

APPARENT EFFECT OF METEOR TRAILS ON THE FORMATION
AND EVOLUTION OF E REGION FIELD-ALIGNED IRREGULAR-
ITIES

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Mid latitude E region plasma irregularities have been studied using the MU radar (34.9 degrees N, 131.6 degrees E, geomagnetic latitude 25.0 degrees N). Interest was renewed in the study of mid-latitude E-region plasma instabilities and irregularities with the report of quasiperiodic structuring of these irregularities by Yamamoto et al. [1991] using the MU radar. An explanation for these quasiperiodic striations observed initially in the post sunset period and later even in the post sunrise period stills remains elusive. We report here the first results from the study of the effect of meteor trails, particularly as revealed in range spread trail echoes (RSTE), on these field-aligned irregularities. Using radar data collected from the summer of June 2001 and analyzing the data on both pulse by pulse basis and on an averaged scale we show that range spread trail echoes play a significant role in the formation and development of Quasi Periodic Echoes and in some cases might be mistaken as the actual striations itself. We also provide the first known report of Low Altitude Quasi Periodic Echoes observed by the MU radar. The aspect sensitivity of both the quasiperiodic echoes and the range spread trail echoes is also discussed.

References:

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