



Acoustics of planetary atmospheres with active multi-microphone techniques, probing Titan

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We investigate the possibility of probing the atmospheres of planets and moons with multi-microphone techniques including acoustic transmitters and focus on Titan in the Saturnian system. Based on in-situ measurements from Huygens Atmospheric Structure Instrument (HASI/PWA) on Huygens probe (mission Cassini-Huygens) in 2005 we present novel techniques for study wind- and sound velocities, acoustic waves, turbulence and other macroscopic atmospheric parameters for upcoming missions, e.g. the proposed TandEM mission in the frame of ESA's Cosmic Vision call. The local acoustic environment and noise properties are characterised, remote acoustic events and other short-term impulsive emissions could be located and analysed. The systems engineering based to a great extend on technology with space heritage. Main technical parameters such as sensitivity, frequency range and acoustic directivity could be adapted in-flight during operation of the microphone network.

Keywords: acoustics, multi-microphone technique, Titan, systems engineering, space mission