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Magnetic and Electromagnetic signals related to tectonic activity: updates and new analysis on measurements in Central Italy.

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Tectonomagnetic field observations from absolute magnetic field levels and electromagnetic variations from VLF signal recordings have been collected in central Italy since 1989 by means of a network of four absolute magnetometer stations, including the geomagnetic Observatory of L'Aquila (42 23N, 13 19E) used as reference for differentiation, and of VLF search coil wide-band antennas. Many reports proved the occurrence of EM effects clearly related to tectonic events (earthquake failure process and volcanic activity) in active areas of our planet. In this paper we show the variation of some transients leading to the phenomenon of electromagnetic induction which, in turn, could be related to local and regional seismic activity for the most recent years 2002 and 2003. We also report the seismic activity recorded in this area by the Italian seismic national network. Some tentative analysis (in the wavelets and statistical approach) on the historical and recent dataset allow a better characterization of EM properties of the study area, at different temporal and spatial lengthscales.