



IoNosphere Sounding for Pre-seismic anomalies Identification REsearch (INSPIRE) project possible contribution to GGOS

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GNSS systems are the main components of the global geodetic service providing the global distribution of ionospheric delays in the form of the global maps. It was discovered that ionosphere day-to-day variability which is result of solar and geomagnetic activity and of many different sources form below including seismic activity can essentially contribute to errors provided by ionospheric delays. If in case of solar and geomagnetic activity we have additional external sources of information of existing disturbances, for the pre-seismic ionospheric activity we have no any additional sources of information except ionospheric variability per se. It means that special technology should be developed for smart identification of this kind of ionospheric variability. It was the task of reported INSPIRE project executed under the ESA call “Ionospheric Sounding for Identification of Pre-Seismic Activity”. Taking into account that GPS TEC is integral parameter not always adequately representing the vertical distribution of electron concentration the additional sources of information were involved such as in-situ local satellite probe measurements, vertical ground-based and topside ionospheric sounding, InSar. Additional efforts were fulfilled to improve the physical model of pre-seismic ionospheric anomalies generation. Results and technologies developed by INSPIRE project are demonstrated using experimental data for several major earthquakes.