

GLOBAL NAVIGATION SATELLITE SYSTEMS FOR SPACE WEATHER STUDIES

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Global navigation satellite system (GNSS) provides huge data sets to study the Earth's ionosphere and different aspects of space weather influence. The talk briefly reviews GNSS-based experimental studies of the ionospheric effects from solar flares, solar terminator, solar eclipses, magnetic storms, etc. It also mentions recent events such as the ionospheric effects of the 2023 Türkiye earthquake, the May 2024 magnetic storm, the 18 November 2023 Starship explosion. Such researches are based on total electron content variations. Some attention is devoted to the advances that GNSS stations in Russia suggest for global monitoring. Our team developed a free-to-use system to treat GNSS data – SIMuRG (<https://simurg.iszf.irk.ru>) [Yasyukevich et al., 2020]. The system could be useful for studying the ionospheric space weather. The talk partly is devoted to machine learning to study the Earth's ionosphere. The work is financially supported by the Russian Science Foundation (project No. 23-17-00157).

REFERENCES

1. Yasyukevich Y.V., Kiselev A.V., Zhivetiev I.V. et al. SIMuRG: System for Ionosphere Monitoring and Research from GNSS. GPS Solutions. 2020. V. 24. 69.