



Non-uniform scaling behavior in Umbria-Marche seismicity and detection of possible earthquake precursors

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The scaling behavior of the 1981-2007 seismicity in Umbria-Marche (central Italy) Region, one of the most seismically active areas in Italy, was investigated, by using the detrended fluctuation analysis (DFA), a powerful method for capturing scaling behavior in nonstationary time series. Using an appropriate instability index, it is possible to identify and quantify deviations from uniform power-law scaling, which suggest the presence of changing dynamics in the system under study. Significant deviations from uniform power-law scaling in the temporal fluctuations of Umbria-Marche seismicity were revealed mostly linked with the occurrence of rather large earthquakes or seismic clusters.