

MIS014-04

Room: 101

Time: May 28 16:15-16:30

## Nighttime-like Quasi Periodic echoes induced by a partial solar eclipse

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The first observations of solar eclipse induced mid-latitude plasma irregularities using the middle and upper atmosphere radar (MU radar) at Shigaraki (34.85N, 136.1E, 25.0N geomagnetic) are presented. The observations were done during the partial solar eclipse on 22 July, 2009. The observations show that the sudden withdrawal of solar radiation could deplete the background E-region densities, thereby unmasking the long-lived metallic ions within the strong and patchy Sporadic E-layers. As a result of this, Quasi-Periodic (QP) echoes were generated, which were detected by the MU radar. These echoes resemble the normal post-sunset QP echoes observed over mid-latitudes as revealed by the multi-channel interferometry imaging. This example shows that over mid-latitudes E-region plasma irregularities can be generated during a partial solar eclipse, revealing a hitherto unobserved aspect of mid-latitude ionospheric responses to eclipses.

Keywords: solar eclipse, July 22, 2009, MU radar observation, E-region irregularity, QP echo