



Empirical modeling of 27-day variations of local and global ionospheric parameters

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We present the results of empirical modeling of 27-day variations of local and global ionospheric parameters which are supposed to be a result of the 27-day solar rotation. The solar radio flux index F10.7 and the extreme ultraviolet radiation were used as solar proxies. The peak electron density above Irkutsk (52.3N, 104.3E), the total electron contents over different stations, and the global electron content were selected as ionospheric parameters. The 27-day components were extracted by bandpass filtering both the ionospheric and solar data sets. Using the 27-day components we calculated the sensitivities of the ionospheric parameters to 27-day variations of solar flux and the delays between the 27-day variations of the ionospheric and solar data. The calculated sensitivities and delays were used to create empirical models of 27-day variations of the ionospheric parameters. As a criterion of the model efficiency we selected the reduction of day-to-day variability of the ionospheric parameters by subtracting the 27-day component. Predictabilities of 27-day variations of different ionospheric parameters are compared and discussed.