



1 Title of Abstract

Sofia urban area – seismic scenarios simulation for risk assessment

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The problem of estimation of seismic wave's behaviour for Sofia region is discussed. An approach for seismic waves classification on the base of principal axes transformation, long-range dependence time series analysis and neural modelling is used. The parallel between estimation of seismic waves behavior with different magnitude ($M=7$, $M=6.3$) is done. The synthetic accelerograms are used as input information for determining of destructive phase (S-phase) of strong motion acceleration. The boundaries of S-phase are defined with principle axes transformation.

For selected diapason of transformed accelerograms is implemented vector clustering and using the self-organized map (SOM) technique are determined the weight centers of each cluster. According to SOM and vector quantization the cluster quantity is defined. With the help of learned and trained SOM the probability density distribution for the selected target clusters are determined.

This approach is used for risk assessment for seismic scenarios with different magni-

tudes in Sofia urban area. The influence of the magnitude and geological conditions over the destructive force of seismic waves is shown. The results can be used for determination main parameters of structural control devices in the Sofia region.