



## **Multifractal analysis of seismic noise at Paleochora station**

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The results of multifractal analysis of seismic noise recorded at Paleochora station (Crete Island) in July-August, 2004, are presented. The records were obtained with the use of wide-band RefTek equipment, the sample rate was 125 sps. In the considered period of time one strong ( $M=4.8$ ) earthquake, followed by numerous aftershocks, took place in the region (July, 24).

The records of horizontal components have been analysed. The initial data sets were transformed into the new ones by taking square values and averaging over 500 samples. So, each resulting one-hour record contained 900 points, daily record - 21600 points. The combined continuous data set was considered as the distribution of some measure directly related to released seismic energy in the analysed time interval.

Obtained results demonstrate distinct multifractal structure of seismic noise. Method of moments was used for multifractal spectra calculations and scaling interval from 4 sec to 4 min was chosen for evaluation of scaling function. Scaling for positive moments proved to be much more pronounced than for negative ones.

The analysis of seismic noise before and after the strong earthquake has demonstrated that: 1) Statistical (multifractal) properties of large aftershocks differ from the properties of background noise and they should be considered separately; 2) Relative number of "large" events on the background of usual seismic noise increases three days before the main shock and the width of multifractal spectrum increases; 3) Multifractal properties of seismic noise don't vary right after the main shock. Generalized dimensions of data sets before and after the shock are close to each other; 4) The noise regains usual structure about a week later the main shock.