

Observations of daytime 150-km echoes from off-electrojet location Gadanki, India

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We present for the first time systematic observations of daytime 150-km echoes from Gadanki (13.5° N, 79.2° E, 6.3° dip latitude) and provide evidence beyond any doubt that the 150-km irregularities occur at locations outside the equatorial electrojet belt of $\pm 3^\circ$ and hence not confined to the close vicinity of the magnetic equator. The echoing regions are confined to 140-165 km altitude and show forenoon descent and afternoon ascent of the echoing region displaying a 'necklace shape' quite similar to that of the equatorial 150-km echoes. The velocity and spectral width are -5 to 35 m s^{-1} and 2 to 15 m s^{-1} , respectively. The observed 'necklace shape' is first of its kind from outside the electrojet belt and the present observations have almost all characteristics of daytime 150-km echoes observed within the electrojet belt. Based on one-year systematic observations, we find that there is no strong seasonal preference of these echoes to occur over Gadanki in contrast to the E region echoes. The seasonal variation of signal strength and the Doppler velocities will be presented and compared with similar observations made at dip-equatorial latitudes. Finally, the generation mechanisms of the irregularities responsible for the radar backscatter and physical processes for the diurnal variation of the echoing height are discussed.