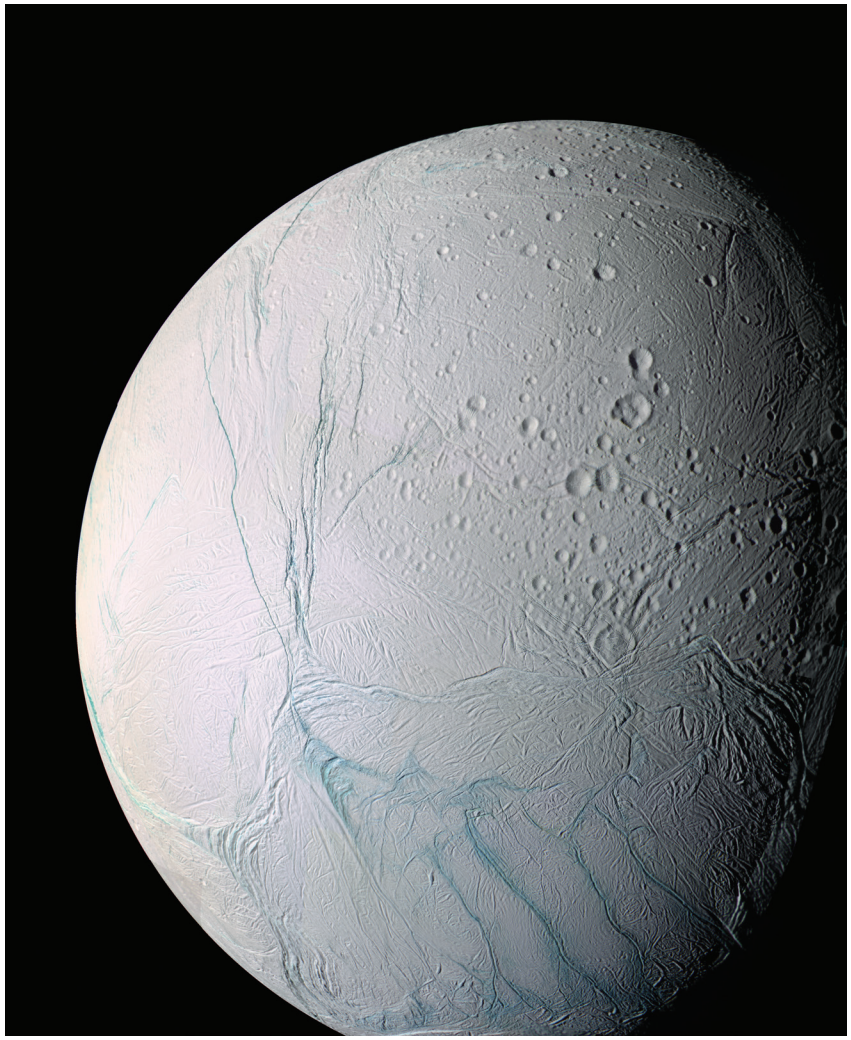
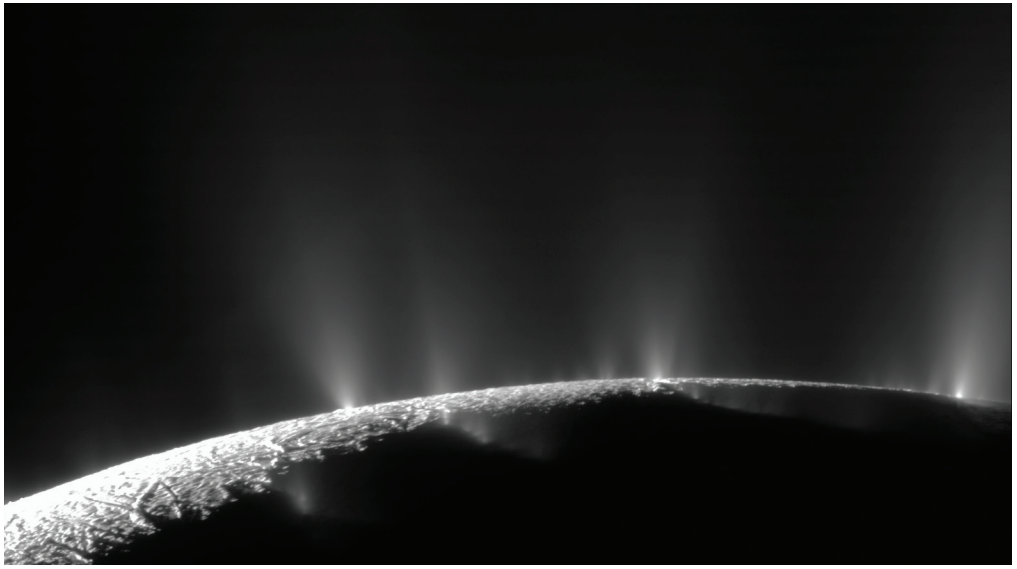
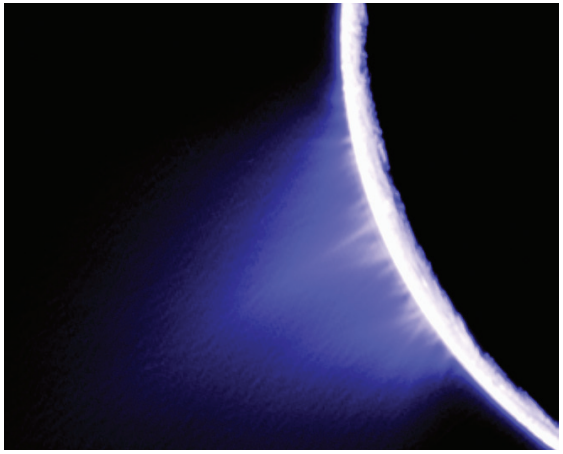
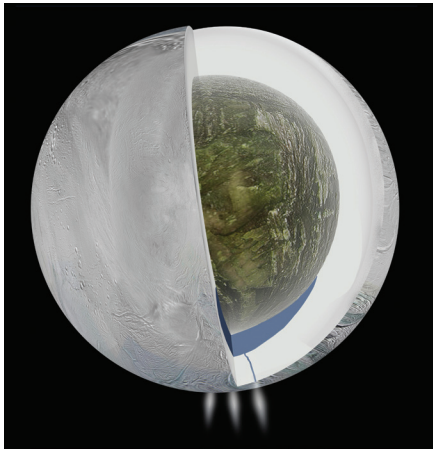








Enceladus, Moon of Saturn

Enceladus (pronounced en-SELL-ah-dus) is an icy moon of Saturn with remarkable activity near its south pole. Covered in water ice that reflects sunlight like freshly fallen snow, Enceladus reflects almost 100 percent of the sunlight that strikes it. Because the moon reflects so much sunlight, the surface temperature is extremely cold, about –330 degrees F (–201 degrees C). The surface of Enceladus displays fissures, plains, corrugated terrain and a variety of other features.

Enceladus may be heated by a tidal mechanism similar to that which provides the heat for volcanoes on Jupiter's moon Io. A dramatic plume of jets sprays water ice and gas out from the interior at many locations along the famed "tiger stripes" at the south pole. Cassini mission data have provided evidence for at least 100 distinct geysers erupting on Enceladus. All of this activity, plus clues hidden in the moon's gravity, indicates that the moon's interior harbors a liquid water ocean.

Feeding the E Ring

In the 1980s, scientists noticed that Saturn's faint and expansive E ring is at its brightest where Enceladus orbits the planet. Researchers came to suspect the icy moon might be the source of the ring's material, but they were not sure how it was being produced. Later, NASA's Cassini mission showed that some of the material that sprays out of geysers on the surface of Enceladus goes into orbit around Saturn, forming the E ring. Thus, the little moon orbits within a ring of its own creation. As it orbits Saturn, Enceladus scoops up some of this ring material, coating itself continually in a mantle of fresh, white ice.

An artist's concept of Saturn's rings and some of the icy moons. The ring particles are composed primarily of water ice and range in size from microns to tens of meters. In 2004, the Cassini spacecraft passed through the gap between the F and G rings to begin orbiting Saturn.

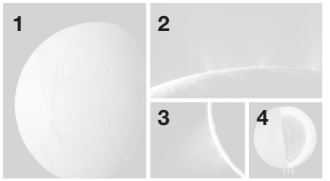
Saturn's Rings

Saturn's rings form an enormous, complex structure. From edge to edge, the ring system would not fit in the distance between Earth and the Moon. The seven main rings are labeled in the order in which they were discovered. From the planet outward, they are D, C, B, A, F, G and E.

Saturn's remarkable E ring spans all the way from the orbit of Mimas to the orbit of Titan, about 620,000 miles (1 million kilometers). Saturn also has another faint, extended ring at the orbit of Phoebe, 8.1 million miles (13 million kilometers) from Saturn.

The Cassini mission to Saturn is a cooperative project of the National Aeronautics and Space Administration (NASA), the European Space Agency and the Italian Space Agency. The Jet Propulsion Laboratory, a division of the California Institute of Technology, manages the mission for NASA.

For images and information about the Cassini mission, visit — http://saturn.jpl.nasa.gov/



1 This enhanced color view of Enceladus' south polar terrain shows the fractures called "tiger stripes," encircled by folds and ridges in the twisted terrain.

2 Dramatic jets spray water ice from many locations along the tiger stripes near the south pole.

3 Another view of the jets — false color reveals the subtleties in brightness.

4 An illustration depicting a water ocean in the interior of Enceladus based on gravity measurements by NASA's Cassini spacecraft and Deep Space Network.

National Aeronautics and Space Administration

Jet Propulsion Laboratory
California Institute of Technology
Pasadena, California

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