



Curtain Falls on Cassini-Huygens Missions

GWENDOLYN EADIE &
AARON SPRINGFORD

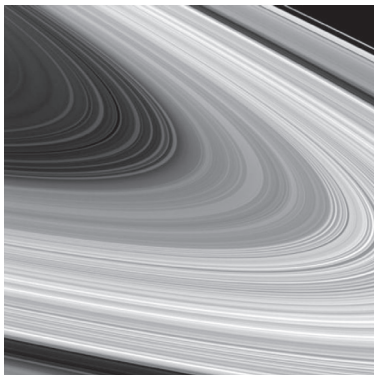
The Cassini-Huygens spacecraft, launched October 15, 1997, and arriving at Saturn in 2004, is named for Giovanni Domenico Cassini and Christian Huygens. Cassini was an astronomer made famous by his discovery of four moons orbiting the planet Saturn, and by his description of the large gap in Saturn’s rings, which was eventually named the Cassini Division. Huygens was a mathematician, astronomer, and physicist. His contribution to Saturnal knowledge was his discovery of Saturn’s moon Titan. It is therefore fitting that the spacecraft designed to study Saturn should bear the names of these men: Cassini for the orbiter and Huygens for the probe that was destined for Titan.

Cassini’s images have led to some very significant discoveries. For example, an early fly-by of Saturn’s

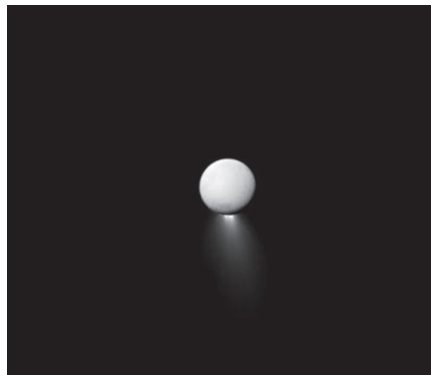
moon Enceladas revealed plumes of material being ejected into space. This discovery was so novel that Cassini was made to return to Enceladas and fly through the plume in order to sample its composition. The plume included organic molecules necessary for life. Another unique discovery was the features imparted on Saturn’s rings due to the action of moons; waves, ripples, clumps, and spokes appear frequently as the small moons interact with the material in the rings. Exploration of Titan revealed lakes of liquid hydrocarbons, and a dense atmosphere, both Earth-like features.

The Cassini-Huygens spacecraft must be considered an overwhelming success; Huygens was successfully delivered to the surface of Titan on January 14, 2005, and Cassini is currently on its second mission extension. After arriving at Saturn in 2004, Cassini’s design mission was not only to deliver Huygens to Titan but also to explore the Saturn system over the course of four years.

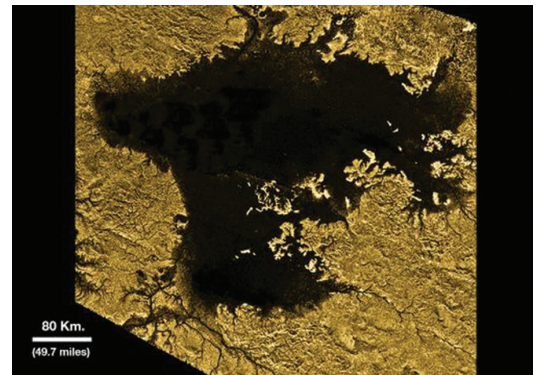
After completing its initial mission and still in fighting form, a mission extension called Cassini Equinox was devised and begun in September 2010. This mission studied various aspects of the Saturn system during the planet’s equinox. Continuing the theme, its second mission extension is called Cassini Solstice, coinciding with northern hemisphere “summer” on Saturn in 2017. Cassini Solstice will be the spacecraft’s swan song; it is currently undergoing manoeuvres that will bring it on closer and closer flybys of Titan before finally being enveloped by Saturn’s atmosphere in September 2017.



*A sample of one of the detailed images of Saturn’s rings, taken by the Cassini spacecraft.
Credit: NASA/JPL-Caltech/Space Science Institute.*



*A giant plume of material is released from Saturn’s icy moon Enceladas. This Cassini image was taken in April 2013.
Credit: NASA/JPL-Caltech/Space Science Institute.*



*An enhanced photo of one of the many liquid-hydrocarbon (e.g. ethane and methane) lakes discovered on Saturn’s moon Titan.
Credit: NASA/JPL-Caltech/Space Science Institute.*