

# **Electromagnetic fields measurements in ULF-ELF-VLF (0.001Hz-100KHz) bands**

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The MEM Project (Interreg IIIA Adriatic Cross Border Programme) has been activated in L'Aquila since 2004 with the purpose of monitoring the environmental electromagnetic signals in ULF-ELF-VLF (0.001 Hz-100 KHz) bands. Data from interferometric array will allow to realize environmental electromagnetic tomography in order to do a graphical representation of electromagnetic fields in the domain of time, frequency and space. This technique is a good investigation tool to obtain three-dimensional maps of electromagnetic background noise, on regional scale. Tomographic maps are useful to show the spatial distribution of electromagnetic sources and to characterize signals with a set of parameters such as energy, polarization, spectral content. The interferometric array will be constituted by three stations. Data from each station will be elaborated to investigate different sectors as the structure of ground electric conductivity, the electromagnetic phenomena connected with seismic activity, the separation of electromagnetic fields of internal origin to the Earth and the electromagnetic phenomena originated in the magnetosphere, in the ionosphere and in the Earth-Ionosphere cavity. In this work we present the results obtained in the first station of the interferometric array. The station was installed in the INGV Geomagnetic Observatory of L'Aquila (42° 23' N, 13° 19' E, 682m a.s.l.) since the middle of 2005. In order to study the time changes of the underground distribution of electrical conductivity we analyse the time variations of magnetic transfer functions and the complex components of the electromagnetic tensor in three main bands: 0.001 Hz – 1000 Hz, 1000 Hz – 5 kHz and 5 kHz-100 kHz.