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Scaling properties of the Mw7.0 Samos (Greece), 2020 aftershock sequence.

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On October 30, 2020 a strong shallow earthquake of magnitude Mw=7.0 occurred on the Eastern edge of Aegean Sea. The epicenter was located on the North offshore of the Greek island of Samos. The aim of our work is to present a first analysis of the scaling properties observed in the aftershock sequence as reported until December 31, 2020, as numerous seismic clusters activated. Our analysis is focused on the main of the clusters observed in the East area of the activated fault zone and strongly related with the main shock's fault. The aftershock sequence follows the Omori law with a value of p≈1.01 for the main cluster which is remarkably close to a logarithmic evolution. The analysis of interevent times distribution, based on non-extensive statistical physics indicates a system in an anomalous equilibrium with a cross over from anomalous (q>1) to normal (q=1) statistical mechanics, for great interevent times. A discussion of the cross over observed, in terms of superstatistics is given. In addition the obtained value q≈1.67 suggests a system with one degree of freedom. Furthermore, an scaling of the migration of aftershock zone as a function of the logarithm of time is discussed in terms of rate strengthening rheology that govern the evolution of afterslip process.

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