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Non-inductive component of electromagnetic signals associated with L'Aquila earthquake sequences estimated by means of inter-station impulse response functions

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On April 6, 2009 at 01:32:39 UT a strong earthquake occurred west of L'Aquila at the very shallow depth of 9 km. The main shock local magnitude was Ml = 5.8 (Mw = 6.3). Several powerful aftershocks occurred the following days. The epicentre of the main shock occurred 6 km away from the Geomagnetic Observatory of L'Aquila, on a fault 15 km long having a NW-SE strike and a SW dip of about 50°. For this reason L'Aquila seismic events offered very favourable conditions to detect possible feeble electromagnetic emissions related to the earthquake. Data used in this work come from a special wide band electromagnetic station located in the geomagnetic Observatories of L'Aquila and Duronia. Here the results concerning the daily estimates of inter-station transfer functions and inter-station impulse functions from 2006 to 2009, are shown. The main goal of this work is the study of the statistical properties of the residual field in the time domain in order to determine whether significant changes occur before and during the L'Aquila seismic sequences.