



## **Huygens proximity sensor.**

### **Data evaluation of terrestrial tests performed aboard the Comas Sola balloon.**

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The Huygens Proximity Sensor was designed to measure the altitude of the Huygens probe during its descent to Titan. An altitude and a descent velocity profile can be retrieved from a timing signal within the Radar operating range of about 50-0.15 km. The ramp rate driven timing signal corresponds to the propagation delay of the FMCW signal backscattered from the surface of Titan.

A secondary scientific objective is based on the spectral analysis of an intermediate frequency signal. The bandwidth of the IF-Signal indicates the roughness of the surface topography covered by the footprint of the Huygens Radar Altimeter. A performance test of the Radar Altimeter Unit (RAU) at high altitudes (up to 30 km) was part of the HASI/Comas Sola balloon campaign launched in Leon, Spain, in December 1995. The Huygens mission at Titan was simulated by a drop test. The Huygens probe mock-up was separated from the stratospheric balloon in order to descent by a

parachute. With regard to the Huygens mission this performance test has provided one of the most realistic data sets of the RAU.

The results of the Comas Sola and other balloon tests will be used to calibrate the RAU data measured on Titan. Altitude and descent velocity profiles as well as the results of the spectral analysis of the IF spectrum will be shown, and calibration methods for Huygens data will be discussed.