

Recent investigation on QP/LQP echoes using Gadanki MST radar

AMIT K PATRA

National MST Radar Facility, Tirupati, India.

Quasi-periodic echoes have been a subject of interest in the recent past. Their occurrence was first noticed at mid-latitudes using the MU radar. Now it is known that they can occur at all latitudes and longitudes. However, a clear picture is yet to emerge on their detailed characteristics as a function of latitude/longitude and local time. To examine the characteristics of these echoes, several experiments have been conducted using the Gadanki MST radar in last several years. While the QP echoes are found to show quite similar behavior to that of the mid-latitudes, the periods and time of occurrence are different than that of midlatitudes. More importantly, we have observed a new type of QP structures (LQP) occurring in the height region below 100 km both during the day and night. Remarkably, these echoes are found to be confined to limited altitude range unlike the normal nighttime echoes occurring at higher altitudes. Also it is found that these structures are associated with descending irregularity layer, whose characteristics are similar to that of tidal winds. The characteristics of the normal nighttime QP echoes occurring at higher altitudes and their occurrence as a function of local time and season, and the characteristics of LQP echoes and their seasonal variability will be presented. The source of the low altitude echoes will be discussed critically since their occurrence at such low altitudes is somewhat unusual and needs proper investigation in terms of their generation mechanism.