

MONITORING SOLAR FLARES AND GAMMA RAY BURSTS: MULTI-INSTRUMENTAL APPROACH INVESTIGATION

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In this paper ionospheric phenomena were studied by utilization of VLF (Very Low Frequency radio signals, 3-30 kHz) technology for monitoring of lower ionospheric plasma response to driving agents originating both within our solar system, e.g. on Sun like solar flare (SF) events, and beyond our solar system, e.g. like gamma ray bursts (GRBs), with time span that encompasses period of several years. The data on X-ray fluxes measured by Geostationary Operational Environmental Satellites (GOES) were taken from NOAA National Centers for Environmental Information database, while data on GRBs were taken from Swift satellite database. VLF signal amplitude and phase data were monitored along multiple radio signal paths using network of VLF transmitters globally positioned worldwide and received in Belgrade, Serbia by BEL receiving system, covering mainly European subcontinent. Short-termed ionospheric perturbation associated with GRBs and relatively longer-lasting ionospheric perturbations associated with

SFs were compared in order to study similarities and differences in ionospheric plasma responses to these fundamentally different driving mechanisms.

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