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Seismic precursory non-uniform scaling behavior in Ultra Low Frequency (ULF) geomagnetic signal

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The technique of the Detrended Fluctuation Analysis (DFA) applied to an Ultra Low Frequency (ULF) geomagnetic time series, recorded each day at a sampling rate of 1 Hz, from February 1 to December 31, 2000, has been applied. For each day the north-south (N-S), east-west (E-W), vertical (V) and horizontal (H)component of the ULF geomagnetic field have been investigated. During this period the seismic activity within the area monitored by the station was intense. Analysing the deviations from uniform power-law scaling in the ULF time series, we found that before an intense seismic cluster occurred during the observation period, the signal fluctuations grow erratically, indicating a loss of scaling stability.