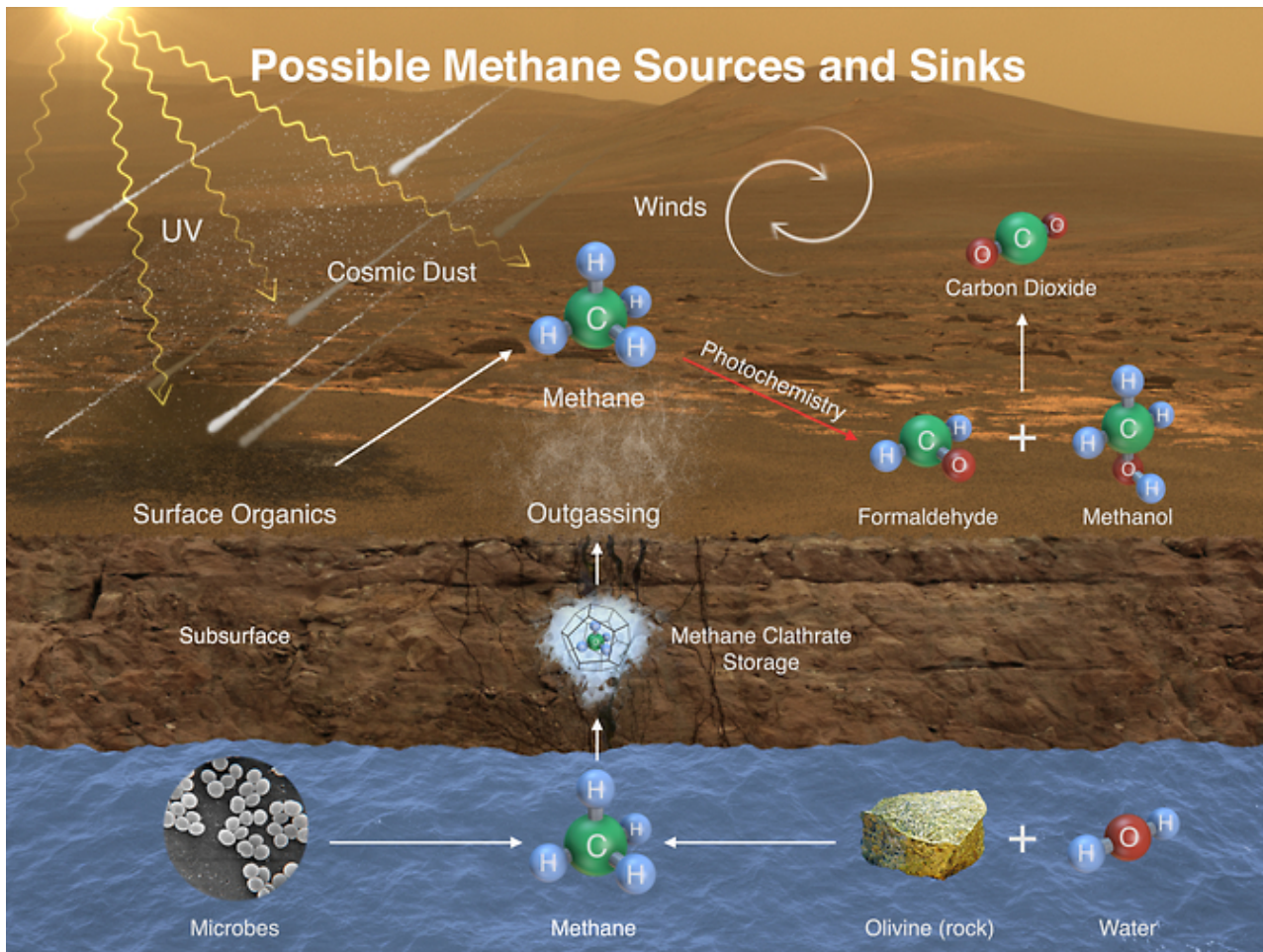
Back in 2013, researchers used Curiosity's onboard Sample Analysis at Mars (SAM) laboratory a dozen times in a 20-month period to "sniff" Mars' atmosphere as the rover [rolled up](#) to its latest mission landmark, [Mount Sharp](#).

During two of those months, in the middle of the sampling period, a series of methane measurements averaged seven parts per billion. Before and after that, readings averaged only one-tenth that level.

That's a big surprise for experts, who had long thought that the Red Planet's dusty air was relatively unchanging, with no notable geological or biological activity occurring on the planet for countless years.

"This temporary increase in methane - sharply up and then back down - tells us there must be some relatively localized source," Sushil Atreya, of the Curiosity rover science team, explained in a [statement](#).

Atreya and his colleagues have already highlighted several factors that could be changing the atmosphere's chemistry, one of which could be the presence of methane-emitting microbes deep beneath Mars' surface. Another likely cause could be an interaction between a deep water table and various types of rock, which could release methane through a chemical reaction. (*Scroll to read on...*)



(Photo : NASA/JPL-Caltech/SAM-GSFC/Univ. of Michigan)

Curiosity also detected various organic materials in Martian soil after it drilled into a rock dubbed Cumberland, marking the first definitive detection of organics on the planet.

However, this doesn't mean that Mars is still a home to hidden life, or that it ever was a source of life. Organic molecules, which contain carbon and usually hydrogen, are simply chemical building blocks life uses, and can exist without ever giving rise to life.

Still, "this first confirmation of organic carbon in a rock on Mars holds much promise," said Curiosity participating scientist Roger Summons, from MIT. "Organics are important because they can tell us about the chemical pathways by which they were formed and preserved."

This in turn can help researchers determine the differences between Mars and Earth, helping experts account for any and all factors that could impact future manned missions to the Red Planet.

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