

Radar Investigations of Low Altitude Quasi-periodic echoes in Chung-Li

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Quasi-periodic (QP) radar echoes from the sporadic E-layers are also found at altitudes below 100 km which we call Low-altitude Quasi-Periodic echoes (LQP). We have used the Chung-Li VHF radar in Taiwan to study correct locations of these echoes creating irregularities, which are confined to the height range between 90 km and 100 km, have a thickness of 2-4 km and are only slowly descending in altitude. They occur with periods of some tens of seconds to maximum three minutes. Doppler velocities are towards the radar between 12 and 24 m/s, but the fluctuating velocity, deduced from the spectral width is as large as 70 m/s. Since Chung-Li is close to the equatorial region we can prove that these LQP, usually observed at midand low latitudes occur in this temperate region as well. The particular progress reported in this paper is that interferometry allows us to determine the position of the scattering irregularities in three dimensions, which provides new information about the motion of the scatterers. We confine with the assumption that the LQP echoes are created in a strong wind shear below 100 km altitude.