

THE INFLUENCE OF ATMOSPHERIC GRAVITY WAVES EXCITED BY DEEP CONVECTION ON THE IONOSPHERE

Sharon Vadas

In this paper, we discuss the influence that atmospheric gravity waves (GWs) excited by deep convection near the tropopause have on the F region of the ionosphere. Because GWs only propagate in the neutral atmosphere (which is the thermosphere in the F region), we examine the interaction between the neutrals and the ions in this region. This depends on the orientation of the Earth's magnetic field with respect to the propagation direction of the GW. We then discuss the resultant oscillations in the ionosphere. These oscillations are called traveling ionospheric disturbances (TIDs). These TIDs are not self-supporting waves, but instead rely on the GWs in order to travel in the ionosphere. We discuss the medium and large-scale TIDs created by primary and secondary GWs from deep convection. We also discuss persistent positive and negative TEC perturbations that are created near regions of deep convection from under or overdense regions in the neutrals in the thermosphere.