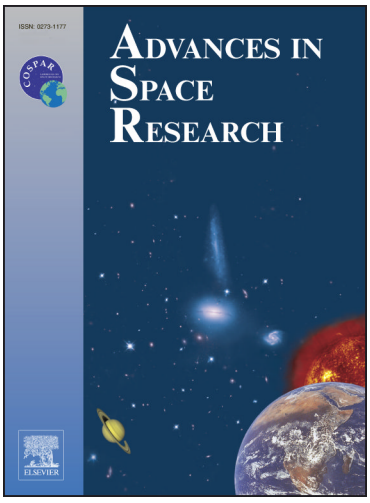

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R.G. Rastogi, H. Chandra, P. Janardhan, B.W. Reinisch, Susanta Kumar Bisoi

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Post sunset equatorial spread-F at Kwajalein and interplanetary magnetic field

R. G. Rastogi[1], H. Chandra[1*], P. Janardhan[1], B.W. Reinisch[2,3] and Susanta Kumar Bisoi[4]

[1]Physical Research Laboratory,
Ahmedabad 380009, India.
[2]Lowell Digisonde International, Lowell, MA 01854
[3]Centre for Atmospheric Research,
University of Massachusetts, Lowell, USA.
[4]Key Laboratory of Solar Activity, National Astronomical Observatories, Chinese Academy of Sciences, Beijing, China.

Abstract. We connect the time sequence of changes in the IMF-Bz to the development of spread-F at an equatorial station Kwajalein on three different nights in November 2004, one during a geomagnetic quiet period and other two during geomagnetic disturbed periods. The chosen days show clear and smooth variations of IMF-Bz without any large fluctuations thereby enabling one to correlate changes in equatorial spread-F with corresponding changes in IMF-Bz. It is shown that a slow and continuous increase in the IMF-Bz over a duration of few hours has a similar effect on the equatorial ionosphere as of a sudden northward turning of the IMF-Bz in causing an electric field through the polar region and then to the equator. We conclude that the Spread-F at equatorial and low latitudes are due to echoes from ionization irregularities that arise due to the plasma instabilities generated by an eastward electric field on the large plasma density gradient in or below the base of the F-layer during any period of the night time along with the gravity driven Rayleigh-Taylor instability.

Key words: Equatorial ionosphere; Equatorial Spread-F; Geomagnetic storms

[*]Corresponding author: H. Chandra, Physical Research Laboratory, Ahmedabad 380009, India.
(e-mail: hchandra@prl.res.in)
Phone: +91-79-26314938