

Life on Mars? Too dry, say scientists

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United Kingdom and the United States have been analysing individual particles of Martian soil that were gathered as part of a 2008 NASA Phoenix mission to Mars. They present their findings in the journal Geophysical Research Letters.

The Phoenix, a robotic spacecraft that was sent to explore Mars by an international consortium of scientists led by NASA, landed on Mars in May 2008. Mission scientists controlling the craft from Earth, based at mission control in the University of Arizona in the United States, used instruments onboard to search for any clues of microbial life. The Phoenix touched down in the northern arctic region of the planet with the aim of searching for signs that it was habitable, and analysing ice and soil on the surface.

The team analysed soil samples dug up by a robot arm, using an optical microscope to produce images of larger sand-sized particles, and an atomic-force microscope to produce 3D images of the surface of particles as small as 100 microns across.

Results from the soil analysis suggest that Mars has been extremely dry for over 600 million years. These findings follow previous research that uncovered the ice indicating that Mars could have experienced a warmer and wetter period more than 3 billion years ago.

By looking for the microscopic clay particles that are formed when rock is broken down by water, the team were able to draw conclusions. Such particles are an important marker of contact between liquid water and the soil as they form a distinct population in the soil, but the researchers found no such marker. Even if the few particles they saw in this size range were in fact clay, they would make up less than 0.1 % of the total proportion of the soil in the samples - clay on Earth can make up 50 % or more of the soil content.

The team's results also showed that the soil on Mars had been exposed to liquid water for at most 5 000 years since its formation billions of years ago.

Lead study author Dr Pike, from Imperial College London, comments on the findings: 'We found that even though there is an abundance of ice, Mars has been experiencing a super-drought that may well have lasted hundreds of millions of years. We think the Mars we know today contrasts sharply with its earlier history, which had warmer and wetter periods and which may have been more suited to life. Future NASA and ESA missions that are planned for Mars will have to dig deeper to search for evidence of life, which may still be taking refuge underground.'

Although the team's findings are based on analysis of one region of the planet, previous studies have confirmed that soil on Mars is quite uniform across the whole planet, meaning that these results can more than likely be applied to the whole of Mars.For more information, please visit:Imperial College London:http://www3.imperial.ac.uk/

Countries

Switzerland, Germany, Denmark, Netherlands, United Kingdom, United States

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