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Study of apparent resistivity fluctuations by using Detrended Fluctuation Analysis observed in a continuous magnetotelluric monitoring station located in Agri Valley (Southern Italy)

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Using the electromagnetic data recorded by means a continuous magnetotelluric (MT) station operating in Agri Valley (Southern Italy) since 2003, a robust signal processing has been performed. In this work we show the electric apparent resistivity curves obtained from 2003 to 2005 recorded at 6.25Hz. The stationarity of resistivities estimated has been studied and we verified that the median is a good estimator for the apparent resistivity stability. By median values we obtained the "characteristic" curves of the site (Balasco *et al.* 2004). To check the statistic reliability of our estimates, we considered different time registration windows and frequency ranges. Several methods have been used to detect abnormal values to "characteristic" apparent resitivity curves due to the noise or other depth resistivity changes, as variograms and Detrended Fluctuation Analysis (Peng et al., 1995).These applications pointed out highlight interesting scaling properties in the principal components of the apparent resistivity in conformity with geotectonic and hydrogeology properties of Agri Valley.