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# SCIENCE & SPACE

## Spacecraft probes Titan's upper atmosphere

Scientists: Saturn moon's atmosphere full of organic material

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**(CNN) -- The Cassini spacecraft's most recent flyby of Titan, Saturn's largest moon, found that its upper atmosphere is full of complex organic material, a discovery that could help unlock the mystery of life on our own planet, scientists said Monday.**

Scientists have long believed that chemical reactions by hydrocarbons -- organic compounds like methane that contain carbon and hydrogen -- began the process of life on Earth.

To scientists, Titan's atmosphere is a time machine to the early days of Earth.

"Scientists believe that Titan's atmosphere may be a laboratory for studying the organic chemistry that preceded life and provided the building blocks for life on Earth," according to NASA's Jet Propulsion Laboratory in Pasadena, California.

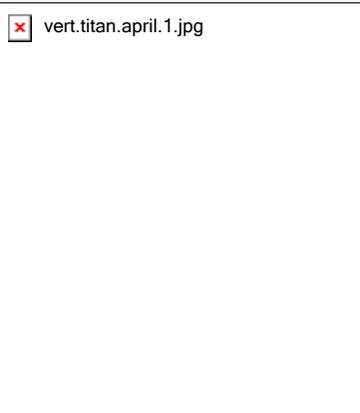
The pass took place April 16 and was the closest the probe has been to Titan. The spacecraft came within 1,027 kilometers (638 miles) of the moon's surface. This was Cassini's sixth flyby of Titan. The next is August 22.

Data sent by Cassini indicate a large number of different hydrocarbons in Cassini's outer layer atmosphere.

Complex mixtures of hydrocarbons and carbon-nitrogen compounds "were seen throughout the range of masses" measured by the Cassini's spectrometer.

Scientists were surprised to find such an abundance of complex hydrocarbon molecules in the upper atmosphere.

"Titan is very cold, and complex hydrocarbons would be expected to condense and rain down to the surface," according a JPL news release.



Titan as it would look to the human eye -- a hazy orange globe surrounded by a bluish haze.

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Titan is the only moon in the solar system to retain a substantial atmosphere. Its atmosphere is a murky mix of nitrogen, methane and hydrocarbon. Temperatures on Titan hover around minus 292 degrees Fahrenheit (180 Celsius).

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Scientists hope to use this information to determine the structure, dynamics and history of Titan.

"Ultimately, this information from the Saturn system will help us determine the origins of organic matter within the entire solar system," said Dr. Hunter Waite, a Cassini mission scientist and professor at the University of Michigan.

"Biology on Earth is the primary source of organic production we are familiar with, but the key question is: What is the ultimate source of the organics in the solar system?" Waite said.

The Cassini-Huygens mission is an unprecedented \$3.3 billion effort among NASA, the European Space Agency and Italy's space program to study Saturn and its 33 known moons. The two vehicles were launched together from Florida in 1997.

On January 14, the European Huygens probe detached from Cassini and touched down on the surface of Titan, beaming back images of a frozen methane world. ([Full story](#))

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