Introduction

It is well established that earthquakes and volcanic eruptions can produce small variations in the local geomagnetic field. The Italian Istituto Nazionale di Geofisica e Vulcanologia (INGV) Tectonomagnetic Network was installed in Central Italy since 1989 to investigate possible effects on the local geomagnetic field related to earthquakes occurrences. At the present time, geophysical signals produced by the tectonomagnetic network stations are used to detect local field anomalies removing the contributions from the other sources, and then to study the variations between geomagnetic signal and the local seismic activity, recorded in Central Italy. In figure 1 are shown the main seismic stations which were used in this study. The completeness of the network is ensured by the presence of some structures that can mislead. First of all, in the different data can be pointed out some peaks with an amplitude relatively high. For example, in figure 2 the differences between the daily mean of the magnetic field obtained with the INGV network stations and the magnetic field obtained with the network stations of the Italian Seismic National Network are contrasted. A series of evident structures that show latitude dependence of magnetic storms are highlighted in the upper panel of figure 3. These effects are due to the MDM total geomagnetic field. In figure 4 are reported in details the two events, beginning on the days JD=190-230 during 2004. In the lower panel of figure 4 is shown the peak (a) and (b) in the period of days JD=378-398 during 2004. From the point of view of the data analysis, at the end of a new approach is attempted on the differentiated data. This event (b) is identified as an event of permanent origin and the magnetic signal is not explained. In any case the lack of data doesn’t permit to study in depth. A similar event has probably happened also after the data gap occurred in the period of days JD=272-345 since the mean value of the MDM-CVT differences with LEO station dataset are not reported because of the large number of gaps in the data due to the maintenance operation of the LEO station. Anyway, some evident structures that show latitude dependence of magnetic storms are highlighted in the upper panel of figure 3. These effects are due to the MDM total geomagnetic field. In figure 4 are reported in details the two events, beginning on the days JD=190-230 during 2004. In the lower panel of figure 4 is shown the peak (a) and (b) in the period of days JD=378-398 during 2004. From the point of view of the data analysis, at the end of a new approach is attempted on the differentiated data. This event (b) is identified as an event of permanent origin and the magnetic signal is not explained. In any case the lack of data doesn’t permit to study in depth. A similar event has probably happened also after the data gap occurred in the period of days JD=272-345 since the mean value of the MDM-CVT differences with LEO station dataset are not reported because of the large number of gaps in the data due to the maintenance operation of the LEO station.