

Selection and Preparation of Waveform Templates for Cross-Correlation Detection of Seismic Events

In this paper we present the process of selection and preparation of waveform templates for the cross-correlation detection of seismic events. Selection of the template based on parametric characteristics of the set of previously received records of seismic events in a given region. Parametric characteristics includes the list of recorded seismic phases, the parameters of the autocorrelation function, the bandwidth-duration product of the signal, the level of anthropogenic noise, amplitude and spectral characteristics of the noise before the begin of the signal, the signal to noise ratio in different frequency bands in the signal. We can prepare the set of the templates based on one single record of the seismic event, differing in length and a set of seismic phases. We introduce the template quality metric is computed by its parametric indicators. The final template selection is made on the results of the quality metrics match. We designed the software by Python programming language for parametric analysis of waveform templates. We considered using of this software for the recordings made by Mikhnevo small aperture seismic array of Institute of Geosphere Dynamics, Russian Academy of Sciences.

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