ELECTRIC FIELD TRANSIENTS OBSERVED BY
THE HUYGENS PROBE IN THE ATMOSPHERE
OF TITAN: ATMOSPHERIC ELECTRICITY
PHENOMENA OR ARTEFACTS?

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Abstract

During the first 35 close Titan flybys the Radio and Plasma Wave Science instru-
ment (RPWS) aboard the CASSINI orbiter did not observe radio signals possibly
associated with lightning in the atmosphere of Titan [Fischer et al., 2007, Geo-
phys. Res. Lett., 34, L22104]. The electric field sensors of the HUYGENS PWA
instrument (permittivity, waves and altimetry) observed smooth variations as well
as impulsive events varying with altitude during the descent of the probe in the
atmosphere of Titan. While a part of the low frequency signals was explained
as externally driven Schumann resonances, there is still a debate on the origin of
the impulsive events. In order to differentiate natural atmospheric discharges from
sources on the parachute or the probe the HUYGENS electric field data have been
re-evaluated und combined with probe attitude and velocity. The correlation results
indicate that atmospheric electricity phemonena are present in the atmosphere of
Titan.

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