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Identification and filtration of different sources of the ionosphere variability

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The nature of the ionosphere variability is one of the main problems for creating of the ionospheric models [1, 2] and for practical applications using the ionospheric data [3]. Ionosphere is absorbing energy from sources above: different components of solar and geomagnetic activity and sources from below: AGW, mesoscale atmospheric disturbances, earthquakes, volcano eruptions and dust storms [4, 5, 6]. To include all these factors in physical models is practically impossible because the majority of effects are transient, and for practical applications should be monitored in real time.

To identify these transient events we applied the machine learning technology which permit to filter the Space Weather effects from the atmospheric influence [7] as well as to differentiate the different sources of Space Weather on the ionosphere [8]. We applied to GPS TEC data the normalization procedure to differentiate the F10.7 and Dst effects. For other cases we used the locality feature of transient events.

These technologies will be demonstrated in the given report.

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