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Coulpling of the themosphere/ionosphere with the lower atmosphere through atmospheric waves

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Observations suggest that short-term variability in the thermosphere and ionosphere can be driven by meteorological perturbations such as planetary waves and gravity waves. The mechanism of this driving, however, is not yet well understood. This talk will review some of our recent efforts in this aspect. In particular, TIME-GCM simulations have shown that the total electron contents (TEC) and peak F2 layer electron density can vary rather significantly in response to transient planetary waves and secondary generation of gravity waves in the thermosphere. We will present a detailed analysis of the key dynamical and electrodynamical processes that produce the thermospheric and ionospheric variability.