

HASI Huygens Atmospheric Structure Instrument



HASI PI and CoI's

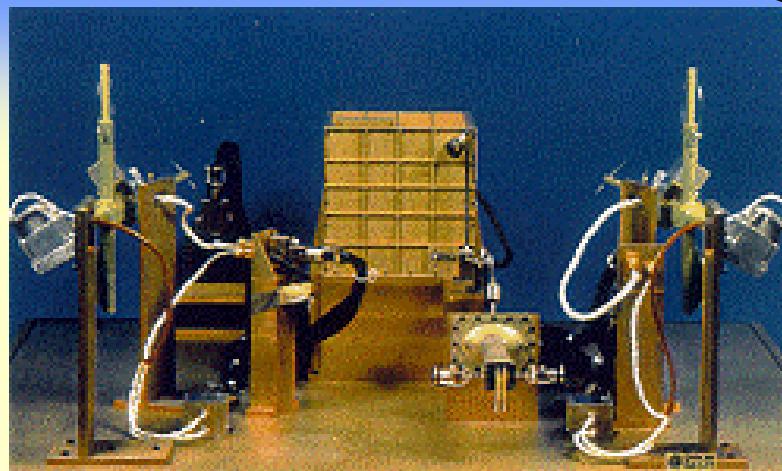
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HASI Sensors



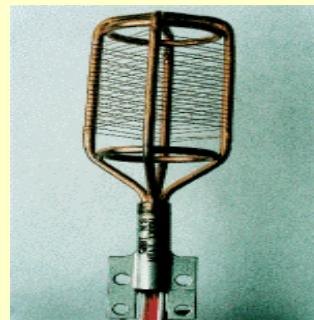
Sensor package	Acronym	Sensor type	Accuracy	Resolution	Measured parameters
Accelerometers*	ACC	3-axes accelerometer (1 X-servo & 3 piezo-resistive accelerometers)	1%	1-10 µg (high res.) 0.9-9 mg (low res.)	Atmospheric deceleration Descent monitoring Response to impact
Pressure Profile Instrument	PPI	Kiel type pressure probe + capacitive transducers	1%	0.01 hPa	Atmospheric pressure
Temperature sensors	TEM	2 dual element Pt thermometers	0.5 K	0.02 K	Atmospheric temperature
Permittivity, Wave and Altimetry	PWA	Mutual Impedance AC field measurement Relaxation probe Acoustic sensor Radar signal processing (FFT)	10%	$10^{-11} (\Omega\text{m})^{-1}$ 2µV/m (threshold) 1 min 25 ms - 2 s 1mV (threshold) 10 mPa (threshold)	Atmospheric electric conductivity Wave electric fields and lightning Ion conductivity & DC electric field Acoustic noise due to turbulence or storms Radar echoes below 60 km

*figures for resolution and accuracy are for the X servo accelerometer

Scientific Objectives

HASI scientific objectives

- Determine the atmospheric density, pressure and temperature profiles
- Determine the atmospheric electric conductivity and charge carrier profiles
- Investigate ionisation processes
- Survey of wave elelctric fields, lightning and analyse the quasi-static electric fields leading to storm formation
- Detect acoustic noise due to turbulence or storm
- Characterise the roughness, mechanical and electric properties of the surface material, whatever its phase, solid or liquid



Temperature Sensor



Electric Field Sensors