

VLF signal perturbations due to Solar flares monitored on close GCPs

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Incident X radiation from Sun, especially in soft X-ray spectral range (0.1-0.8 nm), in Earth's lower ionosphere leads to abrupt changes in local plasma environment, causing amplitude and phase delay perturbations of Very Low Frequency (VLF) radio signals transmitting within Earth-ionosphere waveguide, that come across transient electron density encasements. Amplitude and phase delay perturbations induced by moderate and relatively strong Solar flares occurred during daytime were monitored on VLF radio signals transmitted from Maine (44.63N, 67.28W) USA and Skelton (54.88N, 3.28W) UK, simultaneously received in Serbia and Hungary, by narrowband VLF receivers. For analysis of Solar X-ray radiation, data from GOES satellite mission were used. VLF data from second half of 23rd Solar cycle were analyzed for insight of possible path-related pattern structures in amplitude and phase delay of VLF data, as observed on recordings from spatially closely positioned signal traces along their Great Circle Paths (GCPs). Main results are presented in this paper.