Effects of Upward Propagating Waves in the Equatorial Ionosphere-Atmosphere System

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The plasma distribution in the equatorial and low altitude ionosphere, where its concentration has a global maximum, has great consequence for diverse space application systems as well as in the study of the solar control of the atmosphere-ionosphere system with its many coupling processes. The large degree of the variabilities observed in the distribution and structuring of the plasma of this region is a direct indicator of the dynamic and electrodynamic coupling processes that cause them, during magnetically quiet as well as disturbed conditions. In this presentation we will discuss the effects of upward propagating atmospheric waves (mainly planetary- and gravity-waves) of varying intensity in the control of the equatorial ionosphere and atmosphere. The main focus will be on the coupling processes leading to the variability in the night time ionosphere. Recent studies have shown that the upward propagating planetary waves can be an important source of modification of the evening prereversal vertical drift and hence in the post sunset development of the plasma bubble/ESF irregularities. The role of gravity waves will also be discussed based on findings from some recent studies including some observational campaigns conducted in Brazil.