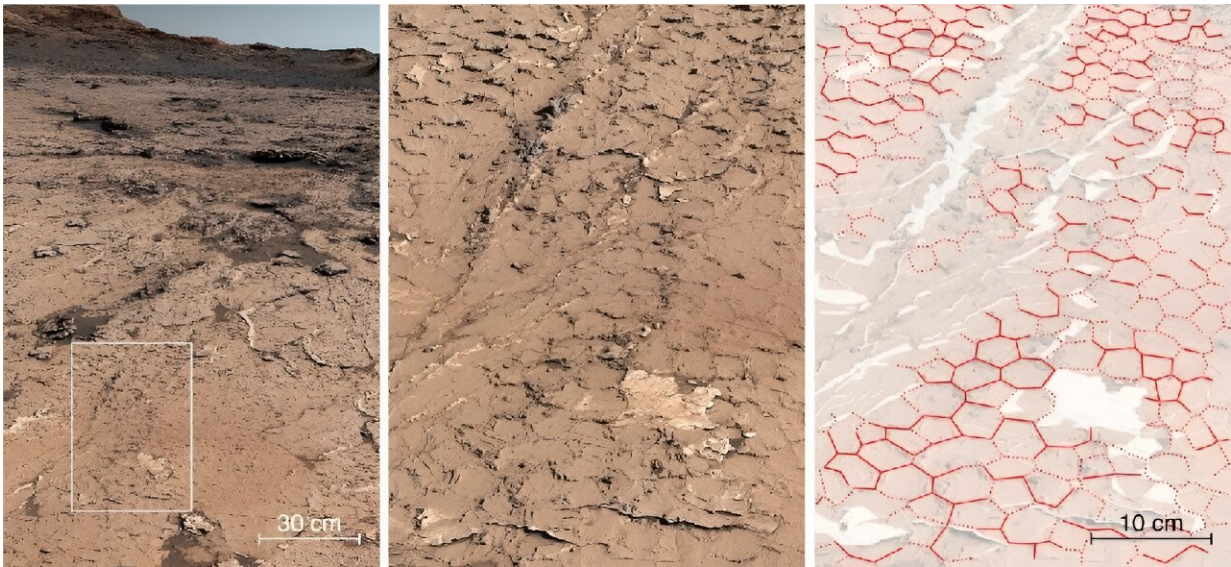


Mars once had wet-dry climate conducive to supporting life: Study

August 13 2023, by Juliette Collen



An image taken by the Curiosity rover showing the hexagonal cracked mud in a Martian crater that was once a vast lake.

NASA's Curiosity rover has discovered the first evidence that Mars once had a climate which alternated between wet and dry seasons similar to Earth, a study said on Wednesday, suggesting the red planet may have once had the right conditions to support life.

Though the surface of Mars is now an arid desert, billions of years ago rivers and vast lakes are thought to have stretched across its surface.

Since 2012, the Curiosity rover has been exploring the huge Gale crater, which is believed to be home of a former lake and has a massive mountain of sediment nearly six kilometers (four miles) high in its center.

"We quickly realized that we were working in lakes and rivers deposits, but did not know what type of climate they were linked to," William Rapin, a researcher at France's CNRS scientific research center and the study's lead author, told AFP.

While climbing the slope of the sediment mountain in 2021, Curiosity found salt deposits forming a hexagonal pattern in soil dated to nearly four billion years ago.

The rover's instruments identified the patterns as cracks in dried mud, according to the study published in the journal *Nature*.

"When a lake dries up the mud cracks, and when it fills back up, the cracks heal," Rapin explained.

Repeat this process enough times, and the cracks arrange themselves in hexagons.

Therefore, this is "the first tangible proof that Mars had a cyclical climate," Rapin said.

Regularly occurring wet and [dry seasons](#), as on Earth, could have provided the conditions needed for life to form, the researchers said.

'Pretty lucky'

Curiosity has already detected the presence of organic compounds considered the [building blocks](#) of life on Mars, which could be another

piece of the puzzle.

But these building blocks need the right conditions to become the precursors of life.

"In a world that's too dry, these molecules never have the opportunity to form—nor do they in a world that's too wet," Rapin said.

But banish thoughts of big-headed green men—if Mars did support life, it was likely primitive single-celled microorganisms.

"Over 11 years, we've found ample evidence that ancient Mars could have supported [microbial life](#)" due to the Curiosity rover, said Ashwin Vasavada of NASA's Jet Propulsion Laboratory.

"Now, the mission has found evidence of conditions that may have promoted the origin of life, too," he said in a statement.

The discovery of such ancient terrain could never have been possible on Earth, where tectonic plates constantly reshuffle the surface, sifting away such lingering traces of the past.

That means that studying Mars—which lacks [tectonic plates](#)—could help scientists solve the mystery of how life began on our home planet.

"It's pretty lucky of us to have a planet like Mars nearby that still holds a memory of the natural processes which may have led to life," Rapin said.

More information: W. Rapin et al, Sustained wet–dry cycling on early Mars, *Nature* (2023). [DOI: 10.1038/s41586-023-06220-3](https://doi.org/10.1038/s41586-023-06220-3)

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