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The application of a dynamic correlation processor for IMS detection screening

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The vast majority of International Monitoring System (IMS) seismic detections are associated with small events that are detected by only one station. Large numbers of small-event detections at each IMS station increases the probability of the International Data Centre (IDC) automatic system building false events. We test whether detections of small, repeating local events (e.g., mines) can be identified and screened prior to the IDC association process. We use a dynamic correlation processor (DCP) (Harris and Dodge, 2011) to form groups of similar waveforms, and we then manually associate these groups to known mines and other sources. We first test screening at the Norwegian Arctic ARCES IMS array by applying the IDC beam recipe to the incoming data steam, then using the DCP software to group events. Preliminary results on this array show that for two beams, 80% and 74% of automated detections are found by DCP and may be screened before IDC preprocessing. These promising results suggest that the DCP screening method may be used to identify and screen detections that are not of interest to monitoring before they are passed to the IDC automatic system. Detection screening may significantly reduce analyst effort to produce the Reviewed Event Bulletin.

Promotional text

Small, repeating events that are detected by one IMS seismic station may be identified and screened prior to the event association process. Detection screening may reduce analyst burden by decreasing the number of false events that are formed by the IDC automatic system.

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