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The correlation of the geomagnetic anomalies recorded at Muntele Rosu (Romania) Seismic Observatory with earthquake occurrence and solar magnetic storms (2000 – 2009)

Iren-Adelina Moldovan (1), Anca Otilia Placinta (1), Angela Petruta Constantin (1), and Adrian Septimiu Moldovan (1)

(1) National Institute for Earths Physics, Seismological dept., Bucharest, Magurele, Romania (iren@infp.ro, 0040214050673), (2) AZEL Designing Group Ltd, Magurele, Romania

The paper is based on geomagnetic records made at Muntele Rosu Observatory (Romania), during the time interval from 2000 to date. The working data are represented by the geomagnetic field as recorded at Muntele Rosu Observatory and manual corrected emphasizing the missing data and by the seismic data, taken from the seismic bulletins of the National Institute for Earth Physics, for Vrancea source zone. First of all, in this paper we want to correct some conclusions given by previous studies that have associated magnetic anomalies due to the missing data or to the solar magnetic storms with the occurrence of Vrancea intermediate depth earthquakes, in the period 2000-2005. Because the investigated period is of 5 years, covering almost half of a complete solar cycle, the solar-terrestrial perturbations have fluctuated from extremely small values to extremely large values, providing a very good medium to observe the correlation of magnetic signals with solar perturbations. In order to discriminate local and global phenomena, the local geomagnetic data are compared with data provided by the INTERMAGNET Project, from 2 stations located outside the epicentral region, considered as reference stations (Surlari-SUA, Romania and Tihany-THY-Hungaria) and with the global geomagnetic indexes.
The largest intermediate depth earthquake occurred in this time interval had the moment magnitude Mw=6.3 (2004) and the largest crustal event had the moment magnitude Mw=4.4 (2008) offering us the opportunity to investigate possible connections between the geomagnetic field behavior and the local crustal and sub crustal seismicity. That's why in the present paper we will also analyze these events and the corresponding geomagnetic anomalies.