



Key Titan Science Drivers for the Titan Explorer and TandEM Missions

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Cassini-Huygens has revealed Titan to be a diverse and complex world that begs further exploration by a focussed mission. A 2007 NASA Flagship study defined science goals that address the new mysteries raised by Cassini and ties them to policies such as the Solar System Roadmap. Two main themes emerged after deliberation by a 12-member Science Definition Team : (1) Exploring Titan as a System (much like Earth system science, where the atmosphere, surface, subsurface and space environment all interact and (2) Titan and the Origins of Life, to explore its remarkable organic chemistry. A flexible Titan Orbiter - Lander - Balloon architecture was proposed to meet these goals, and further study of a Titan Explorer mission will take place in 2008.

In parallel with this activity, the TandEM (Titan and Enceladus) proposal has been accepted for study in the ESA Cosmic Vision 2020 programme, and features detailed in-situ and orbital investigation of Titan.

The science goals, and candidate mission concepts and instrumentation, will be discussed.