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EOS
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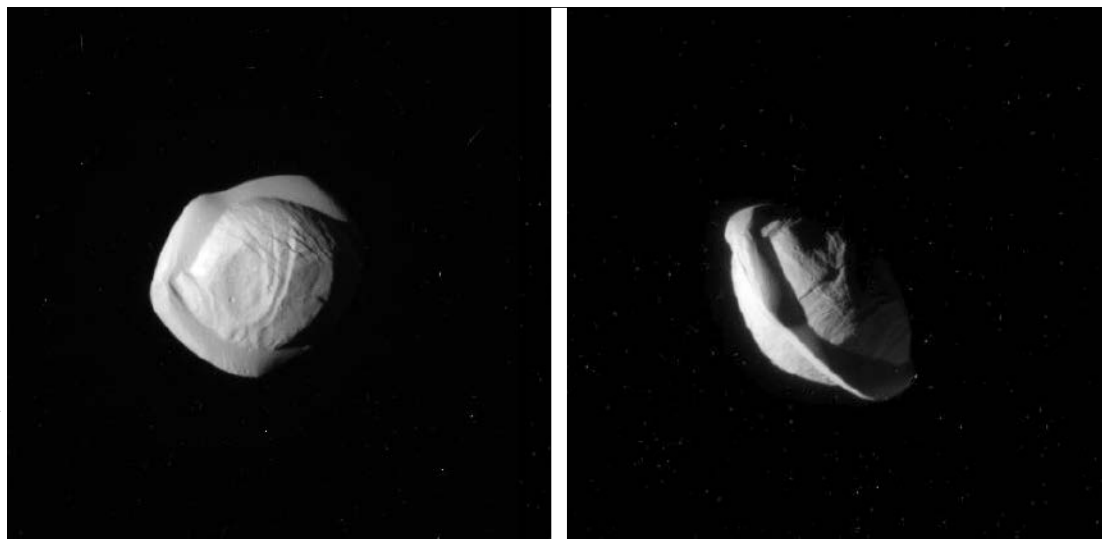
Seafloor in the
MH370 Search Area

What Is Snow Drought?

Earth's Deep Carbon

HOW **HOT** CAN ANTARCTICA GET?

Images of Pan, Saturn's Ravioli Moon, in Unprecedented Detail



NASA/JPL-Caltech/Space Science Institute

(Left) A newly released raw image of Pan, one of Saturn's innermost moons, showing a polar view. (right) Another raw image of Saturn's moon Pan, with its bulging equator at an angle. The ridge is material along Pan's equator. The new, detailed images have a resolution of 150 meters; Pan itself is 35 kilometers wide.

It's a flying saucer! No, a celestial empanada! Or space ravioli? Nope—the weird raw images released by NASA's Jet Propulsion Laboratory on 9 March feature

Saturn's tiny moon Pan and its equatorial fringe in unprecedented detail.

The Cassini spacecraft, which has been orbiting Saturn since 2004, will crash into Saturn later this year. But its final descent brings the spacecraft closer than ever to Saturn's rings and offers scientists a wealth of new research opportunities.

This is because the spacecraft has entered its "ring grazing orbits," Carolyn Porco, leader of

Can you spot Pan? It's the tiny, bright dot in the middle of the Encke Gap, in Saturn's A ring. For millions of years, Pan has been gathering material onto its surface and kicking material out of its way to form the 325-kilometer-wide gap.

the imaging science team for Cassini and current visiting scholar at the University of California, Berkeley, told *Eos*. Throughout its orbit around Saturn's poles, Cassini passes Saturn's equator and is now "just skimming the outer portion of the rings," she continued.

This close orbit allows the spacecraft to take close-up pictures of moons like Pan, which orbits Saturn at a distance of 134,000 kilometers. The new images of the 35-kilometer-wide moon feature a resolution as fine as 150 meters.

"It's just startling. The detail is startling," Porco said of the new images.

Scientists have known about Pan's tutu-shaped waistline for a long time. Ten

years ago, Porco and her team published two papers describing how the bulge could have formed. From computer models, the researchers suspect that as the moon coalesced, material from Saturn's rings fell onto the tiny moon's equator and built up its disklike silhouette.

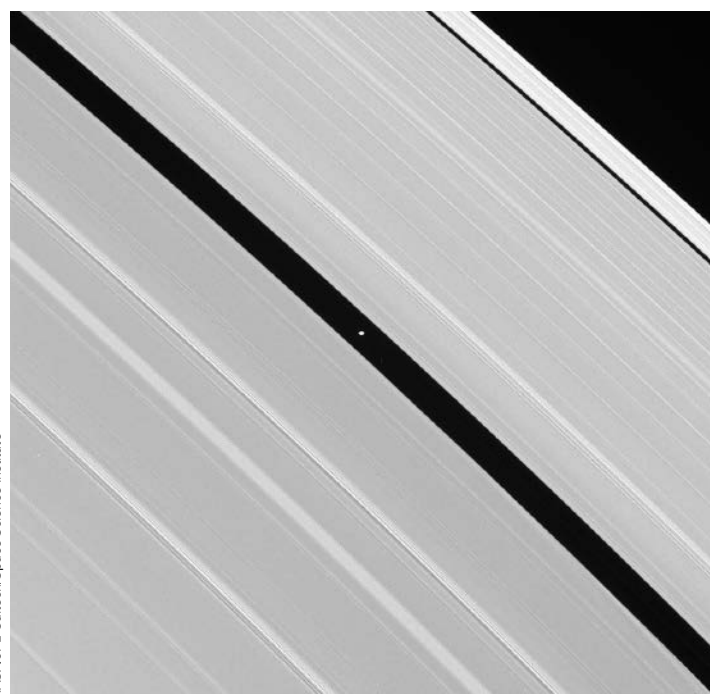
Over millions of years, Pan blazed a trail through Saturn's A ring, clearing what's now known as the Encke Gap. The influx of material onto Pan's equator has decreased but likely continues to some degree to this day, which is why the bulging belt itself looks smoother than the rest of the moon, Porco noted.

"Aside from just the sheer joy of seeing something so alien at such a level of detail," the images will be helpful to scientists studying small moons, asteroids, or comets, Porco continued. Studying Pan will be particularly helpful when scientists think about how material builds up on a small body that has very weak gravity.

So images like these have "an extension beyond the Saturn system," she said.

You can see more raw images of Pan at <http://bit.ly/SaturnRaw2017>.

By **JoAnna Wendel** (@JoAnnaScience), Staff Writer



NASA/JPL-Caltech/Space Science Institute