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# Between Earthquakes and Explosions by Using scaling parameter Hurst Parameter

In this paper, we investigate the long-range correlations and trends between consecutive earthquakes and Explosions by means of the scaling parameter so-called locally Hurst parameter, H(t), and examine its variations in time, to find a specific pattern exists between events. The long-range correlations are usually detected by calculating a constant Hurst parameter. The multi-fractal structure of earthquakes caused that more than one scaling exponent is needed to account for the scaling properties of such processes. Thus, In this paper, we consider the time-dependent Hurst exponent, to realize scale variations in trend and correlations between consecutive seismic activities, for all times. We apply the Hilbert-Huang transform to estimate H(t) for the time series extracted from seismic activities occurred in world . The superiority of the method is discovering some specific hidden patterns exist between consecutive earthquakes, by studying the trend and variations of H(t). Estimation H(t) only as a measure of dependency, may lead to misleading results, but using this method, the trend and variations of the parameter is studying to discover hidden dependencies between consecutive earthquakes. Keywords: Long-range dependence, Time-dependent Hurst exponent, Hilbert-Huang transform, Empirical mode decomposition, Seismic activities.

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