Geophysical Research Abstracts
Vol. 13, EGU2011-12698-1, 2011
EGU General Assembly 2011


# Conditional Dependence of Main Ionospheric Characteristics and Solar and Geomagnetics Indices

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The method of the conditional independence graphs appears as a useful tool for studying the correlationships between fundamental ionospheric parameters. This method can be applied even in the case when classical parametric methods are not convenient, e.g., for non-continuous time series etc. We employ multivariate statistic methods applied to long period daily observational data: F2 layer critical frequency (foF2), Kp Index, and solar radiation flux at 10.7cm (F10.7 index) and relative sunspot number R as indicators of phase of solar cycle. The foF2 data series observed from mid-latitude ionosonde stations that are located both on the western and eastern hemispheres was used.
For investigation of relationships between time and geographic variations of parameters studied we use the method of the graphical models describing and transparently representing structure of dependence relationships in the time series. Final graphical model of the conditional independence of studied parameters is selected by the IPF algorithm. As a test statistics the deviance is used.