



Electromagnetic field observations by the DEMETER satellite in connection with the 2009 L'Aquila Earthquake.

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On April 6, 2009, at 01:33 UT, a 6.2 Mw earthquake stroke the city of L'Aquila ($\lambda=42,21$; $\varphi=13,23$).

An intense preseismic activity ($3 < M < 5$) had been observed for several months. The DEMETER satellite was operational and flew within 1 hour in local time (LT) over L'Aquila twice a day (~ 10 LT and ~ 22 LT).

Electromagnetic field data from DEMETER, experiments ICE and IMSC, have been analyzed during periods in which waveform data collection was available to retrieve possible signals, connected with the earthquake and possible precursor activity.

The data analysis was performed based on a new technique (ALIF, Cicone et al. 2016 and Piersanti et al. 2017). The statistical background was evaluated over four months (January – April) in 2009 and 2010 when geomagnetic activity was very low ($0 < K_p \leq 2$; Sq). On April 4, 2009, when DEMETER flew exactly over L'Aquila at UT=20:29, an intense signal was observed at 333 Hz, whose characteristics seem to be related to a rotation of the electromagnetic field, giving rise to a different ionospheric plasma circulation.