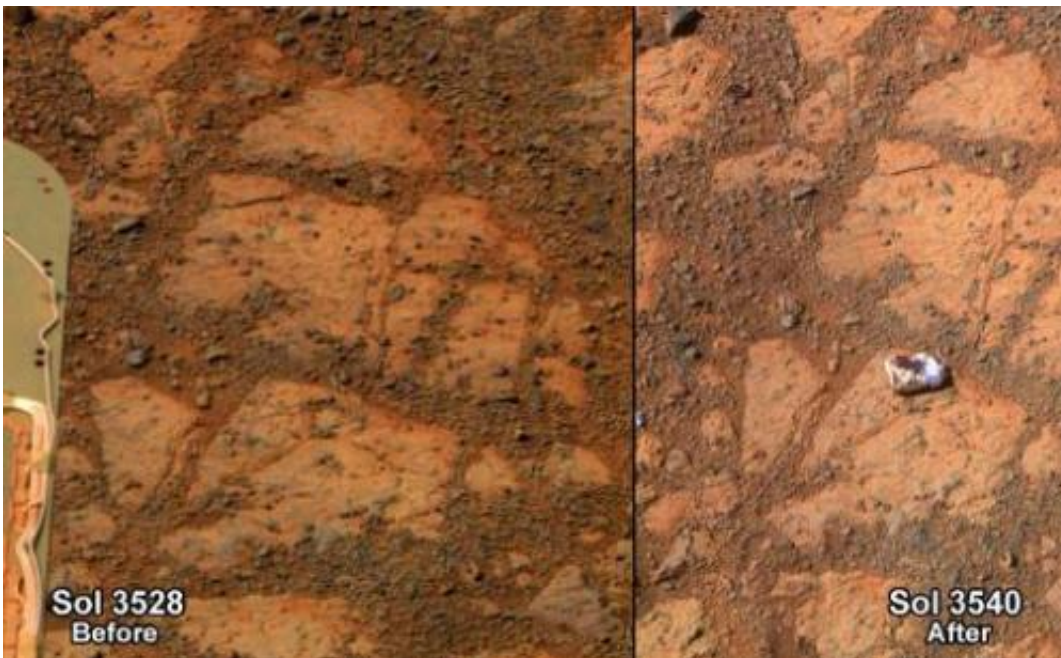


# NASA solves mystery of Mars 'doughnut' rock

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NASA image shows before-and-after of the same patch of ground in front of NASA's Mars Exploration Rover Opportunity 13 days apart documenting the arrival of a bright rock onto the scene, on January 22, 2014

NASA scientists were finally able to explain the origin of the mysterious rock shaped like a jelly doughnut that appeared near the rover Opportunity in early January.

The small, round object suddenly popped up in pictures taken 12 days apart by the US [space agency](#)'s decade-old Opportunity rover.

On December 26, 2013, it was not there. On January 8, it was. But what is it?

The explanation is somewhat prosaic: the 1.5 inches (four centimeters) wide, white-rimmed, red-centered [rock](#), dubbed Pinnacle Island, is a piece of a larger rock that was broken and moved by Opportunity's wheel in early January.

"Once we moved Opportunity a short distance, after inspecting Pinnacle Island, we could see directly uphill an overturned rock that has the same unusual appearance," said Opportunity Deputy Principal Investigator Ray Arvidson of Washington University in St. Louis on Friday.

"We drove over it. We can see the track. That's where Pinnacle Island came from."

The rock however is unusual.

A close examination with Opportunity's spectrometer showed "high levels of elements such as manganese and sulphur, suggesting these water-soluble ingredients were concentrated in the rock by the action of water," NASA said.

"This may have happened just beneath the surface relatively recently," Arvidson said, "or it may have happened deeper below ground longer ago and then, by serendipity, erosion stripped away material above it and made it accessible to our wheels."

Opportunity is one of two Mars Exploration Rovers. Its companion, Spirit, stopped communicating with Earth in 2010.

Both have lived long beyond their planned 90-day missions and have made important discoveries about water on Mars and environments that

might have supported microbial life in the distant past.

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