Geophysical Research Abstracts,
Vol. 10, EGU2008-A-09591, 2008
SRef-ID: 1607-7962/gra/EGU2008-A-09591
EGU General Assembly 2008

Variations of acoustic parameters in the troposphere of Titan as observed by the HUYGENS HASI acoustic sensor

K. Schwingenschuh (1), T. Tokano (2), B. Besser (1), I. Jernej (1), R. Hofe (3), W. Magnes (1), P. Falkner (4), V. Brown (5), H. U. Eichelberger (1)

and the HASI team

(1) Space Research Institute, Austrian Academy of Sciences, Schmiedlstrasse 6, A-8042 Graz, Austria
(2) IGM Universität zu Köln, Germany

(3) Speech and Hearing Group, Dep. of Computer Science, University of Sheffield, UK,

(4) Science Payload and Advanced Concepts Office, ESA/ESTEC, Post Bus 299, NL-2000 AG, Noordwijk, The Netherlands

(5) Instituto de Astrofísica de Andalucía (IAA), CSIC, P.O. Box 3004, E-18080 Granada, Spain

The acoustic unit (ACU)was included in the HUYGENS HASI experiment in order to investigate acoustic activities during the descent and after landing. Pressure fluctuations from 200 Hz to 6 kHz were measured but only the spectral information was transmitted. The scientific objectives include wind and atmospheric turbulence studies.

The changes of the turbulence level observed during the descent of the probe depends on the probe velocity, the variations of the density, temperature and the acoustic impedance of the acoustic sensor. Model results are used to estimate the influence of these parameters on the observed turbulence. The turbulence measured depends also on the tilt and phase angle of the probe taken from the SSP and DISR experiments. A correlation was also found between haze variations and ACU measurements in the

lower troposphere of Titan. The turbulence level after landing was used together with wind tunnel experiments to infer an upper limit of the horizontal wind velocity during the post landing phase.

Correlative studies of the electric and acoustic fluctuations have been performed in order to investigate the acoustic phenomena possibly produced by electrical discharges, e.g. lightning or parachute charging.