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Extreme events in a templex

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Theoretical and numerical studies have shown that transient atmospheric motions leading to weather extremes can be classified through the instantaneous dimension and stability of a state of a dynamical system [Faranda et al., *Sci. Rep.*, 2017]. The asymptotic values of these quantities can be computed theoretically only for specific systems, while their numerical counterpart for climate observables provides information on the rarity, predictability, and persistence of specific states. In this work, we present a first attempt to relate the presence of extreme events with the elements that make up a templex of the system under study, both in the deterministic [Charó et al., *Chaos*, 2022] and stochastic frameworks [Charó et al., *Chaos*, 2023]. The templex provides the key characteristics of the topological structure underlying a dynamical system. This work will present results for the classical, deterministic Lorenz [JAS, 1963] attractor and for the Lorenz Random Attractor, dubbed LORA [Ghil & Sciamarella, *NPG*, 2023].