

**STUDY OF THE IONOSPHERIC RESPONSE TO SUDDEN STRATOSPHERIC  
WARMINGS: PLANETARY AND TIDAL SIGNATURE IN MID-LATITUDE F<sub>o</sub>F<sub>2</sub>  
AND GLOBAL ELECTRON CONTENT.**

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The paper presents a study of the response of the ionospheric parameter during sudden stratospheric warming (SSW). The aim of the work was to analyze the periods of variations of the critical frequency of the F<sub>2</sub>-layer and Global Electron Content (GEC), which may be associated with the periods of planetary and tidal waves arising in the stratosphere during the SSW period. For the analysis, we used the average daily (from 10:00 to 14:00 LT) foF<sub>2</sub> values measured at the ionospheric stations Kaliningrad (54.6 ° N, 20 ° E) and Irkutsk (53 ° N, 103 ° E) in the periods from December till March, for several years in which strong SSW were observed. For all cases considered, low solar activity is common. To detect foF<sub>2</sub> oscillations with periods of planetary waves in a time sequence, we used the method of continuous wavelet transform. In the work, special attention was paid to periods: from 4 to 10 days, 12–16 and 25–29. As unique event we considered in more detailed ionospheric response to 2009 SSW event. For this reason, we used the Irkutsk and Kaliningrad ionosonde data to reveal changes in foF<sub>2</sub> diurnal variations. For this event we also present a model results that was obtained by the new Entire Atmosphere GLoBal model (EAGLE) that combines the upper atmosphere model (GSM TIP) and the neutral atmosphere model (HAMMONIA). Recently it was shown that tidal variations simulated with the EAGLE model are consistent with the previously observed and simulated intensification of the semidiurnal migrating solar tide in the lower thermosphere during 2009 SSW event. Additionally, we investigated the global electron content variations during 2009 SSW event and revealed increase in semi-diurnal variation of GEC and its decreasing during SSW event.

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