
NASA

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00:00:00,050 --> 00:00:04,210
(off screen) “So joining us now from NASA’s Goddard Space Flight Center is Dr. Michelle Thaller.

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00:00:04,230 --> 00:00:08,390
Thanks for joining us.” (Thaller) “Thank you, great to be here.’ (off screen) “So tell us what exactly is a

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00:00:08,410 --> 00:00:12,570
supermoon and will it affect Earth?” (Thaller) “Well a supermoon happens when you

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00:00:12,590 --> 00:00:16,680
get a full moon near a perigee. And perigees are a word for the closest

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00:00:16,700 --> 00:00:20,800
approach the moon makes to the Earth every month. Apogee is the farthest away.

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00:00:20,820 --> 00:00:24,910
You see the moon’s orbit is not a perfect circle. It’s actually a little elliptical. Sometimes

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00:00:24,930 --> 00:00:29,030
it’s a little farther away. Sometimes it’s a little closer. And that means that the size of the moon

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00:00:29,050 --> 00:00:33,160
seems to change in the sky. And when you get a full moon that happens when

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00:00:33,180 --> 00:00:37,280
the moon is very close, that’s called a supermoon. Now as far as the affects

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00:00:37,300 --> 00:00:41,380
on the Earth…nothing very direct. The actual size of the moon in the sky doesn’t change

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00:00:41,400 --> 00:00:45,460
very much. It’s only about 12 percent larger than an average full moon.

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00:00:45,480 --> 00:00:49,510
And as you may know, the highest tides of the month happen at

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00:00:49,530 --> 00:00:53,540

full moon and new moon. These are called the spring tides of each month.

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00:00:53,560 --> 00:00:57,720
And because the moon is a little closer than normal, that means the tides will be a little bit higher

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00:00:57,740 --> 00:01:01,890
than normal as well. But we’re talking about a change of less than an inch.

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00:01:01,910 --> 00:01:06,070
So one of the challenges about measuring what they call the perigean tide,

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00:01:06,090 --> 00:01:10,250
the high tides associated with a supermoon, is even measuring it at

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00:01:10,270 --> 00:01:14,430
all. It’s a fun thing to actually detect. It’s not something that you can easily see.

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00:01:14,450 --> 00:01:18,600
(off screen) “So what is the best time to view the supermoon and will it look different

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00:01:18,620 --> 00:01:22,780
from other full moons?” (Thaller) “Well to me the best time to view

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00:01:22,800 --> 00:01:26,940
any full moon is right at sunset because that’s when it rises. And when you see the

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00:01:26,960 --> 00:01:31,080
moon with respect to the horizon with buildings and trees or whatever

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00:01:31,100 --> 00:01:35,220
it just seems to look so much more spectacular. It looks larger. In reality

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00:01:35,240 --> 00:01:39,320
the size changes not that much. The moon at perigee or closest is just

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00:01:39,340 --> 00:01:43,370
a little bit larger than the moon when its farther away. Um there really

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00:01:43,390 --> 00:01:47,470
isn’t a best time at night to view this. Kind of a trivia that the actual moment

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00:01:47,490 --> 00:01:51,540
of supermoon when it’s both closest and the most full is going

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00:01:51,560 --> 00:01:55,590
to be at 7:30 a.m. this Sunday. But that’s actually after the moon has set.

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00:01:55,610 --> 00:01:59,640
So I would say anytime on Saturday night, go out and look at this beautiful big,

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00:01:59,660 --> 00:02:03,830
bright, full moon. My personal favorite time is right after sunset.

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00:02:03,850 --> 00:02:08,010
(off screen) “NASA has a major observatory in orbit around the moon right

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00:02:08,030 --> 00:02:12,190
now call the Lunar Reconnaissance Orbiter. What are some of the cool things you’re seeing.”

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00:02:12,210 --> 00:02:16,370
(Thaller) “Well yeah so we actually have an observatory orbiting the moon right now.

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00:02:16,390 --> 00:02:20,550
And we are returning spectacular high-resolution images of the entire

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00:02:20,570 --> 00:02:24,690
lunar surface. We can see all the Apollo landing sites, the footprints of the

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00:02:24,710 --> 00:02:28,860
astronauts. The poles of the moon are fascinating places.

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00:02:28,880 --> 00:02:33,010
There are actually craters both at the north and south pole of the moon where the sun never

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00:02:33,030 --> 00:02:37,140

shines. You never get any sunlight at all. And of course those are very difficult to image.

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00:02:37,160 --> 00:02:41,250
. But we’re actually bouncing lasers down to the moon. We’re studying the topography

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00:02:41,270 --> 00:02:45,370
of these craters. And there’s evidence that there may be ice actually frozen

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00:02:45,390 --> 00:02:49,450
into the soil in these permanently shadowed craters. So there may be more

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00:02:49,470 --> 00:02:53,520
water on the moon, frozen water, than we suspected. So LRO is telling

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00:02:53,540 --> 00:02:57,570
us so much about how the moon came to be, how it changes over time.

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00:02:57,590 --> 00:03:01,620
We’ve recorded the coldest temperature in the entire solar system with LRO in one of these

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00:03:01,640 --> 00:03:05,810
permanently shadowed craters. It’s about 23 Celsius above absolute

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00:03:05,830 --> 00:03:09,990
zero, which is actually much colder than 400 degrees

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00:03:10,010 --> 00:03:14,180
below zero Fahrenheit. So just a fascinating place and we’re finding out

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00:03:14,200 --> 00:03:18,360
new things all the time. There’s so much more to learn about this familiar object

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00:03:18,380 --> 00:03:22,540
in the sky. (off screen) “I understand that LRO has taken some really incredible

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00:03:22,560 --> 00:03:26,720
images. Can you talk about some of those?” (Thaller) “Well I know that certainly some of my

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00:03:26,740 --> 00:03:30,900
favorite images are of the Apollo landing sites. In some cases you can actually see the American

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00:03:30,920 --> 00:03:35,080
flag still up. I’m also a particular fan of

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00:03:35,100 --> 00:03:39,250
the central mountain peak inside Tycho Crater. You can see this gorgeous mountain

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00:03:39,270 --> 00:03:43,440
right inside the crater. There are boulders on it that are as big as baseball stadiums.

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00:03:43,460 --> 00:03:47,610
And I just love the variation of the lunar

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00:03:47,630 --> 00:03:51,740
terrain. There are dark lava plains that are relatively smooth.

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00:03:51,760 --> 00:03:55,850
There are high regions where it’s very rocky and bouldery. It tells us

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00:03:55,870 --> 00:03:59,940
about the evolution of the solar system. You can actually see the scars left by

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00:03:59,960 --> 00:04:04,010
huge impacts. Here again we have that gorgeous mountain inside Tycho Crater.

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00:04:04,030 --> 00:04:08,060
That one boulder you see in the middle is the size of an entire

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00:04:08,080 --> 00:04:12,090
football stadium. It’s incredibly huge. The moon is a

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00:04:12,110 --> 00:04:16,270
relic of a more exciting and more violent time in our solar system’s

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00:04:16,290 --> 00:04:20,440

formation when the planets were coming together. Lots of things were colliding.

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00:04:20,460 --> 00:04:24,620
We think the moon may have been created during a super collision where the

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00:04:24,640 --> 00:04:28,810
Earth was actually hit by something the size of a planet. So the moon is

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00:04:28,830 --> 00:04:32,990
so serene and we see it, it's so familiar to us. It's also

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00:04:33,010 --> 00:04:37,180
dramatic and violent and the stories associated with it

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00:04:37,200 --> 00:04:41,350
just really fire my imagination." (off screen) "So tell us, where

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00:04:41,370 --> 00:04:45,520
can we learn more about the moon." (Thaller) "Well I would say if you want to go through some of the

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00:04:45,540 --> 00:04:49,690
best images NASA has of the moon, go to the LRO website. That would be

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00:04:49,710 --> 00:04:53,830
NASA.GOV/LRO for Lunar Reconnaissance Orbiter.

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00:04:53,850 --> 00:04:57,960
Look at the Apollo landing sites. Look at the giant mountains on the moon. Have fun

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00:04:57,980 --> 00:05:02,060
fun exploring your closest neighbor in space.