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Subject: 'Significant' water found on Moon  
Posted by [Spyder](#) on Sat, 14 Nov 2009 10:04:00 GMT  
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Article 'Significant' water found on Moon  
By Jonathan Amos  
Science reporter, BBC News

A camera on the probe shows the ejecta plume about 20 seconds after impact

Nasa's experiment last month to find water on the Moon was a major success, US scientists have announced.

The space agency smashed a rocket and a probe into a large crater at the lunar south pole, hoping to kick up ice.

Scientists who have studied the data now say instruments trained on the impact plume saw copious quantities of water-ice and water vapour.

One researcher described this as the equivalent of "a dozen two-gallon buckets" of water.

"We didn't just find a little bit; we found a significant amount," said Anthony Colaprete, chief scientist for the Lunar Crater Observation and Sensing Satellite (LCROSS) mission.

The following probe was designed to analyse the debris plume

No doubt

October's experiment involved driving a 2,200kg Centaur rocket stage into the 100km-wide Cabeus Crater, a permanently shadowed depression at the Moon's far south.

At the time, scientists were hoping for a big plume of debris some 10km high which could be seen by Earth telescopes.

LCROSS (Nasa)

The following probe was designed to analyse the debris plume

The actual debris cloud was much smaller, about 1.6km high, but sufficiently large to betray the evidence researchers were seeking.

The near-infrared spectrometer on the LCROSS probe that followed the rocket into the crater detected water-ice and water vapour. The ultraviolet-visible spectrometer provided additional confirmation by identifying the hydroxyl (OH) molecule, which arises when water is broken apart in sunlight.

"We were able to match the spectra from LCROSS data only when we inserted the spectra for water," Dr Colaprete said.

"No other reasonable combination of other compounds that we tried matched the observations. The possibility of contamination from the Centaur also was ruled out."

Useful resource

The total quantity of H<sub>2</sub>O spied by the instruments was more than 100kg. It came out of a 20m-30m wide hole dug up by the impacting Centaur rocket.

The LCROSS scientists stressed that the results presented on Friday were preliminary findings only, and further analysis could raise the final assessment of the amount of water in Cabeus.

Peter Schultz, from Brown University and a co-investigator on the LCROSS mission, said: "What's really exciting is we've only hit one spot. It's kind of like when you're drilling for oil. Once you find it in one place, there's a greater chance you'll find more nearby."

The regular surface of the Moon as seen from Earth is drier than any desert on our planet. But researchers have long speculated that some permanently shadowed places might harbour considerable stores of water, perhaps delivered by impacting comets billions of years ago.

If future investigations find the quantities to be particularly large, this water could become a useful resource for any astronauts who might base themselves at the lunar poles.

"It can be used for drinking water," said Mike Wargo, Nasa's chief lunar scientist for exploration systems.

"You can break it down and have breathable air for crews. But also, if you have significant quantities of this stuff, you have the constituents of one of the most potent rocket fuels - oxygen and hydrogen."

The Centaur dug out a hole 20m-30m wide

In September, data from three spacecraft, including India's Chandrayaan probe, showed that very fine films of H<sub>2</sub>O coat the particles that make up lunar soil.

Scientists behind that finding speculated that this water might migrate to the even cooler poles, much as water vapour on Earth will condense on a cold surface.

This cold sink effect could be supplementing any water delivered by comets, they said.

If cometary material did reside in places like Cabeus Crater it would be fascinating to examine it, commented Greg Delory, from the University of California, Berkeley.

"The surfaces in these permanently shadowed areas, such as the one LCROSS impacted, are very cold," he told reporters.

"That means that they tend to trap and keep things that encounter them - compounds, atoms and

so forth. And so they act as record keepers over periods as long as several billion years. They have a story to tell about the history of the Moon and the Solar System."

LCROSS was launched by Nasa on 18 June as part of a double mission which included the Lunar Reconnaissance Orbiter (LRO).

The latter, which continues to circle the Moon, measured a temperature of minus 230 Celsius at the base of Cabeus Crater.

Source: <http://news.bbc.co.uk/2/hi/science/nature/8359744.stm>

Discuss

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Subject: Re: 'Significant' water found on Moon  
Posted by [Omar007](#) on Sat, 14 Nov 2009 10:07:38 GMT

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Hmm i actually heard something like this on a NASA podcast i believe a few weeks ago

Pretty cool the moon has water

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Subject: Re: 'Significant' water found on Moon  
Posted by [ErroR](#) on Sat, 14 Nov 2009 12:03:03 GMT

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Omar007 wrote on Sat, 14 November 2009 12:07Pretty cool the moon has water

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Subject: Re: 'Significant' water found on Moon  
Posted by [CarrierII](#) on Sat, 14 Nov 2009 16:56:47 GMT

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Well that makes a lunar base considerably more feasible - solar powered hydrolysis...

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Subject: Re: 'Significant' water found on Moon  
Posted by [Tupolev TU-95 Bear](#) on Sat, 14 Nov 2009 17:17:12 GMT

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i thought it would be habitable on the moon

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Subject: Re: 'Significant' water found on Moon  
Posted by [Sladewill](#) on Sat, 14 Nov 2009 17:25:21 GMT  
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Well at least it would be able to pick up radion to detect life from other planets whilst hosting habitable life on there with water and some heat.

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Subject: Re: 'Significant' water found on Moon  
Posted by [YazooGang](#) on Sat, 14 Nov 2009 17:34:20 GMT  
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Is it the same water that can be found on earth? Maybe its made differently and cannot be drinkable. Or, it might be pepsi:P

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Subject: Re: 'Significant' water found on Moon  
Posted by [Tupolev TU-95 Bear](#) on Sat, 14 Nov 2009 17:37:33 GMT  
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doubt its pepsi

maybe its 7up or sprite

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Subject: Re: 'Significant' water found on Moon  
Posted by [cmatt42](#) on Sat, 14 Nov 2009 17:49:17 GMT  
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Water is water. Most of the water on Earth is not drinkable, but can be purified, so the same can be accomplished on the moon.

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Subject: Re: 'Significant' water found on Moon  
Posted by [Spyder](#) on Sat, 14 Nov 2009 19:00:08 GMT  
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Maybe, in a few decades, we'll manage to do what they did in "The Jetsons". Build an artificial atmosphere and live on the moon.

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Subject: Re: 'Significant' water found on Moon  
Posted by [nikki6ixx](#) on Sat, 14 Nov 2009 19:03:07 GMT

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I'd rather they just rocket our garbage and nuclear waste onto the moon, instead of wasting time trying to colonize some dead rock. Why not just fix the shit here?

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Subject: Re: 'Significant' water found on Moon  
Posted by [EvilWhiteDragon](#) on Sat, 14 Nov 2009 20:10:56 GMT  
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nikki6ixx wrote on Sat, 14 November 2009 20:03!d rather they just rocket our garbage and nuclear waste onto the moon, instead of wasting time trying to colonize some dead rock. Why not just fix the shit here?

Yeah, let's not process our waste, let's just dump it where it doesn't bother us for now.

I think it would be too expensive to just use it as a garbagedump and it would be very stupid as well.

This because it is way cheaper to launch rockets from the moon than it is to launch rockets from earth. This has to do with the lesser gravity on the moon than on earth. If there is indeed water, it would even allow us to make rocket fuel on the moon. Then we would only send the rocket in pieces to the moon and assemble it there and we could launch it to Mars and beyond.

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Subject: Re: 'Significant' water found on Moon  
Posted by [GEORGE ZIMMER](#) on Sat, 14 Nov 2009 20:39:49 GMT  
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Thank Zeus that Obama decided not to cancel trips to the moon. I guess stuff like this is why

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Subject: Re: 'Significant' water found on Moon  
Posted by [\[NE\]Fobby\[GEN\]](#) on Sat, 14 Nov 2009 20:55:52 GMT  
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1 billion dollar glass of water coming right up

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Subject: Re: 'Significant' water found on Moon  
Posted by [nope.avi](#) on Sat, 14 Nov 2009 21:03:30 GMT  
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I'd be surprised if there wasn't water.

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Subject: Re: 'Significant' water found on Moon  
Posted by [nikki6ixx](#) on Sat, 14 Nov 2009 21:05:35 GMT

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EvilWhiteDragon wrote on Sat, 14 November 2009 14:10nikki6ixx wrote on Sat, 14 November 2009 20:03I'd rather they just rocket our garbage and nuclear waste onto the moon, instead of wasting time trying to colonize some dead rock. Why not just fix the shit here?

Yeah, let's not process our waste, let's just dump it where it doesn't bother us for now.

I think it would be too expensive to just use it as a garbagedump and it would be very stupid as well.

Is it any less stupid than sending people to a big, barren rock in the middle of a vacuum which will ultimately cost the United States billions in dollars it doesn't have?

[NEFobby[GEN] wrote on Sat, 14 November 2009 14:55]1 billion dollar glass of water coming right up

You said it.

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**Subject:** Re: 'Significant' water found on Moon  
**Posted by** [Sladewill](#) on Sat, 14 Nov 2009 21:43:39 GMT  
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All water is drinkable, the water on earth mostly came from outta space anyways, ice and dat. It would be probably cheaper to actually live on the moon, then go further out into space. Find new resources coz the earth for one isnt big enough for us all and also doesnt have the resources that are sustable for all of us.

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**Subject:** Re: 'Significant' water found on Moon  
**Posted by** [GEORGE ZIMMER](#) on Sat, 14 Nov 2009 21:46:01 GMT  
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Sladewill wrote on Sat, 14 November 2009 15:43All water is drinkable, the water on earth mostly came from outta space anyways, ice and dat. It would be probably cheaper to actually live on the moon, then go further out into space. Find new resources coz the earth for one isnt big enough for us all and also doesnt have the resources that are sustable for all of us.

Right, and what resources does the moon offer, aside from a little water? Until we can basically do what alchemists back in the day failed to do, I highly doubt the moon will be worth it to be inhabit. Same goes for mars and etc.

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**Subject:** Re: 'Significant' water found on Moon  
**Posted by** [R315r4z0r](#) on Sat, 14 Nov 2009 21:51:18 GMT  
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I wonder who is going to be the first man/woman to drink natural moon water?

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Subject: Re: 'Significant' water found on Moon  
Posted by [HaTe](#) on Sat, 14 Nov 2009 22:24:24 GMT  
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R315r4z0r wrote on Sat, 14 November 2009 15:51 I wonder who is going to be the first man/woman to drink natural moon water?  
Obama.

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Subject: Re: 'Significant' water found on Moon  
Posted by [GEORGE ZIMMER](#) on Sat, 14 Nov 2009 22:28:05 GMT  
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HaTe wrote on Sat, 14 November 2009 16:24 R315r4z0r wrote on Sat, 14 November 2009 15:51 I wonder who is going to be the first man/woman to drink natural moon water?  
Obama.  
probably...

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Subject: Re: 'Significant' water found on Moon  
Posted by [EvilWhiteDragon](#) on Sat, 14 Nov 2009 22:51:51 GMT  
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GEORGE ZIMMER wrote on Sat, 14 November 2009 22:46 Sladewill wrote on Sat, 14 November 2009 15:43 All water is drinkable, the water on earth mostly came from outta space anyways, ice and dat. It would be probably cheaper to actually live on the moon, then go further out into space. Find new resources coz the earth for one isnt big enough for us all and also doesnt have the resources that are sustable for all of us.  
Right, and what resources does the moon offer, aside from a little water? Until we can basically do what alchemists back in the day failed to do, I highly doubt the moon will be worth it to be inhabit.  
Same goes for mars and etc.  
Excuse me, but you're stupid to think that the moon doesn't have any valuable minerals. It's space, and doesn't have an atmosphere, so comets and asteroids will surely deposit a shitload of minerals there.

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Subject: Re: 'Significant' water found on Moon  
Posted by [Spyder](#) on Sun, 15 Nov 2009 01:01:04 GMT  
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EvilWhiteDragon wrote on Sat, 14 November 2009 23:51 GEORGE ZIMMER wrote on Sat, 14 November 2009 22:46 Sladewill wrote on Sat, 14 November 2009 15:43 All water is drinkable, the water on earth mostly came from outta space anyways, ice and dat. It would be probably cheaper to actually live on the moon, then go further out into space. Find new resources coz the earth for one isnt big enough for us all and also doesnt have the resources that are sustable for all of us.  
Right, and what resources does the moon offer, aside from a little water? Until we can basically do what alchemists back in the day failed to do, I highly doubt the moon will be worth it to be inhabit.

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Same goes for mars and etc.

Excuse me, but you're stupid to think that the moon doesn't have any valuable minerals. It's space, and doesn't have an atmosphere, so comets and asteroids will surely deposit a shitload of minerals there.

Only thing left to do for us is to explore and examine.  
Find minerals, examine minerals and experiment with them.

Earth is only a needle in a haystack when talking about "space" or "the universe". There's much more to be discovered. But you've got to start somewhere. In this case, it's the moon.

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Subject: Re: 'Significant' water found on Moon  
Posted by [R315r4z0r](#) on Sun, 15 Nov 2009 05:07:40 GMT  
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A needle is too large. It's more like a grain of sand in a hay stack as large as Antarctica.

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Subject: Re: 'Significant' water found on Moon  
Posted by [Omar007](#) on Sun, 15 Nov 2009 10:37:08 GMT  
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R315r4z0r wrote on Sun, 15 November 2009 06:07A needle is too large. It's more like a grain of sand in a hay stack as large as Antarctica.

I just hope that if we find new minerals etc we wont mine it all in a short time so it's all used up >.>

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Subject: Re: 'Significant' water found on Moon  
Posted by [jnz](#) on Sun, 15 Nov 2009 11:19:19 GMT  
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R315r4z0r wrote on Sun, 15 November 2009 05:07A needle is too large. It's more like a grain of sand in a hay stack as large as Antarctica.

A grain of sand it too large. It's more like an atom in a haystack the size of our solar system.

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Subject: Re: 'Significant' water found on Moon  
Posted by [Goztow](#) on Sun, 15 Nov 2009 12:05:56 GMT  
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I say we send the people who got banned from renforums there first, to test the water...

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Subject: Re: 'Significant' water found on Moon  
Posted by [EvilWhiteDragon](#) on Sun, 15 Nov 2009 12:31:39 GMT  
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Goztow wrote on Sun, 15 November 2009 13:05I say we send the people who got banned from renforums there first, to test the water...  
Without breathing equipment! kthxdbai!

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Subject: Re: 'Significant' water found on Moon  
Posted by [ErroR](#) on Sun, 15 Nov 2009 12:53:44 GMT  
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R315r4z0r wrote on Sat, 14 November 2009 23:51I wonder who is going to be the first man/woman to drink natural moon water?  
..and live?

---

Subject: Re: 'Significant' water found on Moon  
Posted by [GEORGE ZIMMER](#) on Sun, 15 Nov 2009 12:59:12 GMT  
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In other news, a young Russian man was sent to the moon without proper breathing equipment. After failing his attempt at painting the moon neon green, he shouted out "U JELUS MY HUD", and promptly died.

No one attended the funeral.

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Subject: Re: 'Significant' water found on Moon  
Posted by [Dreganius](#) on Sun, 15 Nov 2009 13:20:32 GMT  
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Above post: BWAHAHAHAA.

Back on topic, I actually had an idea the other day after reading about orbital satellite telescopes, radio sensors, etc. What if we were to use the moon as a base for celestial research? As the moon has no atmosphere it makes for a better location for sensors and because of the gravity difference. The only problem I could see is the gravity difference, which could likely make things just not work right.

Is this material for another topic?

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Subject: Re: 'Significant' water found on Moon  
Posted by [RoCk2Star](#) on Sun, 15 Nov 2009 13:29:47 GMT

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w00t

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Subject: Re: 'Significant' water found on Moon  
Posted by [GEORGE ZIMMER](#) on Sun, 15 Nov 2009 13:32:11 GMT  
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Dreganius wrote on Sun, 15 November 2009 14:20Back on topic, I actually had an idea the other day after reading about orbital satellite telescopes, radio sensors, etc. What if we were to use the moon as a base for celestial research? As the moon has no atmosphere it makes for a better location for sensors and because of the gravity difference. The only problem I could see is the gravity difference, which could likely make things just not work right.

Is this material for another topic?

Some stuff would need to be adjusted yeah, but the main problem would be the people living on the moon themselves- due to the lower gravity, it would be almost impossible for them to properly live again on Earth unless we can find a way to make fully working artificial gravity that matches the Earth's.

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Subject: Re: 'Significant' water found on Moon  
Posted by [nopol10](#) on Sun, 15 Nov 2009 15:35:29 GMT  
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Why has no one mentioned this yet?

Toggle Spoiler

...seriously, no Doctor Who fans here?

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Subject: Re: 'Significant' water found on Moon  
Posted by [Dreganius](#) on Sun, 15 Nov 2009 16:13:44 GMT  
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GEORGE ZIMMER wrote on Mon, 16 November 2009 00:32Dreganius wrote on Sun, 15 November 2009 14:20Back on topic, I actually had an idea the other day after reading about orbital satellite telescopes, radio sensors, etc. What if we were to use the moon as a base for celestial research? As the moon has no atmosphere it makes for a better location for sensors and because of the gravity difference. The only problem I could see is the gravity difference, which could likely make things just not work right.

Is this material for another topic?

Some stuff would need to be adjusted yeah, but the main problem would be the people living on

the moon themselves- due to the lower gravity, it would be almost impossible for them to properly live again on Earth unless we can find a way to make fully working artificial gravity that matches the Earth's.

We could possibly have it automated, or operated from Earth. The machinery could be robotic.

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Subject: Re: 'Significant' water found on Moon  
Posted by [jnz](#) on Sun, 15 Nov 2009 16:18:51 GMT  
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Or just lug around with a few weights strapped to your back.

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Subject: Re: 'Significant' water found on Moon  
Posted by [EvilWhiteDragon](#) on Sun, 15 Nov 2009 16:38:02 GMT  
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Dreganius wrote on Sun, 15 November 2009 14:20Above post: BWAHAHAHAA.

Back on topic, I actually had an idea the other day after reading about orbital satellite telescopes, radio sensors, etc. What if we were to use the moon as a base for celestial research? As the moon has no atmosphere it makes for a better location for sensors and because of the gravity difference. The only problem I could see is the gravity difference, which could likely make things just not work right.

Is this material for another topic?

You're forgetting that the moon rotates around the earth and around itself, therefore it wouldn't be usable quite often (as the earth is blocking the view, or there is nothing of intrest in the direction the telescope is facing at that moment.

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Subject: Re: 'Significant' water found on Moon  
Posted by [Dreganius](#) on Sun, 15 Nov 2009 20:13:39 GMT  
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Actually, the same side of the moon always faces Earth. Equipment can easily be set up on the opposite side from us.

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Subject: Re: 'Significant' water found on Moon  
Posted by [Spyder](#) on Sun, 15 Nov 2009 20:30:18 GMT  
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Subject: Re: 'Significant' water found on Moon  
Posted by [halo2pac](#) on Thu, 19 Nov 2009 15:41:53 GMT  
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Why dont we launch our wastes into the sun? its like a giant incinerator...

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Subject: Re: 'Significant' water found on Moon  
Posted by [Dover](#) on Thu, 19 Nov 2009 15:46:13 GMT  
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halo2pac wrote on Thu, 19 November 2009 07:41Why dont we launch our wastes into the sun? its like a giant incinerator...

Burning is a chemical process, not an atomic one. To REALLY get rid of our waste, we'd need to find a way to get it into the sun's core, where it's fusion/fission occurs. Anything else is just the equivalent of the trash-burning we do on Earth, just at a hotter temperature.

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Subject: Re: 'Significant' water found on Moon  
Posted by [ErroR](#) on Thu, 19 Nov 2009 16:18:23 GMT  
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halo2pac wrote on Thu, 19 November 2009 17:41Why dont we launch our wastes into the sun? its like a giant incinerator...  
lol i thought of that.. hmm

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