

Metodología para el cálculo de acelerogramas sintéticos utilizando funciones de transferencia empíricas y el método estocástico de Boore, en la ciudad de Tapachula, Chiapas

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AbstractThe main objective of this article is to estimate the synthetic accelerograms of an earthquake with a magnitude of 7.3 in the City of Tapachula, Chiapas, which occurred on november 7, 2012 on the coasts of Guatemala. In this paper, the methods of the Empirical Transfer Functions and the Boore's Stochastic Method (1983, 2003), which is useful to simulate the high frequency ground motions ($f > 0.1$ Hz), were combined. This is of great interest in the field of engineering (Boore, 2003).The accelerograms were obtained through the method used in this work. In order to verify the degree of adjustment between them, the metrics proposed by Anderson (2004) were used. To accomplish this, tests were performed with known accelerograms recorder in a temporary network. These were installed from June 15 to July 29, 2011, in the City of Tapachula, and were compared later with the synthetic results obtained after applying the mentioned method. For the simulation of a magnitude 4.7 earthquake, both horizontal components showed good adjustment in most of the stations where they were registered. In other words, the method proposed manages to closely approximate the real data recorded in each of the stations. This fact supports the confidence we have in this method, in how particularly useful it is to generate applications of interest in seismic engineering.
Key words: synthetic accelerograms, transfer functions, fitting metrics and stochastic method.