The development of the Romanian tectonomagnetic network in the frame of the MEMFIS Project

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In the early 80ths, the National Institute for Earth Physics (Bucharest, Romania) has installed in Vrancea area a network of magnetic stations in order to investigate possible relationship of the local magnetic field with earthquakes occurrences. The Vrancea region is a particularly complex seismic region of continental convergence characterized by at least three tectonic units in contact the East European plate, Intra-Alpine and Moesian subplate. This seismic area is characterized both by shallow seismicity with only moderate-size earthquakes, not exceeding magnitude 5.6 and an important intermediate depths seismicity (60-200 km) with one to six events with $Mw>7$ per century. The first network consisted of several stations where the total magnetic field intensity data were collected using proton precession magnetometers. Later on this network was replaced by 3-axial magnetometers. Here we report the development of this new network with three new 3-axial magnetometers. Two of the new magnetometers are placed in the epicentral area and the third at the limit of the seismic area associated with the Moesian subplate. The data recorded by these magnetometer are transmitted on-line to the National Institute for Earth Physics in Bucharest. To detect a possible tectonomagnetic effect the data of each station are differentiated respect to the data of the other stations in order to detect local field anomalies removing the contributions from the other sources, external and internal to the Earth. Several others algorithms are in progress to be implemented to detect such an effect both on short and long time periods: multivariate spectral analysis using Hilbert wavelet pairs, inter-station

transfer functions time variations analysis.