

1159-86-151

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High frequency study of EL Niño Southern Oscillation index.

The El Niño-Southern Oscillation (ENSO) phenomenon is recognized as the main source of seasonal and interannual short-term climatic variability in the tropics and in much of the mid-latitudes, causing changes in the interaction between the ocean and the atmosphere. The interaction of the ocean and the atmosphere in the Tropical Pacific Ocean fluctuates somewhat irregularly between the warm phase (SST warmer than normal) called El Niño, and the opposite phase known as La Niña. The Southern Oscillation Index (SOI) is often used as an input for seasonal climate forecasting in ENSO sensitive areas around the world. In this work, we analyse daily data of the SOI index from 1991 to 2020. We study distribution that characterizes SOI increments and by means of the Detrended Fluctuation Analysis (DFA) the presence of long-range correlations for periods less than 80 days was revealed. Additionally, in order to study the multifractal behavior of the signal we apply a generalization of the DFA method called Multifractal Detrended Fluctuation Analysis (MF-DFA). The application of this technique to the SOI time series allowed us to find the generalized Hurst exponents, and the multifractal spectrum of the signal. (Received August 03, 2020)