

More of Titan's secrets to be unveiled on 21 January

January 18 2005

One week after the successful completion of Huygens' mission to the atmosphere and surface of Titan, the largest and most mysterious moon of Saturn, the European Space Agency is bringing together some of the probe's scientists to present and discuss the first results obtained from the data collected by the instruments.

After a 4000 million kilometre journey through the Solar System that lasted almost seven years, the Huygens probe plunged into the hazy atmosphere of Titan at 11:13 CET on 14 January and landed safely on its frozen ground at 13:45 CET. It continued transmitting from the surface for several hours, even after the Cassini orbiter dropped below the horizon and stopped recording the data to relay them towards Earth. Cassini received excellent data from the surface of Titan for 1 hour and 12 minutes.

More than 474 megabits of data were received in 3 hours 44 minutes from Huygens, including some 350 pictures collected during the descent and on the ground, which revealed a landscape apparently modelled by erosion with drainage channels, shoreline-like features and even pebble-shaped objects on the surface.

The atmosphere was probed and sampled for analysis at altitudes from 160 km to the ground, revealing a uniform mix of methane with nitrogen in the stratosphere. Methane concentration increased steadily in the troposphere down to the surface. Clouds of methane at about 20 km altitude and methane or ethane fog near the surface were detected.

The probe's signal, monitored by a global network of radio telescopes on Earth, will help reconstruct its actual trajectory with an accuracy of 1 km and will provide data on Titan's winds. Early analysis of the received signal indicate that Huygens was still transmitting after three hours on the surface. Later recordings are being analysed to see how long Huygens kept transmitting from the surface.

Samples of aerosols were also collected at altitudes between 125 and 20 km and analysed on board. During the descent, sounds were recorded in order to detect possible distant thunder from lightning, providing an exciting acoustic backdrop to Huygens' descent.

As the probe touched down at about 4.5 metres per second, a whole series of instruments provided a large amount of data on the texture of the surface, which resembles wet sand or clay with a thin solid crust, and its composition as mainly a mix of dirty water ice and hydrocarbon ice, resulting in a darker soil than expected. The temperature measured at ground level was about -180 degrees Celsius.

Some stunning preliminary results were presented shortly after the science teams obtained access to their data, on 15 January. After several days of processing and analysis of these results, the scientists will be able to deliver a better view of this strange distant world during a press conference on **Friday 21 January at 11:00 CET** at ESA's Headquarters in Paris (rebroadcast at several other ESA establishments).

Participating in this event:

David Southwood
ESA's Director of Science Programmes

Jean-Pierre Lebreton
ESA's Huygens Project Scientist and Mission Manager

Marcello Fulchignoni (TBC)

Principal Investigator for the Huygens Atmospheric Structure Instrument (HASI), from the University of Paris/Observatoire de Paris-Meudon, France

Martin G. Tomasko

Principal Investigator for the Descent Imager and Spectral Radiometer (DISR), from the University of Arizona in Tucson, United States

John C. Zarnecki

Principal Investigator for the Surface Science Package (SSP), from the Open University at Milton Keynes, United Kingdom

Guy Israel

Principal Investigator for Aerosol Collector and Pyroliser (ACP), from CNRS, Service d'Aéronomie, Verrières-le-Buisson, France

Toby Owen

Cassini Interdisciplinary Scientist for the atmospheres of Titan and Saturn, from the Institute for Astronomy, Honolulu, United States

The ESA TV service will televise the press conference live via satellite (Eutelsat W1). For transmission details, check television.esa.int

NASA-TV will broadcast the press conference across the US and as partner in the Cassini-Huygens mission ensure live streaming. For details, see: www.nasa.gov/multimedia/nasatv/

The Cassini-Huygens mission is a cooperation between NASA, ESA and ASI, the Italian space agency. The Jet Propulsion Laboratory (JPL), a division of the California Institute of Technology in Pasadena, is managing the mission for NASA's Office of Space Science, Washington DC. JPL designed, developed and assembled the Cassini orbiter.

Source: ESA

Citation: More of Titan's secrets to be unveiled on 21 January (2005, January 18) retrieved 24 April 2024 from <https://phys.org/news/2005-01-titans-secrets-unveiled-january.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.