



## **The zenith angle dependence of the TEC fluctuations measurements obtained from GNSS observations.**

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The main goal of the results presented in this work is applying of the improvements in the algorithm used for monitoring of the ionospheric conditions at high latitudes. The irregular distribution of the permanent stations connected with land mas configuration and strong dynamics of the ionosphere at the polar regions are the main factors which have a significant impact on the possibilities of the GNSS observations use for the ionospheric conditions detection with short subdaily resolution. Both of them have to be taken into account for the purpose of the shortening of the TEC fluctuations maps time interval. Certainly the decreasing of the time window used for a singular map should give the more detailed information on ionospheric conditions for the areas with large number of observations but it also cause the expansion of the gaps, where the interpolation is needed. The smaller number of GNSS measurements for the short time window can be compensatsed at some level by the lower cut-off elevation angle. However the impact of this step on the obtained results of the TEC fluctuations parameters has to be tested. The presented work contains the studies about the dependance of the ROTI observations on zenith angle and the changes of the ionospheric variability observed in different directions. The last section demonstrates the current status of the TEC fluctuations ionospheric product created in Olsztyn.