

Vertical energy propagation associated with formations of an additional layer in the ionosphere

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In addition to the normal *D*, *E* and *F* layers, some transient (or additional) layers formed in the low-latitude ionospheric *F*-region have been recently reported. A sequence of rapid-run ionograms recorded at Parepare (4.0°S, 119.6°E) is employed to monitor the formation of an additional layer. It is found that the additional layer appears and disappears when the ionosphere *F*-region is ascending and descending periods, respectively during the noontime and dusk periods. Various virtual heights of fixed sounding frequencies extracted from the ionograms are used to study ionospheric waves during the formation of the additional layer. Results show that the formation of the additional layer accompanies with certain waves. The vertical group velocities of the wave in the away directions from the peak indicate the additional layer to be the source of the waves.