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Discrimination of quarry blasts using a complex of seismic and infrasound data in Kazakhstan

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The monitoring system of NNC RoK comprises five seismic arrays, eight 3-component stations, and three infrasound arrays. Every year, the network in Central Asia registers and processes some 20,000 seismic events. Among the total bulk of such processed events, about 5,000 events are blasts of different characters. Mainly, they are industrial quarry blasts. The technique has been developed and technology has been generated for recognition of the character of the event based on the set of seismic and infrasound data, which can also increase the accuracy of blast localization significantly on account of reliable reference to the specific quarry. For twelve quarries, template seismic waveforms have been produced. It has been shown that a record of the Lg phase at every quarry at a specific station has a specific form; notably, record forms of this phase from different blasts registered by the same station at the same component for the same quarry are very similar. This feature is used as a criterion for recognition. This technique has been tested with data from the Aqbastau quarry. The findings of this research proved that this method is feasible and highly efficient.

Promotional text

Discrimination of quarry blasts applying correlation techniques with a combination of seismic and infrasound data can support national needs, and to improve nuclear test monitoring and verification.

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