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# Very Cold Very Close

By [David Bois](#) | Sunday, September 20, 2009 12:19 PM ET

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We've [reported](#), with recent [updates](#), on NASA's impending plan to blow up a fresh crater on the surface of the moon with the hope that exposing subsurface soils will provide evidence of fresh water, in the form of ice.

But a funny thing happened while the good folks at NASA were making final arrangements for the early October blow out: data collected by the Diviner Lunar Radiometer that's aboard the Lunar Reconnaissance Orbiter (LRO) indicate that air temperatures in these craters near the lunar south pole are hovering just above absolute zero, and [may be the coldest known area in our solar system](#).

Diviner project scientist and UCLA professor David Paige, as reported by Space.com, spells out the cool new findings:

"Diviner has recorded minimum daytime brightness temperatures in portions of these craters of less than -397 degrees Fahrenheit. These super-cold brightness temperatures are, to our knowledge, among the lowest that have been measured anywhere in the solar system, including the surface of Pluto."

The LRO was launched in June as a companion craft to LCROSS, the latter being the one that will send the explosive charge down onto the lunar surface early next month. LRO has been helping project scientists build a robust data set on all manner of lunar conditions, and these new temperature findings gave everyone in the room goose bumps.

It may seem counterintuitive that something relatively close to the sun would be among the coldest places in the solar system, but in a statement to Space.com, Alan Boss of the Carnegie Institution explains:

"The key point is not their distance from the sun, but the fact that there are regions at the poles of the Moon and Mercury that never see the sun, and so never get heated by sunlight. The only heat they receive is from the underlying rock, but that means only interior heat leftover from their formation or their internal radioactive decays, but in any case the local rocks are still cold because they too are free to radiate out to -263 Celsius space without getting any heat back from the sun."



Image courtesy of [NASA](#)

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Dave Bois is a native of Maine and has lived in the San Francisco bay area since 2000. He graduated from Tufts University with degrees in geology and sociology and pursued graduate studies in physical geography at the University of Maryland.

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