# NASA's LCROSS Reveals Target Crater For Lunar South Pole Impacts

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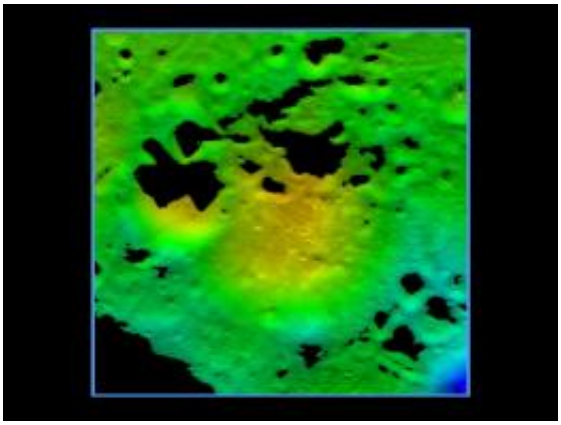

Close up image of crater Cabeus A near the moon's south pole and show crater elevation. Yellow represents lower elevations. Credit: NASA/JPL

(PhysOrg.com) -- NASA has selected a final destination for its Lunar Crater Observation and Sensing Satellite, or LCROSS, after a journey of nearly 5.6 million miles that included several orbits around Earth and the moon. The mission team announced Wednesday that Cabeus A will be the target crater for the LCROSS dual impacts scheduled for 7:30 a.m. EDT on Oct. 9, 2009. The crater was selected after an extensive review as the optimal location for LCROSS' evaluation of whether water ice exists at the lunar south pole.

LCROSS will search for water ice by sending its spent upper-stage Centaur rocket to impact the permanently shadowed polar crater. The

satellite will fly into the plume of dust left by the impact and measure the properties before also colliding with the lunar surface. The LCROSS team selected Cabeus A based on a set of conditions that include proper debris plume illumination for visibility from Earth, a high concentration of hydrogen, and mature crater features such as a flat floor, gentle slopes and the absence of large boulders.

"The selection of Cabeus A was a result of a vigorous debate within the lunar science community that included review of the latest data from Earth-based observatories and our fellow lunar missions Kaguya, Chandrayaan-1, and the Lunar Reconnaissance Orbiter," said Anthony Colaprete, LCROSS project scientist and principle investigator at NASA's Ames Research Center in Moffett Field, Calif. "The team is looking forward to the impacts and the wealth of information this unique mission will produce."

A cadre of professional astronomers using many of the Earth's most capable observatories is helping maximize the scientific return from the LCROSS impacts. These observatories include the Infrared Telescope Facility and Keck telescope in Hawaii; the Magdalena Ridge and Apache Ridge Observatories in New Mexico and the MMT Observatory in Arizona; the newly refurbished Hubble Space Telescope; and the Lunar Reconnaissance Orbiter, among others.

"These and several other telescopes participating in the LCROSS Observation Campaign will provide observations from different vantage points using different types of measurement techniques," said Jennifer Heldmann, lead for the LCROSS Observation Campaign at Ames. "These multiple observations will complement the LCROSS spacecraft data to help determine whether or not water ice exists in Cabeus A."

During a media briefing Sept. 11, Daniel Andrews, LCROSS project manager at Ames, provided a mission status update indicating the

spacecraft is healthy and has enough fuel to successfully accomplish all mission objectives. Andrews also announced the dedication of the LCROSS mission to the memory of legendary news anchor, Walter Cronkite, who provided coverage of NASA's missions from the beginning of America's manned space program to the age of the space shuttle.

"Dad would sure be proud to be part, if just in name, of getting humans back up to the moon and beyond," said Chip Cronkite, son of the famed news anchor.

The LCROSS mission was selected in April 2006 as a mission manifested with the Lunar Reconnaissance Orbiter. Both missions launched on June 18, 2009 on an Atlas V from Cape Canaveral, Fla. The LCROSS mission and science operations are managed at Ames.

"The LCROSS team has long been preparing for its final destination on the moon, and we're looking forward to October 9," Andrews said. "The next 28 days will undoubtedly be very exciting."

Provided by JPL/NASA (news : web)