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# of Detecting Seismic Events in IMS seismic network

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In the verification regime of the Comprehensive Nuclear-Test-Ban Treaty (CTBT), nuclear tests must be detected and identified with high confidence. Seismic monitoring is particularly well suited for detecting and locating an underground nuclear explosion and determining its magnitude. The detection capability of a seismic network depends on the density of the network and distribution of stations, their site conditions, their recording characteristics, their data link to the processing center, and the post-processing methods of recorded seismic data.
In this study, previous studies of determination coverage of IMS seismic network is reviewed. Furthermore, the probability of detecting a seismic event is determined using the methodology proposed by Schorlemmer and Woessner (2008). This method is based on past seismicity detected by a seismic network. Accordingly, the detection probability for each seismic station is determined as a function of magnitude and hypocentre distance, using data from past seismicity.
After more than 20 years of performance of IMS seismic network, in this paper, the detection capability of this network is estimated based on past performance of the network. A comparison is made between the results of this study and the seismic coverage maps provided by the IDC.

Promotional text

One of the main concerns in CTBTO is the coverage map of seismic network of IMS. The coverage map is a tool to ensure the proper performance of the IMS seismic network in relation with the Treaty objectives. This paper address the evaluation of performance of IMS seismic network.

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