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Latitude variations of AGW wave-front orientation deduced from a comparison of MSTID observations by DEMETER and its simulation using the SAMI2 ionospheric model

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Daytime Medium-Scale Traveling Ionospheric Disturbances (MSTIDs) were observed simultaneously by GPS-TEC and DEMETER satellite at 660km altitude showing that the ion density and velocity disturbances measured on board the satellite display different phase shift with respect to the variation of GPS-TEC at the conjugate point of the satellite. A modelling study using the ionospheric SAMI2 code and a simplified description of the AGW has shown that effects in the upper ionosphere result from two different regimes of propagation, the first one controlled by the coupling of the plasma with the neutral gas in the collisional ionosphere below $\sim$ 400 km and the second one at higher altitudes where plasma disturbances propagate along the magnetic field lines with a velocity close to the ion-acoustic velocity. In order to explain the observed latitudinal variation of the phase differences, we have empirically varied the AGW wave-front direction during its propagation. Initial results of this study will be presented showing a satisfactory agreement with the GPS and satellite data.