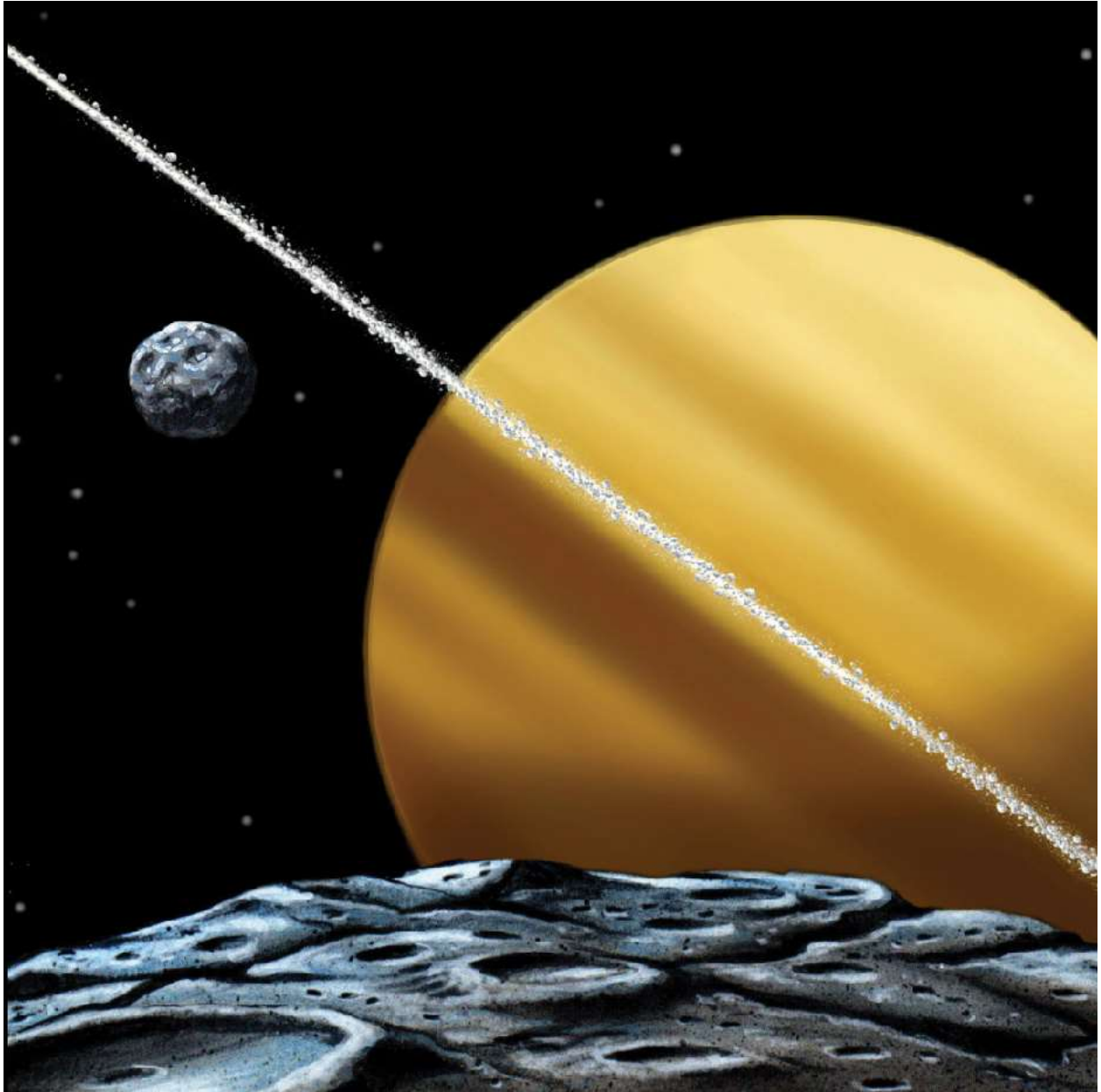




# Saturn's Moons

Questions, Answers, and Cool Things to Think About



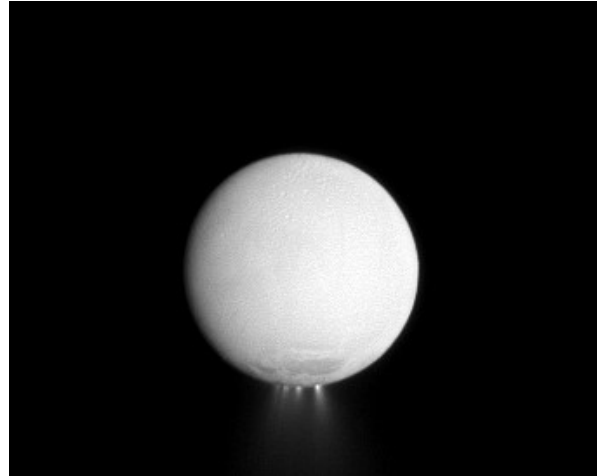
Discovering Saturn: The Real Lord of the Rings

**N**ext time you look up at the Moon in the night sky, imagine what it would be like to live on a world with more than 60 moons! That's how many we've found so far orbiting Saturn. There might be even more that we haven't discovered yet.

No one knew that Saturn had any moons until 1655, when a Dutch astronomer named Christiaan Huygens pointed a telescope at the giant planet and saw its largest moon, Titan, for the first time. During the centuries since then, as people built more powerful telescopes and sent robot explorers into space, we discovered more and more moons around Saturn. We've found more than 60 so far, and it's possible that the Cassini spacecraft will discover even more as it orbits the planet until 2017.

Most of Saturn's moons are much smaller than Earth's Moon. But they are strange and fascinating in many ways. Some of them help to keep Saturn's famous rings together. The rings are made up of millions of icy stones and specks of dust, and gravity from some of the moons keeps the material from floating away from the rings, much like a shepherd keeps sheep from wandering away from the flock. In fact, those moons are called "shepherd moons."

One moon, called Enceladus (en-CELL-uh-dus), is one of the shiniest objects in the solar system. It's about as wide as Arizona, and it's covered in ice that reflects sunlight like freshly fallen snow. That makes it extremely cold —



Cassini image of Enceladus's ice geysers

about 330 degrees below zero on the Fahrenheit scale! The icy particles that make up Saturn's E ring came from volcanoes or ice geysers on this moon.

Another moon, Mimas (MY-muss), has a giant crater that is one-third as wide as the moon itself. In the center of the crater is a mountain as tall as some of the biggest mountains on Earth.

Two other moons, Epimetheus (ep-uh-ME-thee-us) and Janus (JAY-nuss), trade orbits with each other every few

years, taking turns being closer to the planet.

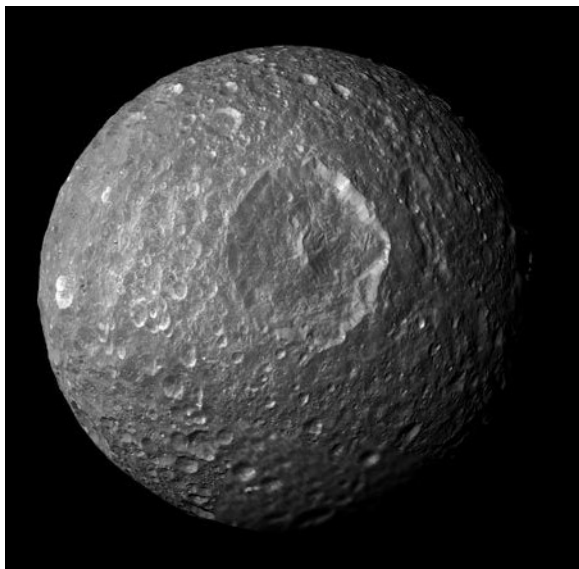
Iapetus (eye-A-pe-tus) may be the strangest of Saturn's moons. It looks like a big ball that's chocolate on one side and vanilla on the other side!

Some scientists think a moon called Phoebe (fee-bee) may have started out far beyond Pluto, and wandered billions of miles toward the Sun until it was captured by Saturn's gravity. Titan is by far Saturn's biggest moon. It's the second largest moon in the whole solar system. (The largest one, *Ganymede*, is in orbit around Jupiter.) Titan is bigger than the planet Mercury!

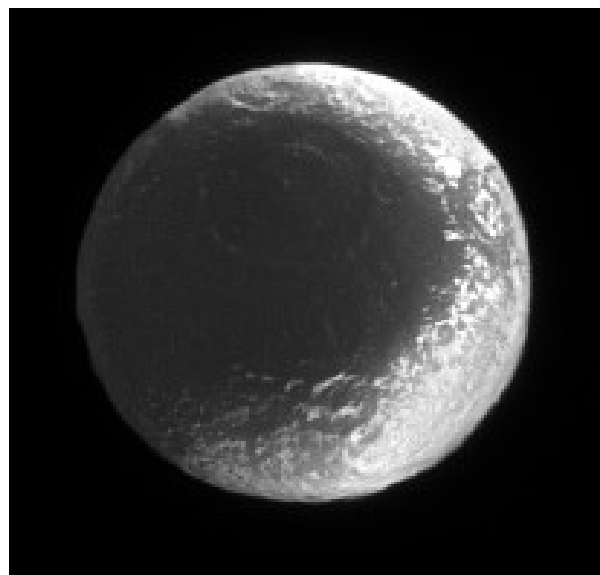
Titan's surface is hidden beneath a thick, deep-orange haze. But radar can "see" through the haze, and scientists on Earth using a powerful radar system to bounce microwaves off the giant moon found what they thought might be huge lakes or oceans on Titan. But there was no clear evidence yet.

The Huygens probe, named after the astronomer who discovered Titan, was carried by the Cassini spacecraft to Saturn. The probe parachuted to Titan through the murky skies, sending back the first images from the surface. The probe's landing site looked as though it had been eroded by a flowing liquid.

Images by Cassini



Mimas



Iapetus

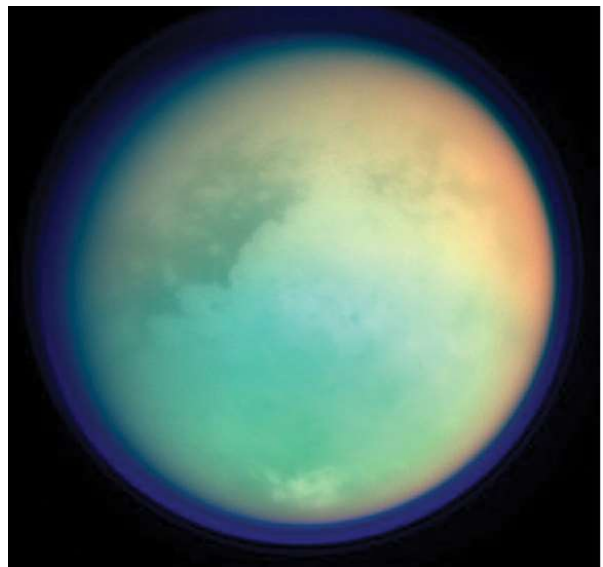


**Before its parachutes opened, Huygens began to fall through Titan's atmosphere.**

Then, in 2007, Cassini mission scientists announced the Cassini's imaging radar system had discovered more than 75 lakes on Titan. These lakes are filled with liquid methane instead of water. Titan is so cold that water there is frozen as hard as rock!

We now know that Titan has an active atmosphere and complex, Earth-like processes. Titan resembles a very cold version of Earth as our planet was several billion years ago.

Which of Saturn's moons would you most like to visit? Why?



**Cassini image of Titan's cloud layers, shown in "false colors"**

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