



## **Temporal correlation patterns in pre-seismic electromagnetic emissions reveal distinct complexity profiles prior to major earthquakes**

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In the last years, continuous recordings of electromagnetic emissions from geophysical observatories have been recognized to exhibit characteristic fluctuation patterns prior to some major earthquakes. To further evaluate and quantify these findings, this work presents a detailed assessment of the time-varying correlation properties of such emissions during the preparatory phases preceding some recent earthquakes in Greece and Italy. During certain stages before the earthquakes' occurrences, the electromagnetic variability profiles are characterized by a marked increase in the degree of organization of fluctuations, which allow developing hypotheses about the underlying physical mechanisms. Based on the preparatory phases of selected seismic events, the information provided by different statistical properties characterizing complementary aspects of the time-varying complexity based on temporal correlations is systematically assessed. The obtained results allow further insights into different pre-seismic stages based on the variability of electromagnetic emissions, which are probably associated with distinct geophysical processes.