



Titan Aeronomy

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The Cassini-Huygens Mission has provided an abundance of data pertaining to Titan's thermosphere and confirmed general conclusions from the Voyager Mission that CH₄ is well mixed to high altitude and the thermosphere is cold (~ 150 K), with similar total densities at the equatorial 950 km level. However, the thermospheric structure is not consistent with the Voyager conclusion that only solar forcing and heating is important. Some of the surprises include 1) suggestive evidence for large non-thermal escape fluxes H₂ and CH₄, 2) large amplitude waves, 3) equatorial bulge above 1000 km, 4) complex molecules and ions in abundances above 1000 km far in excess expectations of pre-Cassini-Huygens photochemical models, 5) magnetospheric induced electrodynamic interaction down to the 1000 km level, and 6) significant high energy ion fluxes penetrating below 1000 km with important chemical and physical consequences. A selection of these topics will presented consistent with the allocated time.