The role of plasma turbulence in the E-W asymmetry of the experimentally observed electron drift velocities and altitude of occurrence of maximum electron drift velocity in the EEJ region

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Abstract: E-W asymmetry in the electron drift velocity at equatorial electrojet (EEJ) altitudes has been observed using the HF radar (18 MHz) at the magnetic equatorial location of Trivandrum (Tiwari, 2003). We observed a similar asymmetry in the altitude structure of the electrojet, wherein the electrojet current is observed to peak at a higher altitude in the direction of the west beam when compared to the current in the east beam direction of the HF radar. Krishna Murthy and Ravindran (1994) have shown using VHF backscatter radar (54.95 MHz) observations at Trivandrum, for selected days, that the peak altitude of electrojet current is shifted upwards with increase in the level of plasma turbulence in the region. Using the method (for determining plasma turbulence parameters) given by them we are making quantitative estimates of the plasma turbulence parameters such as electron density irregularity strength, anomalous collision frequency etc for the radar data in the two beam directions. The observed e-w asymmetry is being examined in terms of the behaviour of the plasma turbulence parameters in the two beam directions and the details are presented and discussed.