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Damping of Whistler Waves through Mode Conversion to Lower Hybrid Wave in the Ionosphere X. SHAO, BENGT ELIASSON, A.S. SHARMA, G. MILIKH, K. PAPADOPOULOS, Dept. of Physics and Astronomy, Univ. of Maryland — The VLF waves excited by powerful ground-based transmitter propagate in the Earth-ionosphere waveguide and leaks through the ionosphere to the magnetosphere. Recent studies [Starks et al. 2008] using combined Earth-ionosphere waveguide model and ray-tracing model found that the model systematically overestimates the VLF wave field strength in the plasmasphere owing to VLF transmitter by ∼20 dB at night and ∼10dB during the day. We present a numerical model to simulate linear mode conversion between whistler wave and lower hybrid wave due to the interaction with short scale density striations such as field-aligned irregularities in the Earth's ionosphere. It is found that at the altitudes between 90 to 120 km in the ionosphere, the energy of whistler wave energy can be converted to the lower hybrid wave and the lower hybrid wave can be subsequently damped by ion-neutral collisions. The mode conversion of whistler wave to lower hybrid wave in the E region ionosphere may play an important role in the whistler wave damping. This work is supported by ONR MURI grant.

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