



On the precursor of equatorial plasma bubble

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In the recent past, attempts have been made to identify seed perturbation and precursor of the equatorial plasma bubble (EPB). Atmospheric gravity wave induced perturbation in the F layer parameters as seed and Large Scale Wave Structure (LSWS), Satellite Trace (ST), Multi-Reflected Echoes (MREs) as precursors have been the focus. Intriguingly, temporal variations of the F layer height have been shown to display large amplitude periodic variations, presumably of atmospheric gravity wave origin, prior to the onset of EPB. Considering the likely potential of such observations in developing the prediction capability of EPB, we have examined ionosonde data from the Indian sector. Results show that the occurrence/non-occurrence of EPB has no simple relation with the F layer height perturbation as well as the height of the F layer, indicating that temporal variations of the F layer height is not a reliable precursor of EPB. Further analysis has been made based on simultaneous observations using collocated Digisonde, Gadanki Ionospheric Radar Interferometer (GIRI) and Airglow imager at Gadanki to examine the correlation between the observed periodic variations in Digisonde observed F layer height with the spatial scales of plasma bubbles observed by the GIRI and airglow, underlining the importance of spatial variations in the F layer parameters in the seeding process. These results will be presented and their implications in forecasting EPB will be discussed.