A modern view of Statistical Seismology in terms of Tsallis entropy

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Based on nonextensive statistical mechanics (NESM) introduced by Tsallis (1988), a unified framework that produces the collective properties of earthquakes and faults from the specification of their microscopic elements and their interactions, has recently been introduced. During the last decade have highlighted that NESM is a powerful framework for describing the macroscopic behavior of earthquakes and faults in a wide range of scales (Vallianatos et al., 2016 and references therein), introducing the field of nonextensive statistical seismology (NESS). The dynamical characteristics that lead to a NESM behavior were demonstrated by Beck and Cohen (2003). Here, we provide an overview on the fundamental properties and applications of NESS in Geophysics and Seismology focused on the collective properties of earthquake populations and the main empirical statistical models that have been introduced to describe them.