

SPECTRAL CHARACTERISTICS OF SEISMIC NOISE USING DATA OF KAZAKHSTAN MONITORING STATIONS

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In recent years, NNC RK seismic stations network enlarged significantly. New seismic arrays – Karatau, Akbulak, Borovoye (BVAR) and new three-component borehole Aktyubinsk station were set into operation. Entire view about dynamic characteristics of seismic noise, their variations, general regularities and specific features at each observational site is very important because this knowledge are necessary for both, estimation of station monitoring possibilities and control for station operation on the basis of continuous analysis of noise parameters. The task of the present work was construction of statistically representative seismic noise model for each station, estimation of variations range of noise spectral concentration within 24 hour period, investigation of quantitative criteria of noise level decrease due to seismometer submerge into borehole, developing of seismic noise monitoring methods.

Spectral curves for day and night time intervals were calculated on three components of broadband stations using earlier developed methods of noise spectral concentration calculation. Samples that included several tens of curves were processed statistically to analyze distribution of noise levels in each of studied periods in the range of 0.05 – 100 s. Median and percentiles within 70% interval were used as parameters characterizing the distribution. As a result, median spectral curves of noise that are the most probable noise characteristics at given station were constructed for day and night, possible ranges of their variations were estimated. General regularities of noise level changing with increase of oscillation period agreed with world noise models were revealed. Series of stations have their own local features at specified frequencies.

Changing of the level of noise spectral curve after installation of instrument into borehole was investigated using data of Borovoye and Aktyubinsk stations. Noise decrease especially at high frequencies up to 20 dB ($T \approx 0,1s$) was revealed in comparison with register instruments on surface.

Regular monitoring of seismic noises that has already revealed the instrument failures and separate errors in instrument characteristics description of seismic channels has been started.