Geophysical Research Abstracts, Vol. 9, 06155, 2007
SRef-ID: 1607-7962/gra/EGU2007-A-06155

Quasi-static electric field phenomena in the ionosphere associated with pre- and post-earthquakes effects

M. Gousheva (1), R. Glavcheva (2), D. Danov (3), P. Hristov (1), M. Matova (4)

(1) Space Research Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria, (2) Geophysical Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria, (3) Solar-Terrestrial Influences Laboratory, Bulgarian Academy of Sciences, Sofia, Bulgaria, (4) Geological Institute, Bulgarian Academy of Sciences, Sofia, Bulgaria (mgousheva@space.bas.bg / Phone: +359 297 934 64)

The paper presents our latest results on the processing and analysis of INTERCOSMOS-BULGARIA-1300 satellite data of the quasi-static electric field in the upper ionosphere at different latitudes over moderate earthquakes' source regions (dataset from World Data Center, Colorado, USA). Present research focuses on three main areas- (i) development of methodology of satellite and seismic data selecting, (ii) data processing and analysis, (iii) study of possible connection between anomalous vertical electric fields penetrating from the earthquake zone into the ionosphere, and seismic activity. The most appropriate data (for satellite orbits above sources of forthcoming or just happened seismic events) have been selected from more than 250 investigated cases. We show results from observations of electric field disturbances hours before and after the moderate earthquake occurrence at polar, middle, low and near equatorial ionospheric latitudes in the time period 12.08.1981-30.12.1981. The paper discusses the observed effects of increase of about 2-30 mV/m in the horizontal and vertical components of the quasi-static electric field in the ionosphere. The obtained results strengthen our previous studies (Gousheva et al., 2005a, b; 2006a, b); they are informative about the existence of pre- and post-seismic effects in the ionosphere. These ionospheric effects could be connected to the appearance of sources of quasi-static electric fields of seismic origin over the observed events. Our results are consistent with the theoretical model (Sorokin and Yaschenko, 2000) and (Sorokin et al. 2001) of the electric field disturbances caused by the conductivity currents in the atmosphere and the ionosphere initiated by external electric current and the method (Sorokin et al. 2005, 2006) for computation of the electric field in the atmosphere and

the ionosphere over seismoactive faults.