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A statistical study of the effects of tropospheric variability on the ionosphere parameters

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State of ionosphere is significantly affected by the dynamics of lower-laying atmosphere. Mesoscale systems are effective sources of atmospheric disturbances that can reach ionospheric heights and significantly alter atmospheric and ionospheric conditions. Large cyclonal systems are recognized to be an efficient source of acoustic and gravity waves that are able to propagate upward and reach the ionospheric heights. Our previous study detected a significant wave-like activity at ionospheric heights following immediately after the cross of the frontal system above the ionospheric station.

In the present paper the effects of the tropospheric variability of standard meteorological parameters associated with the passage of atmospheric frontal systems above the Průhonice station on the upper atmosphere are statistically studied. Our analysis concerns variations in occurrence, height, and critical frequency of sporadic E layer.