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How a string of strange discoveries
could reveal a cosmos hidden just out of view

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MARS

Glaciers on Mars reveal the planet went through multiple ice ages

The discovery could help establish how the Martian climate has changed over time

Glaciers that have remained on the surface of Mars for hundreds of millions of years are revealing secrets of the planet's unique geological past.

By analysing the patterns and structures of rocks in 45 of the Red Planet's glaciers, researchers at Colgate University, New York, have found that Mars underwent between 6 and 20 separate ice ages over the last 300 to 800 million years.

The team made the discovery after painstakingly poring over a series of high-resolution images collected by the Mars Reconnaissance Orbiter satellite, and measuring the size of around 60,000 rocks in the photos.

If there was a single, long ice age event, they would've expected to find a steady progression of larger to smaller rocks as they gradually eroded over time. However, they found that rocks of different sizes were distributed

at random. They also found that the rocks were distributed in clear bands of debris across the glaciers' surfaces, with each marking the limit of separate and distinct flows of ice, indicating that each formed during a separate ice age.

"These glaciers are little time capsules, capturing snapshots of what was blowing around in the Martian atmosphere," said Dr Joe Levy, a planetary geologist and assistant professor of geology at Colgate University.

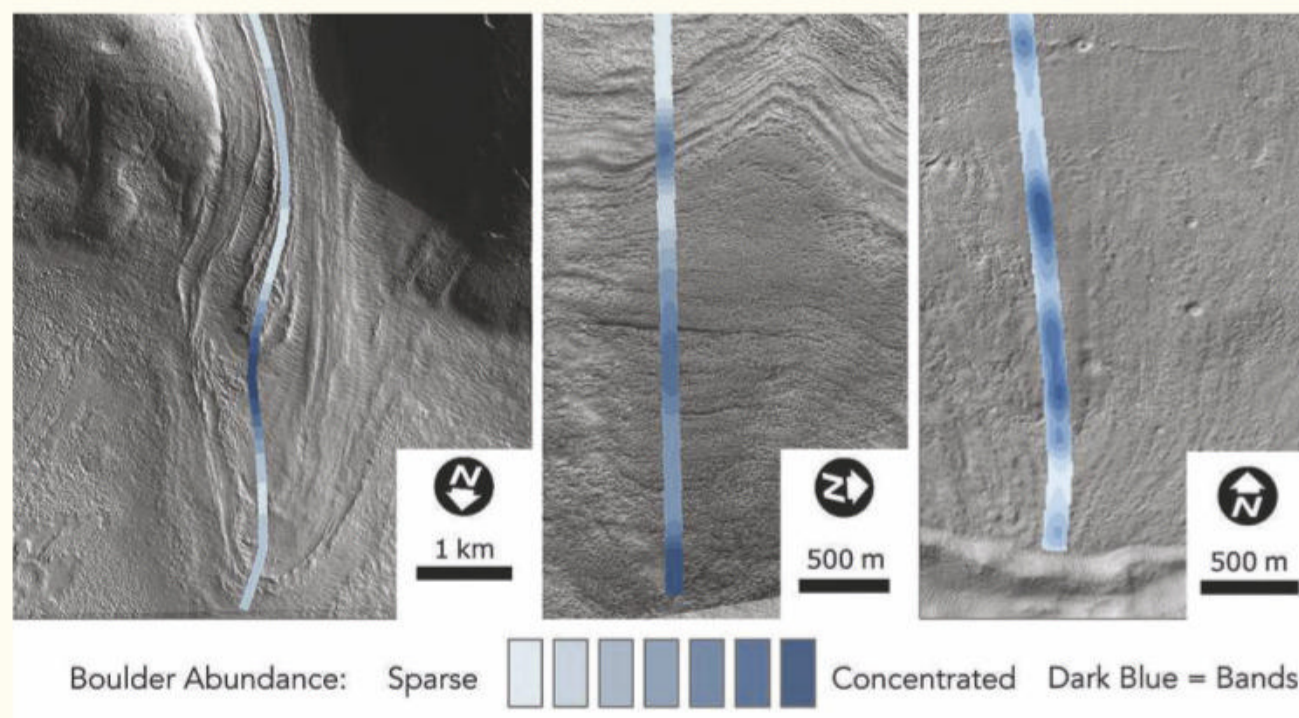
"Now we know that we have access to hundreds of millions of years of Martian history without having to drill down deep through the crust – we can just take a hike along the surface."

Further examination of the glaciers could help scientists to figure out how the climate of Mars has changed over time – as well as what kind of rocks, gases, or even microbes might be trapped inside the ice.

The researchers have now begun to map the rest of the glaciers on the Red Planet's surface and hope to use an artificial intelligence system to count and analyse the rocks, to piece together a complete planetary history of Mars.

"There's a lot of work to be done figuring out the details of Martian climate history, including when and where it was warm enough and wet enough for there to be brines and liquid water," said Levy.

These images of glaciers on Mars show the distribution of boulders in the ice



In numbers

40 billion

The number of base pairs in the genome of the Australian lungfish, making it the longest ever to be sequenced. The human genome has just three billion base pairs.

8

per cent

The percentage of dangerous PM10 particles in Milan that are generated by cigarette smoke. The city has now introduced a ban on smoking within 10 metres of another person.

96

per cent

The amount saved on the carbon footprint generated by a web-conferencing call if video-streaming is turned off, as calculated by researchers at Purdue University, Indiana.