Researchers find possible caves on Mars

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Applying techniques used to scope out caves on Earth to probe the possibility of caves on Mars is paying off.

NAU researchers Glen Cushing and J. Judson Wynne, working at the U.S. Geological Survey, propose that photos from the Mars Odyssey mission reveal football-field size holes that could be entrances to caves.

"If there is life on Mars, there is a good chance you'd find it in caves," said Wynne, an NAU graduate student in biological sciences and project leader for the USGS Earth-Mars Cave Detection Program.

He said the possible discovery could lead to more focused Mars explorations.

Martian caves are considered the "best potential havens for life" because they would be protected from surface radiation and other factors, he said.

"The Martian surface is an extremely harsh environment, so the significance of caves is in their protective nature," said Cushing, a graduate teaching assistant in NAU's Department of Physics and Astronomy, who was the first to spot the black areas on the photographs. "Caves on Mars could become habitats for future explorers, or could be the only structures that preserve evidence of past or present microbial life."

Cushing and Wynne, along with Tim Titus, an astrophysicist with USGS, and Phil Christensen, the chief scientist for the NASA imaging instrument and a researcher from Arizona State University, recently submitted their findings in a research paper at the 38th Lunar and Planetary Science Conference.

The claim for caves is based on an analysis of photographs from the Thermal Emission Imaging System aboard NASA's Mars Odyssey orbiter, which revealed seven black spots near a massive Martian volcano, Arsia Mons. Although this area of Mars is known for geological occurrences, the researchers said the dark spots do not look like impact craters because they don't have raised rims or blast patterns

"This is a very interesting discovery with positive implications," said Nadine Barlow, an associate professor in physics and astronomy at NAU and expert on Martian impact craters. "Caves on Mars could be good places for long-term ice accumulation and that would make them ideal locations to look for life on Mars as well as valuable reservoirs for water to support future human exploration of the planet."

The Earth-Mars Cave Detection Program's overall objective is to

develop techniques for systemically detecting caves on Earth in the thermal infrared and then applying these techniques to searching for caves on Mars, Wynne explained.

The team reported possible caverns ranging from 330 to 825 feet wide and 425 feet deep They've been named after loved ones of the researchers: Dena, Chloe, Wendy, Annie, Abbey, Nikki and Jeanne.

Christensen said the first avenue for further observations could be provided by NASA's latest Red Planet probe, the Mars Reconnaissance Orbiter. "The spacecraft's high-resolution camera could take a closer look at the seven sisters-including sidelong glances that might show whether the features open up into wider chambers beneath," Christensen said.

Source: Northern Arizona University

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