

Mars rover Opportunity climbs to high point on rim

January 9 2015, by Guy Webster



NASA's Mars Exploration Rover Opportunity recorded this view just after reaching the summit of "Cape Tribulation," on the western rim of Endeavour Crater, on Jan. 6, 2015, the 3,894th Martian day, or sol, of the rover's work on Mars. The site is about 440 feet (about 135 meters) higher in elevation than the plain surrounding the crater, higher than any other point Opportunity has reached since it began exploring the Endeavour rim in 2011. This view spans from northeast, at left, to south-southeast, at right. Credit: NASA/JPL-Caltech

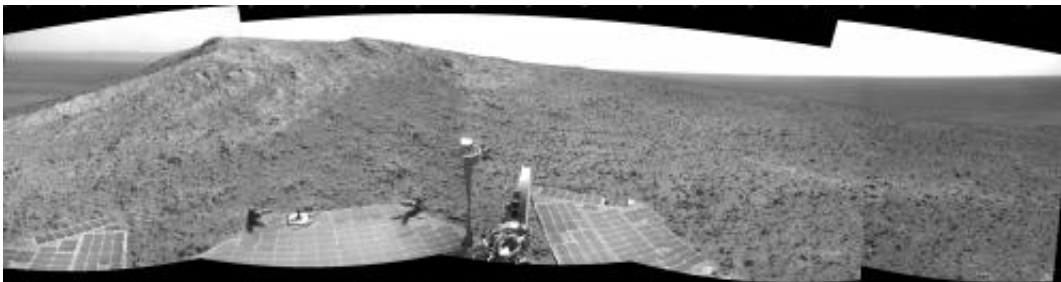
After completing two drives this week, NASA's Mars Exploration Rover Opportunity has paused to photograph the panoramic vista from the highest point the rover has reached during its 40 months of exploring the western rim of Mars' Endeavour Crater. The view is one of the grandest in Opportunity's Martian career of nearly 11 years and more than 25.8 miles (41.6 kilometers).

The rover has been having trouble with a section of its flash memory, the type of memory that can store data even when power is switched off. Opportunity's operators at NASA's Jet Propulsion Laboratory, Pasadena, California, have adopted a tactic of avoiding use of the flash memory, while they prepare a software remedy to restore its usability.

The rover is atop "Cape Tribulation" on Endeavour Crater's rim. Like the informal names for several other features around the 14-mile-wide (22-kilometer-wide) crater, the name Cape Tribulation is a reference to one of the locations visited by the HMS Endeavour captained by James Cook in his first voyage of discovery to Australia and New Zealand in 1769-1771.

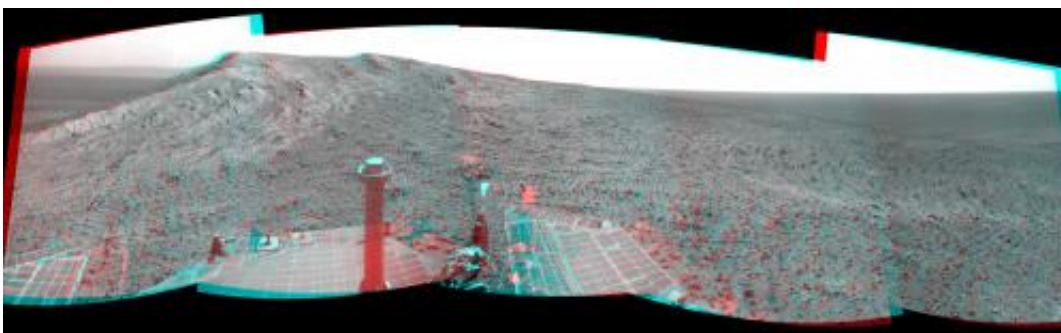
The summit's elevation is about 440 feet (about 135 meters) above the plains surrounding the crater. Drives completed on Jan. 5 and Jan. 6, without use of flash memory, brought Opportunity the final 174 feet (53 meters) southeastward to the crest.

From this site, Opportunity will proceed southward along the crater rim to a location called "Marathon Valley," where water-related minerals have been detected from orbit. That site's informal name comes from the calculation that Opportunity will have completed a marathon-footrace's distance of driving (26.2 miles, or 42.2 kilometers) by the time the rover gets there. The rover's current odometry is 25.86 miles (41.62 kilometers).



NASA's Mars Exploration Rover Opportunity recorded this view of the summit of "Cape Tribulation," on the western rim of Endeavour Crater, on the day before the rover drove to the top. This crest is about 440 feet (about 135 meters) higher in elevation than the plain surrounding the crater, higher than any other point Opportunity has reached since it began exploring the Endeavour rim in 2011. This view combines four images taken by Opportunity's navigation camera on Jan. 5, 2015, during the 3,893rd Martian day, or sol, of the rover's work on Mars. The summit is about 40 feet (about 12 meters) southwest of the location from which the images were taken. Credit: NASA/JPL-Caltech

Opportunity powers down every night in order to have enough energy for daily operations. Without use of the onboard flash memory, it cannot store images or other data overnight. While operating in a no-flash mode, the mission is downloading each day's data before beginning the overnight sleep. Meanwhile, the rover team is testing a software fix that would mask off the portion of the flash memory that has problems. This would allow resuming use of the rest of the flash memory.



NASA's Mars Exploration Rover Opportunity recorded this stereo view of the summit of "Cape Tribulation," on the western rim of Endeavour Crater, on the day before the rover drove to the top. The scene appears three-dimensional when seen through blue-red glasses with the red lens on the left. This crest is about 440 feet (about 135 meters) higher in elevation than the plain surrounding the crater,

higher than any other point Opportunity has reached since it began exploring the Endeavour rim in 2011. This view combines images taken by the left-eye and right-eye cameras of Opportunity's stereo navigation camera on Jan. 5, 2015, during the 3,893rd Martian day, or sol, of the rover's work on Mars. The summit is about 40 feet (about 12 meters) southwest of the location from which the images were taken. Credit: NASA/JPL-Caltech

"The fix for the [flash memory](#) requires a change to the rover's flight software, so we are conducting extensive testing to be sure it will not lead to any unintended consequences for [rover](#) operations," said JPL's John Callas, project manager for Opportunity.

Opportunity landed on Mars on Jan. 25, 2004, Universal Time (on Jan. 24, 2004, Pacific Standard Time) for a mission planned to last three months. Since then, and during the 2004-2010 career of Opportunity's twin, Spirit, NASA's Mars Exploration Rover Project has yielded a range of findings proving wet environmental conditions existed on ancient Mars—some very acidic, others milder and more conducive to supporting life.

Provided by Jet Propulsion Laboratory

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