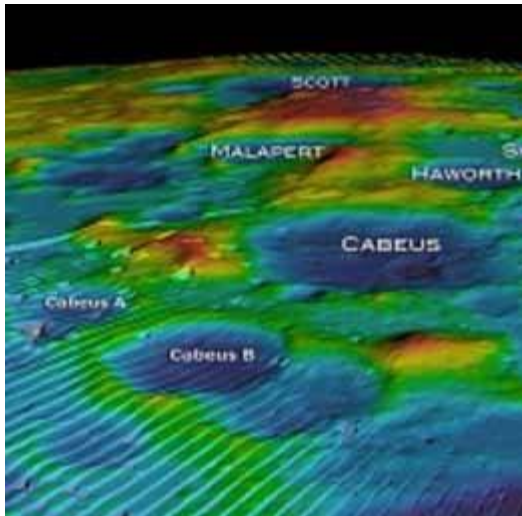


News

Target crater changed for Moon crash

Evidence of ice convinces NASA team to make last-minute switch.

[Eric Hand](#)



It's Cabeus over Cabeus A for the lunar impact. (NASA)

Scientists have picked a new target for the planned 9 October crash of a NASA spacecraft into a crater near the Moon's south pole.

The Lunar Crater Remote Observation and Sensing Satellite (LCROSS) will now plough into Cabeus, a 100-kilometre-wide crater, in the hopes of kicking up some ice along with the rock and dust of the lunar soil. This is a switch from the previous target, Cabeus A, a crater half as wide that sits further from the south pole.

Cabeus A presented favourable viewing angles for the many telescopes on Earth that will be trained on the impact site. But instruments aboard the Lunar Reconnaissance Orbiter, launched with LCROSS on 18 June, have been offering up startling evidence: not only that water could be locked in a deep freeze within permanently shadowed polar craters, but also that there are significant differences between the craters (see ['Water on the moon?'](#)). In particular, a neutron-counting instrument has shown a significant excess of hydrogen — a possible indicator of ice — within Cabeus. "The Cabeus region seems to be one of the places that could be the wettest, so we'd like to go there," says Jennifer Heldmann, the LCROSS observation campaign coordinator at NASA's Ames Research Center in Moffett Field, California.

Cabeus is deeper than Cabeus A, so the impact plume will have to rise higher to be seen from Earth. But Heldmann says this drawback is mitigated by a deep cleft in the rim wall of Cabeus, which will make viewing lower parts of the plume not as difficult as it could be.

The LCROSS team told astronomers of the new target on 25 September. Nancy Chanover, an astronomer at New Mexico State University in Las Cruces, says the adjustment shouldn't be too difficult. "It's not a big burden," says Chanover, who is leading an effort to deduce the composition of the plume through an analysis of its ballistics. Twenty professional observatories, including the Hubble Space Telescope, will be watching the event, and hundreds of amateur astronomers are expected to add their data to the mix.

But LCROSS itself, which has two components, will have the closest view. The spent upper stage of an Atlas V rocket will provide the main punch. A 'shepherding spacecraft', following four minutes behind, will watch the impact until the plume envelops it and conceals its own crash.