

James M. Carpenter

NCAR, High Altitude Observatory

Mentors: Wenbin Wang, Jiuhou Lei, Alan Burns, Barbara Emery

Title: Early Morning Upward Ion Drifts at the Geomagnetic Equator

Abstract:

Observations from Jicamarca Incoherent Scatter Radar show a tendency for ion drifts in the early morning period on some days to be upward, instead of the downward direction that empirical models predict. Potential relationships with certain geophysical parameters and conditions are examined using drift data gathered from the CEDAR database, and geophysical data taken from OMNIweb. It is found that there is no discernible relationship with season. Relative occurrences appear to be higher as k_p -values increase and occurrences drop sharply with increasing F10.7 values. The north-south component of the magnetic field (B_z) appears to have the strongest correlation with the drift behavior out of the examined geophysical parameters, and a pattern emerges in which the vertical drifts sometimes mimic the behavior of B_z , but not in all cases. This may be suggestive of an electric field penetration, or another complex relationship involving B_z , which is influencing the drifts.