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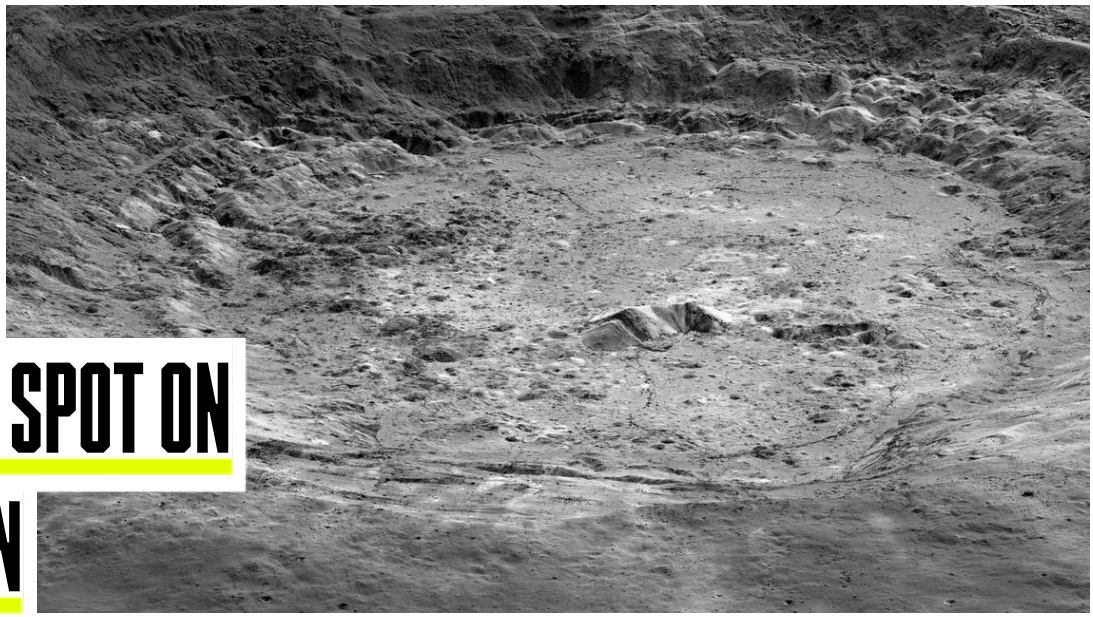

# A BRIGHT SPOT ON THE MOON

Contributed by

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Phil-Plai...
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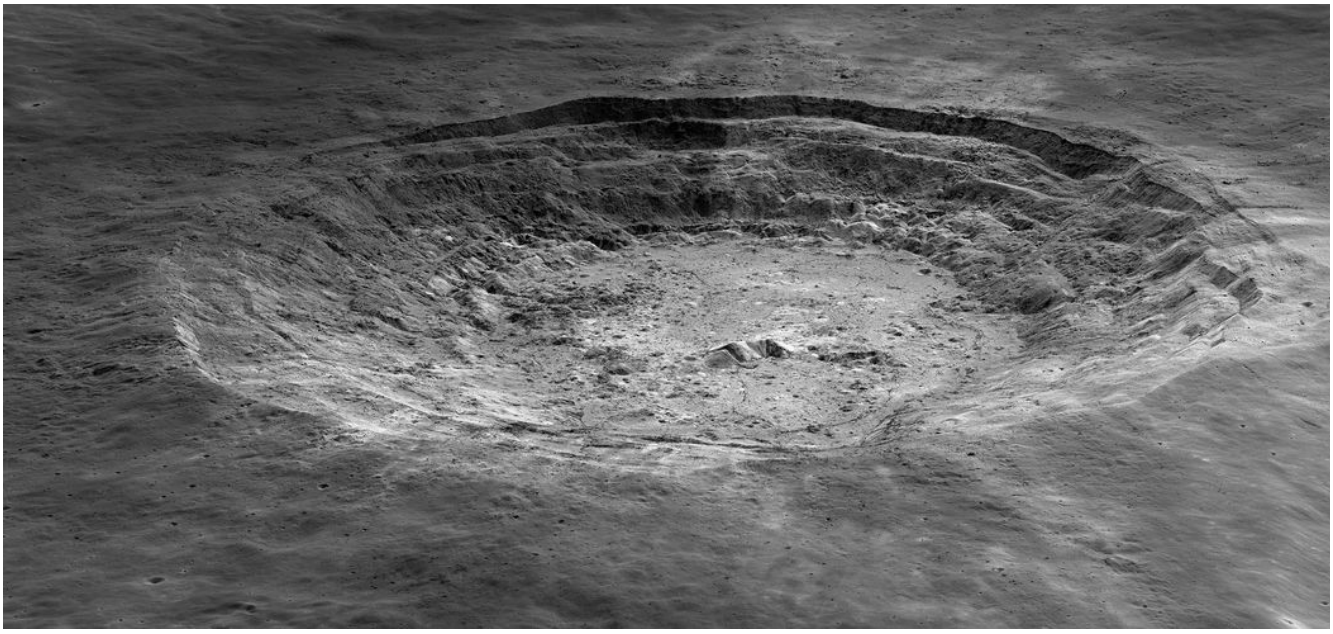
I love the **Lunar Reconnaissance Orbiter**. It's been orbiting our whopping great natural satellite since 2009, sending zillions of amazing images back to Earth, almost 400,000 kilometers away.

The LRO Camera is an instrument on board with wide-angle and narrow-angle cameras that take jaw-dropping images of the lunar surface. For much of its mission it looked straight down as the spacecraft flew over a region (called "nadir pointing"), but over time, as the mission coordinators got more confident with the orbiter, they were able to tilt it over and take oblique images of more distant surface features.

This is a powerful ability. If you're flying over a large crater you can only see a small part of it. From farther away you get a more global view. Also, the angle is much more oblique, sometimes allowing for better viewing geometry and shadowing.

The results can be very, very dramatic. Like this shot of the crater Aristarchus, a 40-kilometer impact crater on the Moon's near side:



The 40-km-wide Aristarchus crater on the Moon, seen at an oblique angle by the Lunar Reconnaissance Orbiter. Credit: NASA/GSFC/Arizona State University

Whoa.

Aristarchus **is a very interesting crater**. The impact overturned a huge amount of material, and **it's pretty diverse**. The crater's in the middle of **Oceanus Procellarum**, an ocean-sized lava-filled basin, but sits in a local plateau. The crater depth is over 3 km, so we see a lot of older material along the walls exposed by the impact.

I love the terraced crater walls, as material slumped down after the crater formed. Dark and light material can both be seen in broad strokes, as well as smaller bright spots punctuating the wall.

The banded 300-meter-tall central peak in the Moon's Aristarchus crater. Credit: NASA/GSFC/Arizona State University

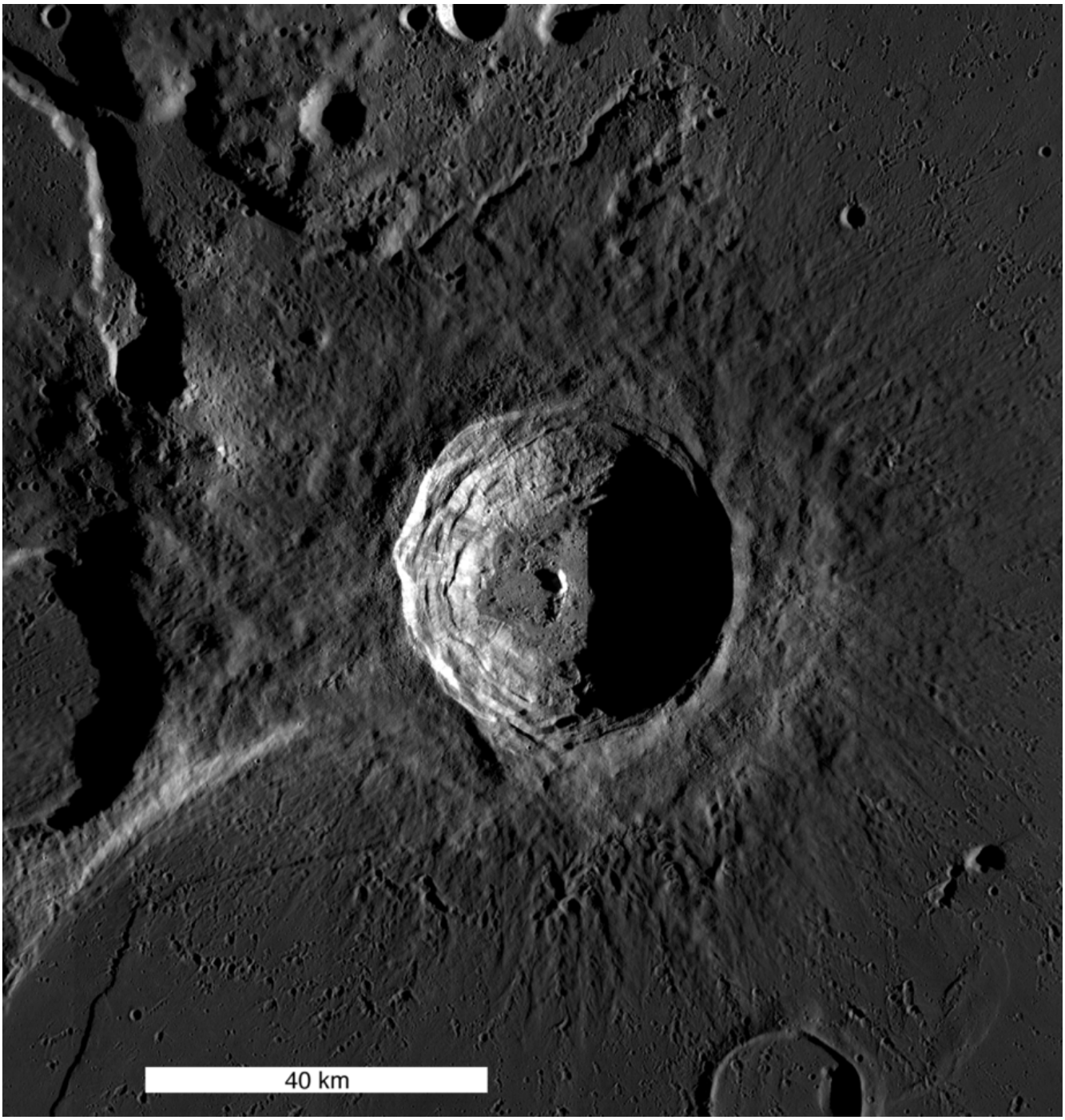
The central peak is... weird. **Usually you see craggy mountains in the middle of a large crater's floor**, created when rock rebounded from the impact itself. This peak is smoother, and **those dark and light bands** suggest an interesting mix of compositions. I like how the texture abruptly changes from the rough crater floor (melted rock that flowed back from the impact and cooled) to the smoother sides of the peak, which tops out 300 meters above the floor. It's lovely.

I have to admit, a big reason I love this image is that Aristarchus is a favorite spot on the Moon to observe when I take my telescope out. It's one of the brightest spots on the Moon; it stands out spectacularly as a shiny-looking point contrasting with the much darker (and far vaster) Oceanus Procellarum. The crater becomes visible a few days after first quarter, and when the Moon is full it shines like a beacon. It's relatively young (maybe less than a half billion years old); over time sunlight, the solar wind, and meteorite impacts darken terrain. Give it a billion or more


The full Moon, with Aristarchus crater standing out in the upper left. Credit: Fred Locklear

years and it'll look like most of the other craters on the Moon.

But for now it calls like a siren to explorers. Perhaps one day some human will stand at the top of that peak and gaze out across 20 kilometers of lunar surface to the rim of the crater, back to a base of operations there where




Looking straight down on Aristarchus crater on the Moon. Credit: NASA/GSFC/Arizona State University

more humans study the site. What will they learn? How would it feel, to stand on another world and gaze across an impact 500 million years old, to pick up a rock that was once buried beneath the surface for eons, to know that you are fulfilling the dreams of so many people who were never able to leave their home planet?

I hope many, many humans get to share that feeling, and that it won't be too far in the future.

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*[P.S.* **At the bottom of the LROC page for the Aristarchus image** *is a pan-and-scan shot, and there's a download button where you can grab a huge 200 Mb 22,000 x 9,900 pixel version of it. Yowza.]*

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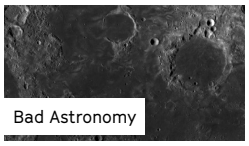


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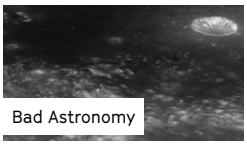


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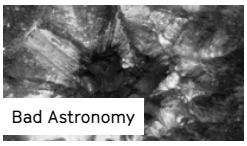


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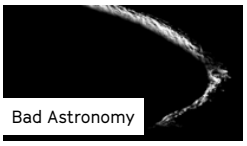


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