

Applying waveform correlation to aftershock sequences using a global sparse network

Studies have shown that waveform correlation is effective in detecting similar seismic waveforms from repeating earthquakes, including aftershock sequences. Monitoring agencies have shown interest in adopting techniques to quickly characterize aftershock sequences to reduce the amount of effort required by analysts to add aftershocks to event bulletins. Our experiment uses waveform templates recorded by multiple stations of the IMS network during the first 12 hours after the main shock to detect and identify aftershocks that occur during the subsequent week. We present methods for station and template selection, threshold setting, and event detection that are specialized for aftershock processing in a sparse, global network. We apply the methods to several aftershock sequences to evaluate the potential for establishing a set of standard aftershock waveform correlation processing methods that can be effective for operational monitoring systems with a sparse network. We compare candidate events detected with our processing methods to the LEB bulletin to develop an intuition about potential reduction in analyst effort.

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