



A STUDY of TEC VARIATIONS in CENTRAL ITALY prior to the 6 APRIL L'AQUILA EARTHQUAKE

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GPS measurements of total electron content (TEC) variations in Central Italy for the period 01 January-30 April 2009 are exploited in order to examine possible TEC variation signatures associated with the L'Aquila earthquake (EQ) on 6 April 2009.

An irregular change of TEC characterizing the L'Aquila's region is initiated on day 095 (05 April 2009). This specific change in TEC starts before noon hours and, with variable amplitude, persists till the EQ shock moment occurred at 01:32:39 UT.

A comparison with TEC data of other GPS stations reveals that the duration of this TEC changes maximizes at L'Aquila, its amplitude maximum (in fact, of short duration less than one hour) however is stretched in southwest direction from L'Aquila at a distance of ~ 100 km. The spatial extension of this TEC change characterizes distances of 300 km and even more from L'Aquila.

TEC changes are compared with ionosonde measurements at Rome and other stations for day 095. Mechanisms of generation of the recorded TEC change are discussed. Analysis of magnetic field variations of localized sources and possible relationships with the observed TEC changes are undertaken.