



Modelling of the signatures of atmospheric gravity waves for empirical electron density models

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Most of the Traveling Ionospheric Disturbances (TIDs) are signatures of Atmospheric Gravity Waves (AGWs), the electron density distribution acting as a tracer for the neutral atmosphere waves. Our model for TIDs is based on AGW properties and takes into account their dispersion relation, their vertical structure ("forward tilt"), and radiation into well defined "fan beams". The model has the capability to superpose waves from different sources and with different propagation properties ("interfering waves"). For Large Scale TIDs one usually assumes sources in the auroral thermosphere, smaller scale TIDs are considered to trace AGWs with primary sources in the lower atmosphere. To model these we adapt for secondary source points in the mid latitude ionosphere. We show simulation results in comparison with TID data gained by means of a dense network of GPS receivers.