



Library Indian Institute of Science Education and Research Mohali



DSpace@IISERMohali (/jspui/)
/ Publications of IISER Mohali (/jspui/handle/123456789/4)
/ Research Articles (/jspui/handle/123456789/9)

Please use this identifier to cite or link to this item: <http://hdl.handle.net/123456789/3143>

Title: Airglow observations of nighttime medium-scale traveling ionospheric disturbances from Yonaguni: Statistical characteristics and low-latitude limit

Authors: Lakshmi Narayanan, V. (/jspui/browse?type=author&value=Lakshmi+Narayanan%2C+V.)
Shiokawa, K. (/jspui/browse?type=author&value=Shiokawa%2C+K.)
Otsuka, Y. (/jspui/browse?type=author&value=Otsuka%2C+Y.)
Saito, S. (/jspui/browse?type=author&value=Saito%2C+S.)

Keywords: OI 630.0 nm airglow
Nighttime medium-scale traveling ionospheric disturbances
Midnight pressure bulge
Atmospheric gravity waves
Equatorial ionization anomaly
Middle-latitude ionosphere

Issue Date: 2014

Publisher: Blackwell Publishing Ltd

Citation: Journal of Geophysical Research: Space Physics, 119(11), pp.9268-9282.

Abstract: The characteristics of nighttime medium-scale traveling ionospheric disturbance (MSTID) features observed over Yonaguni (24.5°N, 123.0°E; 19.3°N dip latitude), Japan are studied using all-sky imaging of OI 630.0 nm airglow emission. The uniqueness of these observations is that the area observed by the imager covers the transition region between low to middle latitudes in the ionosphere. Typical low-latitude limit of midlatitude-type nighttime MSTIDs possessing phase front alignments along the northwest to the southeast occurs in this region. These MSTID features are rarely sighted at dip latitudes below 15°. We selected 2 year period for analysis in which 1 year corresponded to the solar minimum conditions and another year to the solar maximum conditions. The MSTIDs were observed to extend to farther lower latitudes during the solar minimum conditions than during the solar maximum periods. Their observed range of wavelengths, phase velocities, phase front alignment, and propagation directions are similar to those observed at typical midlatitude sites. However, on many occasions the phase fronts of the observed MSTIDs did not extend over the whole field of view of the imager indicating that some process inhibits their extension to further lower latitudes. Detailed investigation suggests that the poleward propagating enhancement of airglow intensity, probably associated with the midnight pressure bulge, causes the MSTID features to disappear when they reach lower latitudes later in the night. When the MSTIDs reach lower latitudes well before midnight, they are found to be inhibited by the equatorial ionization anomaly crest region.


URI: <https://agupubs.onlinelibrary.wiley.com/doi/10.1002/2014JA020368>
(<https://agupubs.onlinelibrary.wiley.com/doi/10.1002/2014JA020368>)
<http://hdl.handle.net/123456789/3143> (<http://hdl.handle.net/123456789/3143>)

Appears in Collections: Research Articles (/jspui/handle/123456789/9)

Files in This Item:

File	Description	Size	Format	
Need to add pdf.odt (/jspui/bitstream/123456789/3143/1/Need%20to%20add%20pdf.odt)		8.63 kB	OpenDocument Text	View/Open (/jspui/bitstream/123456789/3143/1/Need%20to%20add%20pdf.odt)

[Show full item record \(/jspui/handle/123456789/3143?mode=full\)](#)

 [\(/jspui/handle/123456789/3143/statistics\)](#)

Items in DSpace are protected by copyright, with all rights reserved, unless otherwise indicated.