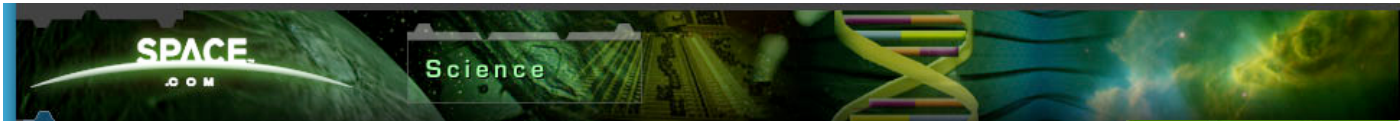


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### Crater on the Moon Gets Stunning Close-Up

By [Clara Moskowitz](#)  
SPACE.com Staff Writer  
posted: 19 January 2010  
03:17 pm ET

New photographs taken by a satellite in orbit around the moon have revealed one of its most prominent craters in a whole new light.

The moon's Tycho Crater, though average in size, is special because it appears to have formed relatively recently. The vast crater still looks pristine in the new images, while older craters are slowly covered by newer impacts as their features are obscured over the years.

Like all the moon's craters, Tycho is thought to have formed when a space rock slammed into the surface. Since the moon lacks Earth's protective atmosphere, which vaporizes small asteroids on collision courses, even tiny rocks can make a dent on the lunar surface.

The [new images](#) were captured by NASA's Lunar Reconnaissance Orbiter (LRO) and released Jan. 14. The robotic spacecraft is on a scouting mission to map the [moon's surface](#) in great detail to help plan for the proposed manned trips on the horizon.

Rays of material ejected during the impact are still visible around Tycho, as is the central heap of debris that resulted when melted material flowed back down the crater's slopes and solidified in the middle. Because it is so well preserved, Tycho offers a unique chance to study the mechanics of how craters form, researchers said in a statement.

Tycho is about 53 miles (85 km) in diameter. Without directly sampling rocks from inside the crater, scientists can't be sure how old it is.

One of their best guesses comes from rocks collected by astronauts at the Apollo 17 landing site that may have originated at Tycho and been displaced by the impact. Radiometric age dating of these rocks indicates they formed about 108 million years ago, meaning the Tycho crater may have formed then as well.

"This may still seem old, but compared to the 3.9 billion-year age for many large lunar craters, Tycho is the new kid on the block," LRO researchers said in a statement.

To find the truth about Tycho's age, scientists will need rocks collected inside the crater. These may finally be available soon, since the site has been chosen as a possible landing spot for future manned missions to the moon in the 2020s under [NASA's Constellation](#) program.

"Directly sampling material from within the crater would help us learn more about not just when Tycho formed, but the ages of terrains on other planets throughout the solar system," the scientists said.

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LRO image of Tycho crater. The proposed Constellation site is to the North of the crater's central peak. Credit: NASA/Goddard/Arizona State University

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Boulders and impact melt line the floor of the 85-km Tycho crater on the moon, a potential site for future exploration. Scene width is 620 meters. Credit: NASA/Goddard/Arizona State University

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