



Fly me INTO the Moon: Nasa prepare to crash probe on lunar surface

By [Claire Bates](#)

Last updated at 4:44 PM on 07th October 2009

Nasa are set to create 'one more dimple' on the Moon as they prepare to crash a rocket into the lunar surface.

The Lunar CRater Observation and Sensing Satellite (LCROSS) will search for water and ice on our nearest neighbour by crashing into a crater in the Cabeus region near the Moon's South Pole. The impact will create a dent around a third the size of a football pitch.

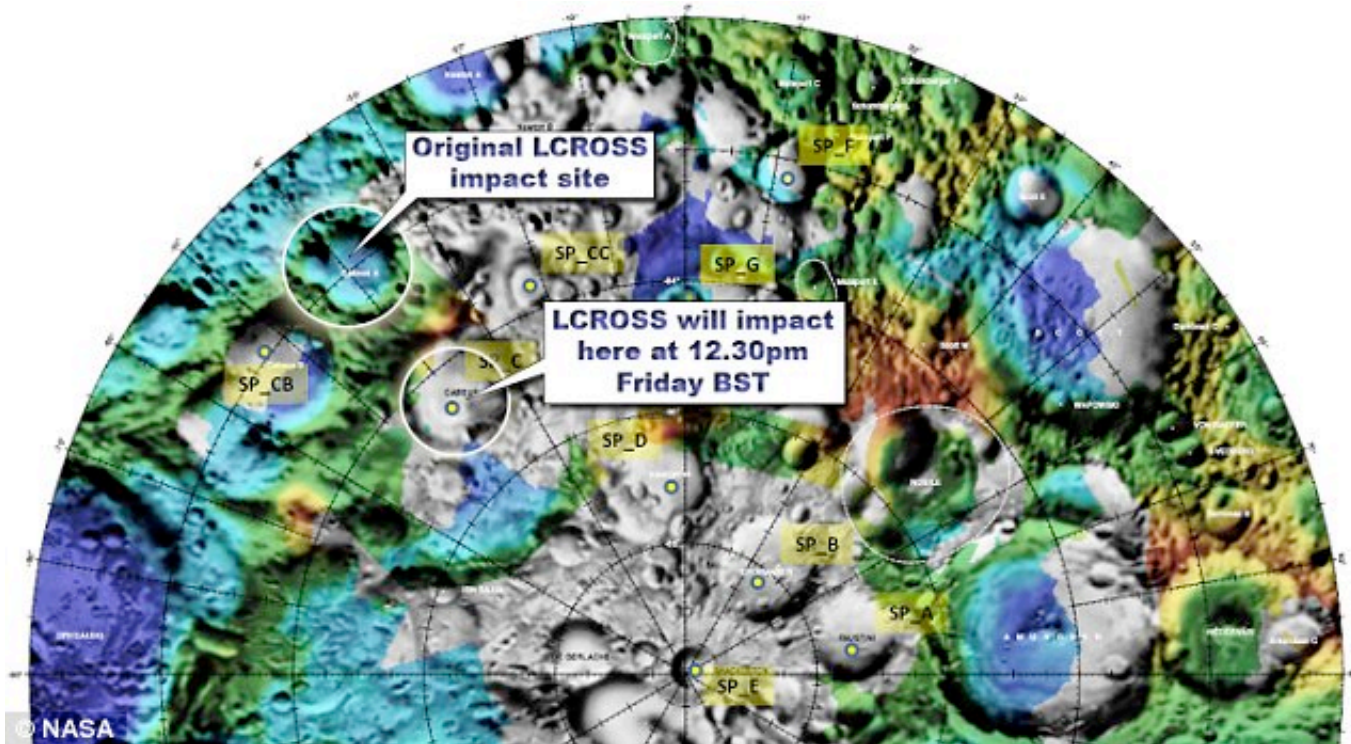


An artist's rendering of the LCROSS spacecraft and Centaur separation. The Centaur will make the first impact with the rest of the spacecraft passing through the debris plume four minutes later.

A heavy vehicle called Centaur will separate from the LCROSS spacecraft and plummet onto the target site creating the first plume of debris. The spacecraft will follow minutes later and fly through the debris plume collecting and relaying data back to Earth. It will then also crash creating a second debris plume.

Approximately 350 tonnes of material will be propelled into the sunlight and breakdown to their basic components, so scientists can study the composition using ground-based telescopes.

The event will come just weeks after exciting research revealed widespread water on the surface of the Moon.



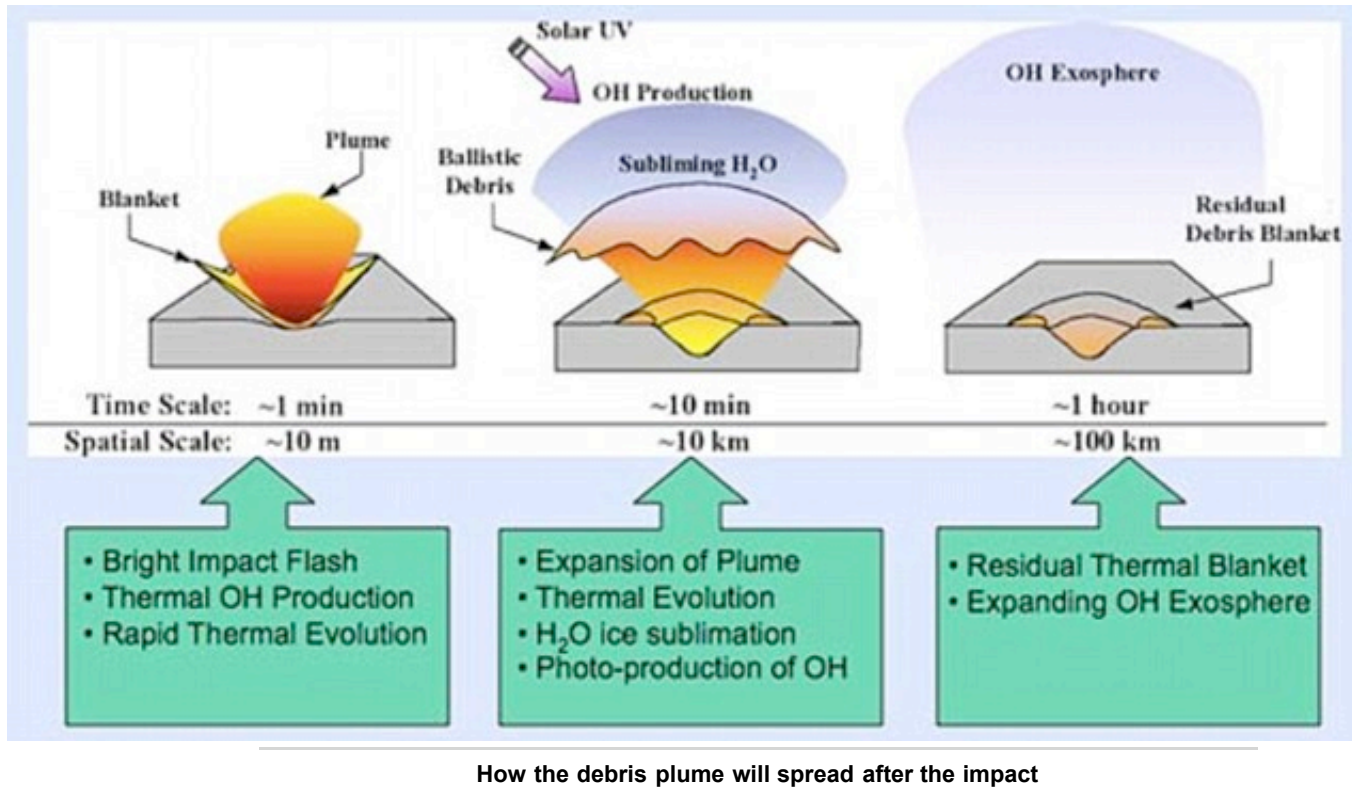
This image of craters near the Moon's south pole is based on current information about the age, depth and structure of the selected craters. The LCROSS team have chosen Cabeus Proper as the impact site

The Moon Mineralogy Mapper on board India's Chandryaan-1 picked up the electromagnetic radiation signature of water on and a few inches below the surface. Surprisingly the signal was emitted from sunlit areas as well as near the two poles. This was confirmed by two other spacecraft.

The impact of the LCROSS has been timed for 12.30pm this Friday so won't be visible in Britain but amateur astronomers in America should be able to view the explosion through 10" telescopes.

Dr Vincent Eke, from Durham University, has helped Nasa decide where to crash the probes in search of water.

He identified the Cabeus crater as a site with high concentrations of hydrogen - a key element in water.



According to the findings, water in the form of ice could be found in the frozen confines of the Moon's polar craters where temperatures are colder than -170C.

Dr Eke said: 'Water ice could be stable for billions of years on the Moon provided that it is cold enough.'

'If ice is present in the permanently shaded lunar craters of the Moon then it could potentially provide a water source for the eventual establishment of a manned base on the Moon.'

LCROSS on Twitter

'Where am I now? Cruisin' at 2,551mph, 380,600km from Earth. 165,600km from Moon. Mission Day 110. 2d5h left on my spacey trip.'

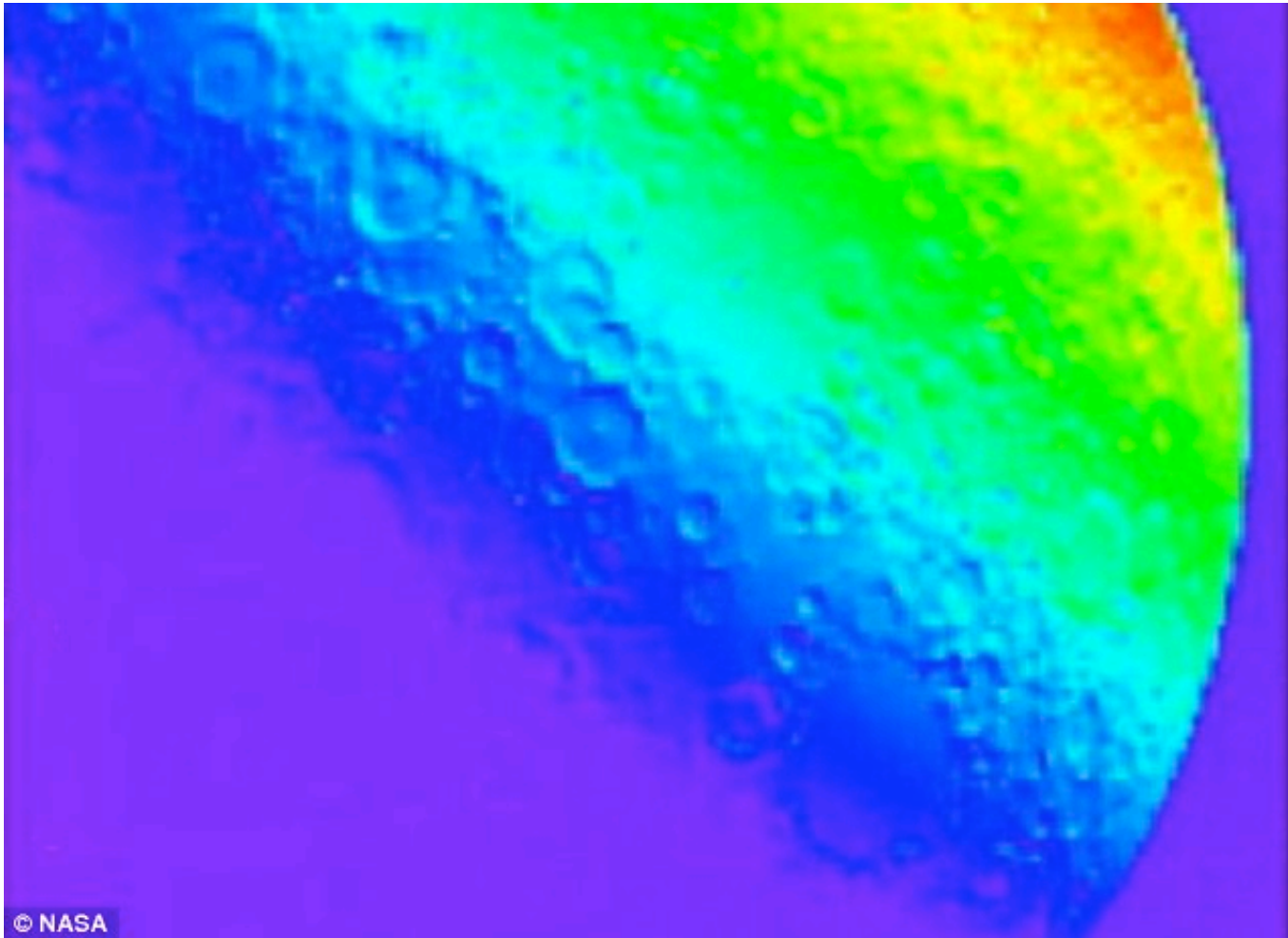
'Such a base could be used as a platform for exploration into the further reaches of our solar system.'

Dr Eke said people should not worry about the effect the collision could have on the Moon.

He added: 'The rocket has roughly the mass of a Transit van and it will hit the Moon at about 5,600mph. The energy of the collision is roughly equivalent to two tonnes of TNT.'

'While this sounds dramatic, the impact of this will simply create one more dimple on the moonscape.'

'The cratered surface of the Moon shows it has a history of violent collisions with asteroids and comets. Such collisions frequently occur, but the difference is that this time we know precisely where and when to look.'



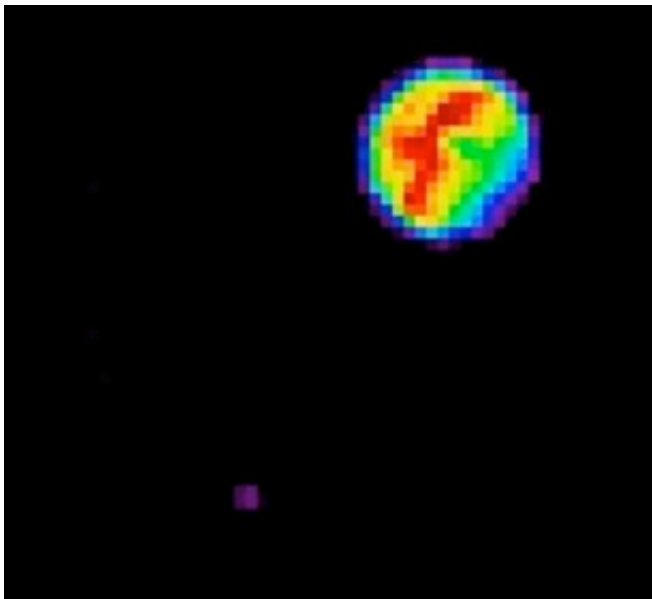
The world's first thermal images of the far side of the Moon have been captured by the British Thermoteknix camera onboard LCROSS

Dr Eke's previous research showed that hydrogen was concentrated in the permanently shaded craters of the Moon's polar regions.

If hydrogen is present as water ice, then the data would imply the top metre of the surface in these craters holds about 200,000 million litres of water in total.

Preparation for impact comes as stunning thermal images of the far side of the Moon have been revealed for the first time.

The British-made Thermoteknix camera is onboard the LCROSS, and will be one of the instruments that will study the first plume of debris before crashing itself.



The Thermoteknix camera (left) has imaged Earth and the Moon. The red areas give off the most heat, while the blue and purple areas are the coolest. The Moon is a faint purple dot below Earth

'The camera has worked flawlessly for nearly 100 days, and counting, in interplanetary space,' said Anthony Colaprete, payload manager and chief scientist for Nasa's LCROSS mission.

'It provided the first thermal images of the far side of the moon and also images of Earth and the Moon from distances as great as 560,000km and 850,000 km away, respectively.'

The MIRICLE camera was developed by pioneering thermal imaging company Thermoteknix Systems, based in Cambridge.

Dr Richard Salisbury, managing director of Thermoteknix, said: 'We are delighted to have been selected to play a critical part in Nasa's important mission to find water on the Moon, which is vital for the future of longterm space exploration.'

'We are all very proud of this achievement.'

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I can,t wait for this,it is being beamed live on N.A.S.A tv on friday should be good.

- Shaun Hampton, Preston,Lancashire, 07/10/2009 17:12

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How about taking pictures of the moon landing site and prove once and for all that man did not land on the moon, before you srash into the moon.

- John, Basildon, 07/10/2009 17:05

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