Geophysical Research Abstracts, Vol. 8, 00408, 2006
SRef-ID: 1607-7962/gra/EGU06-A-00408

Results obtained through the electromagnetic method for short-term prediction of Vrancea (Romania) earthquakes

D. Enescu , **I. A. Moldovan**, B.D. Enescu

National Institute for Earth Physics, Bucharest-Magurele, Romania, (iren@infp.ro / Fax: +40 21-4930052 / Phone +40 21-4930118)

The paper is based on geomagnetic records made at Muntele Rosu Observatory (Romania), during the time interval from December 1997 to November 2005. The results of the data processing are illustrated in diagrams of the magnetic impedance Bz(t)/Bx(t), where Bz is the vertical component of the geomagnetic flux density and Bx its horizontal component.

The theoretical reasons for using ratios Bz(t)/Bx(t) and Bz(t)/By(t) of the geomagnetic flux density components as earthquake prediction tools are first of all provided. Since the roughly EW-oriented By component was negligibly small, we found that using $\zeta(t)$, the time variation of the mean daily ratio Bz(t)/Bx(t), was both right and advisable.

The time variation of Bz(t)/Bx(t) is closely examined in correlation with Vrancea seismic activity. This correlation prove that out 134 earthquakes of magnitudes M>Mo (Mo=3.6-4.0, usually Mo=3.9, in the case of subcrustal earthquakes, while in crustal earthquakes Mo=2.8-3.0), 114 (or 85%) were preceded by significant perturbations of the magnetic impedance Bz/Bx.

The precursor merit of the ζ(t) ratio has been significantly improved by determining a relation between the precursor time t_p and the magnitude of the earthquake. The precursor time t_p is defined as the time interval between the beginning of the precursor magnetic perturbations and the beginning of the predicted earthquake.