



## **Significant amplitude geomagnetic anomalies prior the occurrence of Vrancea October 27<sup>th</sup>, 2007, Mw=6.0 earthquake**

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The paper tries an association between two slow evolving and significant amplitude geomagnetic anomalies and the Vrancea (Romania) October 2004 intermediate earthquake of moderate-to-high magnitude ( $M_w=6.0$ ) followed by few weaker earthquakes ( $M_w < 3$ ).

The National Institute for Earth Physics is monitoring the magnetic field since 1998, in one site situated in Vrancea epicentral zone. While Vrancea earthquakes had never exceeded  $M_w=5.0$  during this period (with only one exception at the beginning of the monitoring period, in May 1999,  $M_w=5.3$ ), they did so in October 2004, culminating with a seism of  $M_w = 6.0$  on October 27, 2004, offering us the first opportunity to investigate possible connections between the geomagnetic field behaviour and the local seismicity.

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. The magnetic data as well as the global geomagnetic indexes prove that, from magnetic point of view, October 2004 was a quiet month, with a magnetic index  $K_p$  less than 5 and the solar-terrestrial perturbations were extremely small, providing a very good medium to observe tectonomagnetic signals.

In the period prior to the October 2004 earthquake we have been intrigued by two magnetic anomalies, with similar shapes, that appeared in an interval of 3 month before the seismic event. One of them occurred in July 2004 and the other one 15 days before the earthquake. It must be emphasized that we are concerning about both the long duration and high amplitude of the recorded anomaly, as - from our knowledge - such behavior is not consistent with other reported cases.