

Cassini Huygens at Titans doorstep

December 5 2004

The NASA/ESA/ASI Cassini Huygens mission to Saturn, which has already delivered stunning images and data of the ringed planet following insertion into the Saturnian system on 1st July this year, is poised to enter a crucial stage in its voyage of scientific discovery. In the early hours of Christmas morning [25th December], the Huygens probe will separate from the orbiter - its' home for the last seven years - to parachute down through the nitrogen-rich atmosphere of Saturn's largest moon, Titan, where it will come to rest, though the exact nature of its final resting place remains a mystery. Scientists speculate that Huygens may find lakes or even oceans of a mixture of liquid ethane, methane and nitrogen.

Prof. John Zarnecki of the Open University, principal scientist for the Science Surface Package, the first instruments to make contact with Titan's terra firma is open minded. "It's a distinct possibility that I could be the very first scientist to carry out oceanography on an outer planet of the solar system. But equally the probe could land with a thud on hard ground or squelch into a morass of extraterrestrial slime - no one knows for sure. In any event, the instruments onboard have been designed to handle a range of possibilities. Let's just say that, after a seven year voyage and twenty years of planning, design and build, I will be extremely pleased to land, whatever the surface."

Following separation from the mothership, Huygens will coast unguided and unpowered for 20 days towards Titan, where it will arrive on the 14th January [2005] to begin its entry and descent to the moon's surface. Travelling at Mach 2 [1522 mph], the probe will enter Titan's

atmosphere at an altitude of 1270km [789 miles] and decelerate to an impact speed of 5 meters per second - the equivalent to jumping from a chair onto the ground.

Commenting on the mission Professor Ian Halliday, Chief Executive of the Particle Physics and Astronomy Research Council [PPARC] that funds UK involvement in the joint NASA/ESA/ASI project said, "Superlatives can come easy when talking about space missions but this particular voyage of scientific discovery is truly awesome. Huygens will be the furthest man-made object to land on a remote celestial body and, whilst the science returns from Titan are eagerly awaited, we shouldn't forget that the European Huygens probe is totally controlled by UK developed systems and hardware. At a distance of almost 1.3 billion km [789 million miles] that's quite a feat."

Professor Halliday added, "Titan is a mysterious place and raises many scientific questions. Its thick atmosphere is mostly nitrogen, but there are also methane and many other organic compounds. Some of them would be signs of life if they were on our planet. Organic compounds form when sunlight destroys methane. If sunlight is continuously destroying methane on Titan, how is methane getting into the atmosphere?"

Source: PPARC

Citation: Cassini Huygens at Titans doorstep (2004, December 5) retrieved 16 August 2024 from <https://phys.org/news/2004-12-cassini-huygens-titans-doorstep.html>

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