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Observations of MSTIDs/GWs at the F2 layer heights in the near equatorial region.

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Ionospheric vertical sounding observations, using a digital ionosonde (Canadian Advanced Digital Ionosonde(CADI)), are being carried out on a routine basis at Manaus (2.90 S, 60.00 W; dip latitude 6.40 N, hereafter referred to as MAN), Brazil, located between the geographic and geomagnetic dip equators, since August 2002. The medium scale traveling ionospheric disturbance (MSTID) signatures, induced by gravity waves (GWs), in the F2 layer can be observed sometimes during daytime in the iso-frequency plots of virtual height daily variations for six fixed frequencies (3, 4, 5, 6, 7, and 8 MHz) which show quasi-periodic oscillations (crests and valleys). The crests and valleys when seen in close frequencies present a phase difference (i.e. first it is observed at higher frequency then at lower frequency), indicating a downward phase velocity. However, these MSTIDs cannot be observed during the pre-reversal period because of the presence of strong eastward electric field in the equatorial
region which possibly swamps the MSTID signatures. This paper presents and discusses the relationship between propagation of MSTIDs/GWs at F-region heights and generation of equatorial spread F (ESF). Also, a comparison between ESF observed in the equatorial region of the Brazilian sector and other sectors will be presented.