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Mars Rover Finds Possible New Evidence of Past Water - 2004-10-08

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The U.S. space agency NASA says one of its two rovers on Mars has found possible fresh evidence that liquid water existed there in the past.

The robotic rover named *Opportunity* has observed flat rocks that bear a network of cracks on their surfaces. NASA says they look liked cracked mud on Earth after water has dried.

The rocks are at the bottom of Endurance crater. Researchers at the Jet Propulsion Laboratory in Pasadena, California say the findings raise the possibility that *Opportunity's* work area was soaked long ago before it dried and eroded into a wide plain. They say there are also signs the area became submerged again after an impact excavated the large crater.

The scientists concede, however, that there may be alternative explanations that do not involve water. For example, the rock surfaces could have been fractured by the force of the impact that dug the crater. They hope that the rover's next rock target, a lumpy boulder, will narrow the list of possible explanations.

Earlier this year, *Opportunity* found evidence of salt compounds in protruding bedrock, indicating the past presence of an extensive, but shallow salty sea that could have supported life.

On the other side of Mars, the twin *Spirit* rover also found bedrock extensively altered by water. Now it is exploring a low set of nearby hills seeking unaltered rock for comparison to help scientists understand the full range of environmental changes. It has not found any yet. Even the freshest looking rocks *Spirit* finds have shown signs of pervasive soaking.

Cornell University geologist Jim Bell said the new set of rocks is different than what Spirit had been looking at. "It's exciting to be in a different area than the volcanic plains we saw earlier in the mission, to be measuring different kinds of rocks that we think are telling us more about the history of water in this part of the planet," he said.

One week ago, NASA extended the rovers' mission for the second time. The original mission, beginning after their January landing, was to last three months. However, the robots have continued operating long past their planned lifetime. The Martian atmosphere has cooperated by minimizing dust storms, causing much less dust than expected to accumulate on the solar energy panels.

Mr. Bell said they are generating 70 percent of the electricity they did at the start of the mission, enough to power the vehicles and their instruments. "These rovers are now surviving more than three times their expected lifetime. None of us dreamed back in January that we would still be operating with fully functional instruments this late in the mission. We're obviously thrilled, we're exhausted, we're excited, but certainly as long as we keep doing this science, discovering new things, we're really, really happy to be still alive," he said.

The latest mission extension means that the Mars rovers are authorized to continue research until April first next year if they do not break down before then.