

Mystery of slick Martian slopes gets less slippery

Streaks observed on the surface of Mars could be caused by melting ice.

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20 March 2012

Sure, everyone knows that Mars was, once upon a time, warmer and wetter. And that, even today, it has huge amounts of water locked in polar ice caps and subterranean glaciers. But planetary scientists are becoming more and more confident that liquid water exists at or near the surface today.

Last summer, the team pointing the HiRISE camera on the NASA Mars Reconnaissance Orbiter (MRO) [dropped that bombshell](#): it had identified 7 confirmed and 12 likely sites that contained hundreds of narrow streaks on steep slopes inside crater walls. During warmer seasons, as temperatures rose as high as 27 degrees Celsius, the streaks darkened, and then faded again. Salts could allow brines to be liquid at these temperatures. Today at the Lunar and Planetary Science Conference in The Woodlands, Texas, the HiRISE team [announced that it now has doubled its stash of streaks](#), with the identification of 15 confirmed and 23 likely sites, all in the mid-latitudes of the Southern Hemisphere.

In their *Science* paper last year, the HiRISE researchers, led by planetary geologist Alfred McEwen of the University of Arizona in Tucson, avoided any outright invocation of water as the cause, saying that the seasonal darkening might also be caused by a change in surface texture. McEwen's main reason for caution was that CRISM, a spectrometer on MRO, hadn't found a signature for water at any of the streak sites.

But now one of his students [has done an analysis](#) showing just how difficult it would be for CRISM to make the water detection. (The resolution of CRISM is much lower than that of HiRISE, and it takes its images at a time of day when the liquid water is unlikely to be present.)

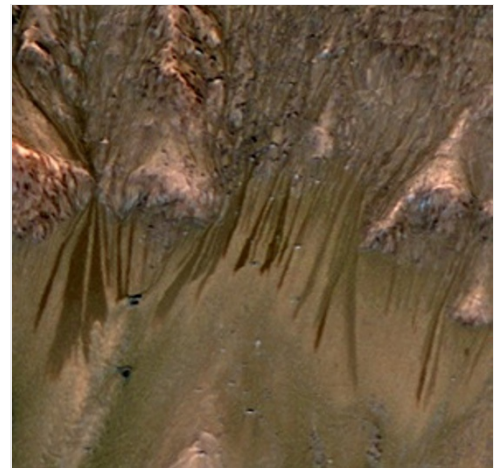
So McEwen is now a little more willing to state the obvious explanation for the streaks: that water ice, just below the surface, is melting just enough to flow through the pores of the sandy material at or near the surface. "It's a lot easier to explain why CRISM isn't seeing water," McEwen says. "Now I'm back to saying it could be wetting and drying."

Joe Levy, of Oregon State University in Corvallis, agrees. He performed a study showing just how [analogous the streaks are to ones in Antarctica](#) that are certainly caused by water moving through pores in the subsurface material. And, he says, the streaks provide a habitable environment in an otherwise inhospitable place.

"In Antarctica, these places are oases. They're full of carbon, microbes, and algae," he says. All the more reason to pursue the same spots on Mars, he adds. "Astrobiologically speaking, these are probably the most important spots on Mars right now."

Yet, although NASA has talked about a goal of "following the water" on Mars, it has limited that search to sites where water flowed in the ancient past. With the [Mars-exploration budget in shambles](#), the agency now has no plans to follow up on the orbiter's discovery.

Nature | doi:10.1038/nature.2012.10268



NASA/JPL/University of Arizona

Mysterious streaks on the slopes of craters on Mars could be telltale signs of water just below the surface.