

Adaptive Short Time Fourier Transform (STFT) Analysis of seismic electric signal (SES): A comparison of Hamming and rectangular window

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Abstract

Seismic electric signal (SES) is one of features for predicting earthquakes (EQs) because of its significant changes in the amplitude of the signal prior to the earthquake. This paper presents detailed analysis of SES recorded prior to earthquake that occurred in Greece in the period from January 1, 2008 to June 30, 2008. During this period of time 5 earthquakes were recorded with magnitudes greater than 6R. In this analysis STFT involving adaptively sliding window technique is used, in which Hamming and rectangular window functions are applied and compared. The comparison shows that Hamming window gives better results in analyzing the first significantly changes of SES prior to the EQ. The application of Hamming window resulted in less rippled spectrum shape which is more suitable to be used in characterizing the SES.

Keywords: Seismic electric signal (SES), Adaptive STFT, Hamming window, Rectangular window

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