

NASA Extends Cassini's Tour of Saturn

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Of the countless equinoxes Saturn has seen since the birth of the solar system, this one, captured here in a mosaic of light and dark, is the first witnessed up close by an emissary from Earth ... none other than our faithful robotic explorer, Cassini. Image credit: NASA/JPL/Space Science Institute

(PhysOrg.com) -- NASA will extend the international Cassini-Huygens mission to explore Saturn and its moons to 2017. The agency's fiscal year 2011 budget provides a \$60 million per year extension for continued study of the ringed planet.

"This is a mission that never stops providing us surprising scientific results and showing us eye popping new vistas," said Jim Green, director of NASA's planetary science division at NASA Headquarters in Washington. "The historic traveler's stunning discoveries and images have revolutionized our knowledge of Saturn and its moons."

Cassini launched in October 1997 with the European Space Agency's Huygens probe. The spacecraft arrived at Saturn in 2004. The probe was

equipped with six instruments to study Titan, Saturn's largest moon. Cassini's 12 instruments have returned a daily stream of data from Saturn's system for nearly six years. The project was scheduled to end in 2008, but the mission received a 27-month extension to Sept. 2010.

"The extension presents a unique opportunity to follow seasonal changes of an outer planet system all the way from its winter to its summer," said Bob Pappalardo, Cassini project scientist at NASA's Jet Propulsion Laboratory in Pasadena, Calif. "Some of Cassini's most exciting discoveries still lie ahead."

This second extension, called the Cassini Solstice Mission, enables scientists to study seasonal and other long-term weather changes on the planet and its moons. Cassini arrived just after Saturn's northern winter solstice, and this extension continues until a few months past northern summer solstice in May 2017. The northern summer solstice marks the beginning of summer in the northern hemisphere and winter in the southern hemisphere.

A complete seasonal period on Saturn has never been studied at this level of detail. The Solstice mission schedule calls for an additional 155 orbits around the planet, 54 flybys of Titan and 11 flybys of the icy moon Enceladus.

The mission extension also will allow scientists to continue observations of Saturn's rings and the magnetic bubble around the planet known as the magnetosphere. The spacecraft will make repeated dives between Saturn and its rings to obtain in depth knowledge of the gas giant. During these dives, the spacecraft will study the internal structure of Saturn, its magnetic fluctuations and ring mass.

The mission will be evaluated periodically to ensure the spacecraft has the ability to achieve new science objectives for the entire extension.

"The spacecraft is doing remarkably well, even as we endure the expected effects of age after logging 2.6 billion miles on its odometer," said Bob Mitchell, Cassini program manager at JPL. "This extension is important because there is so much still to be learned at Saturn. The planet is full of secrets, and it doesn't give them up easily."

Cassini's travel scrapbook includes more than 210,000 images; information gathered during more than 125 revolutions around Saturn; 67 flybys of Titan and eight close flybys of Enceladus. [Cassini](#) has revealed unexpected details in the planet's signature rings, and observations of Titan have given scientists a glimpse of what Earth might have been like before life evolved.

Scientists hope to learn answers to many questions that have developed during the course of the mission, including why Saturn seems to have an inconsistent rotation rate and how a probable subsurface ocean feeds the Enceladus' jets.

Provided by JPL/NASA

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