

Search America's #1 News Site

MSN Home | Mail More Sign In

featuring Today Show Nightly News Dateline Meet the Press MSNBC TV NBC Sports

Technology & science Space

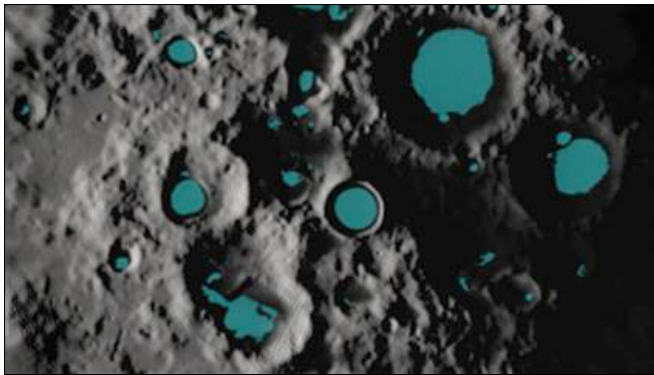
Categories

- U.S. news World news Business Politics Sports Entertainment Health Tech & science Space Science Tech and gadgets Games Wireless Security Innovation Travel Local news Weather Browse Video Photos Disable Fly-out

Marketplace

- Credit Score \$0 at CreditReport.com Scotttrade \$7 online trades Progressive Get car insurance

Debate rages over moon water Two NASA spacecraft, expected to launch this week, may give answers



NASA / GSFC

This NASA illustration depicts how water ice may lie hidden deep at the bottom of deep south pole craters that are in permanent shadow on the moon.

SPACE updated 12:59 a.m. MT, Wed., June 17, 2009

There have been raging debates over the years as to whether there is frozen water on the moon or not. Soon two NASA spacecraft, a lunar spy craft and a kamikaze probe, will help answer the question by peering into the permanent darkness of craters at the moon's south pole.

The new moon probes, the Lunar Reconnaissance Orbiter and the LCROSS impactor, are set to blast off this week on NASA's first mission to the moon in more than a decade. Any ice they discover could not only be used to quench an astronaut's thirst, but also to help fuel rockets for adventures beyond the moon.

All moon rocks collected so far suggest that its surface is bone dry, with any water that might come from impacting comets baked off by the sun, except perhaps for a few water molecules

Space.com

- Japan's Kaguya Probe Slams into the Moon New Video - 'MOON' Film Trailer Military Hush-Up: Incoming Space Rocks Now Classified New Video - Meet the STS-127 Astronauts Review: Spaceflight for Dummies

Related stories

What's this?

- NASA targets moon for a mighty crash Old moon photos tell new tales Kodak to explore the moon NASA's moon missions face fuzzy future

Most popular

- Most viewed Top rated Most e-mailed Makeover! Widow goes from gray to red-hot

Sponsored Links

Compare Water Softeners Compare Top 4 Softening Methods Cost, Performance and Maintenance www.watersoftenerscompared.c

'Your Stimulus Job!' Is Working From Home The Real Deal? We Investigate For You! TheUsaDailyNews.Com

Aquarium Reverse Osmosis Kent Marine, Captive Purity, SpectraPure, Seachem and more! MarineDepot.com

Find Your Credit Score As Seen On TV. Join The Millions Who Got Their Free Credit Report! www.FreeCreditReport.com

2009 New Car Pricing Buying a New Car, SUV or Hybrid? Find Discount Prices in Your Area! www.WhyPaySticker.com

Resource guide

CreditReport.com Get Your 2009 Credit Score

Scotttrade 37 Online Trades Scotttrade: \$7 online trades

PROGRESSIVE Our rates vs. the others

E

Start a business
Entrepreneur.com

Netflix
Try for Free

trapped in volcanic glass beads.

Story continues below ↓

advertisement | [your ad here](#)

- [More massive protests planned in Iran](#)
- [Eddie Bauer files for bankruptcy protection](#)
- [Tattoo gone wrong: Stars and gripes forever?](#)
- [Miami priest in photo scandal weds girlfriend](#)
- [Most viewed on msnbc.com](#)

Find a business to start



Movies delivered - Try free

Shop for Desktops

- Desktops
- Video Cards
- Flat Panels/LCD



Still, there are deep craters at the [moon's poles](#) that have received no sunlight for 2 billion years or more, and in the cold of these permanent shadows — minus 328 degrees F (minus 200 degrees C) — researchers have suggested ice might have survived, explained Anthony Colaprete, principal investigator on NASA's LCROSS, short for the Lunar Crater Observation and Sensing Satellite.

NASA moved the launch the two moon probes from Wednesday to no earlier than Friday to give the shuttle Endeavour another chance to lift off. The shuttle's launch was initially set for June 13, but was postponed until Wednesday due to a hydrogen gas leak. The leak recurred during Wednesday's second try, forcing shuttle managers to postpone Endeavour's launch until July.

Where is it?

Controversial evidence for whether there is water on the moon began appearing in 1996 with the Clementine probe, a joint Pentagon-NASA project. [Radar scans](#) of the lunar surface reflected back the kind of signals at the south pole that one might expect of ice and other frozen compounds.

However, later studies using the Arecibo radio telescope in Puerto Rico revealed similar reflections "even from areas exposed to sunlight, places too warm for water ice to survive," Colaprete said. This suggested the reflections that Clementine saw might have come not from water but from piles of rocks.

But in 1998, NASA's Lunar Prospector also detected hints of water, this time at both poles. Its instruments analyzed neutrons absorbed by a variety of elements on the moon's surface, including

INTERACTIVE



Launch

NASA's 10 greatest science missions

Hubble and Apollo are legendary for changing the course of history with their scientific breakthroughs. Here are the 10 greatest science missions in NASA's history.

hydrogen. With this device, Lunar Prospector discovered hydrogen concentrated at the moon's poles, which scientists conjectured might have come from water molecules, each of which contains two hydrogen atoms. Researchers speculated the moon's poles could hold as much as 3 billion metric tons of ice.

The problem is that Lunar Prospector could only measure hydrogen,

and not what matter the hydrogen was in. Instead of ice, the hydrogen might come from water bound up in clays, or protons from the solar wind, or the kind of carbon-laden molecules from comets that might have been part of the organic soup that life developed from on Earth, "or a mix of all those things," Colaprete said.

The upcoming LCROSS will **crash two probes** into the moon. Its partner probe, the Lunar Reconnaissance Orbiter, will map the moon from orbit and work with other ground and space-based assets to [scan](#) the LCROSS impacts.

By analyzing the plume, scientists hope to answer once and for all whether there is water there.

The icy cold truth

Any ice there might be on the moon could be key to the future of **humanity in space**. Although it could supply water for colonists to drink or grow food, more importantly, it could get split up to make hydrogen and oxygen for fuel for rockets.

"It costs about \$10,000 to \$15,000 per pound to launch something in the space shuttle, and there are about 8 pounds of water to a gallon, so we're talking about \$100,000 to bring a gallon of water to low Earth orbit," Colaprete said. "If we can use the lunar poles as a resource, we could use them as staging bases to go elsewhere on the moon, or beyond the moon, or beyond Mars or Europa or elsewhere we'd want to go. You wouldn't have to bring up millions of gallons of fuel, you could produce it on the moon."

[CLICK FOR RELATED CONTENT](#)

Cosmic Log: Inside the rover factory
NASA OKs Wednesday space shuttle launch
Japan's moon probe makes crash landing

In addition, lunar ice might have survived untouched for billions of years, so it could "serve as a fantastic time capsule into the past," Colaprete said. "This is ice that could date back just as the Earth and moon and inner solar system as a whole were evolving, what kind of organic molecules might have been delivered to Earth. What hits the moon also hits the Earth."

If there is ice there, LCROSS could also show what form it is in — whether it is smoothly spread out in small grains across the crater, or in chunky patches. This could make a difference in how the ice is mined — whether astronauts simply scoop it up anywhere or have to go hunting for patches.

"The results we'll get could be critical for determining how we explore and make use of the moon," Colaprete said.

This report was updated by msnbc.com.

More on [moon exploration](#) | [lunar ice](#)

© 2009 Space.com. All rights reserved. [More from Space.com.](#)

Discuss Story
On Newsvine

Rate Story: Low  High
View popular 4 after 32 ratings

Email

Instant Message

Print

MORE FROM SPACE


Next → [7 moon ideas that just might work](#)

[Shuttle launch delayed until July due to leak](#)
[NASA targets moon for a mighty crash](#)
[Binary stars host potential planetary disk](#)
[Cosmic Log: Inside the rover factory](#)
[What's new on the New Space frontier](#)

Debate rages over moon water

[7 moon ideas that just might work](#)
[Teen knocked down ... by a meteorite?](#)
[Ex-NASA head critical of Obama move](#)
[Month in Space: Marvelous missions](#)
[Space Section Front](#)

Add **Space** headlines to your news reader:

 [More RSS feeds from MSNBC.com](#)

Top msnbc.com stories

- [Iran: 'Intolerable' meddling by U.S.](#)
- [Obama unveils financial overhaul plan](#)
- [Shuttle launch delayed until July](#)
- [NYT: Aftermath of Iranian election](#)
- [Eddie Bauer files under Chapter 11](#)

NBC News highlights

- [Tension in Tehran 'escalating'](#)
- [Swatter in chief takes down fly](#)
- [Boy impaled by branch is OK](#)
- [Teen sues over tattoo boo-boo](#)
- [The new face of Mr. Mom](#)

SPONSORED LINKS [Get listed here](#)

Tempe Mom Lost 47 lbs Following 1 rule!
 I Cut Down 47 lbs of Stomach Fat In A Month By Obeying This 1 Old Rule
www.RachelRayBlogs.com

Tempe Residents: Make \$70/Hr Part-Time!
 \$70/hr part-time jobs open. Requirements: Only a computer.
news5alert.com

Tempe Residents: Make \$63/Hr Part-Time!
 \$63/hr part-time jobs open. Requirements: Just a computer.
Daily-Job-News.com

Tempe News: 'Mom Earns \$7k/Mo At Home!'
 Read The Story of How A Tempe Mom Turned \$1.97 Into \$7359.65
SarahsMoneyBlog.com

Tempe Mom Lost 47lbs W/1 Rule!
 I Cut Down 47+ lbs of Stomach Fat In 4 Weeks By Obeying 1 Old Rule!
www.RachelRayBlogger.com

Featuring	Today Nightly News Dateline Meet the Press MSNBC TV Newsweek	News alerts	E-mail highlights	RSS & feeds
Categories	Top stories Local news U.S. World Politics Business Sports Entertainment Health Tech & science Travel Weather	Mobile headlines	Podcasts	Widgets
About	About us Contact Site map Jobs Terms & conditions			