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the IMS seismic stations by optimizing their detection thresholds

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Two principal performance measures of the International Monitoring System (IMS) stations detection capability are the rate of automatic detections associated with events in the Reviewed Event Bulletin (REB) or precision of the REB and the rate of detections manually added to the REB or miss rate of the REB. These two metrics are significantly influenced by prespecified slowness-, frequency- and azimuth- dependent detection thresholds used in the short-term average over long-term average ratio detection scheme of the IMS stations. The thresholds should be set at optimal values that a) the miss rate is as low as possible since no nuclear explosion should go unnoticed by the IMS and b) the precision is as high as possible as low precision compromises the quality of the automatically generated event lists and adds heavy and unnecessary workload to the seismic analysts during the interactive processing stage. In this abstract we present the procedure for optimizing the STA/LTA detection thresholds and how these new values are expected to impact the associated phases and added phases rates and other performance measures.

Promotional text

Optimization of STA/LTA detection thresholds at the IMS seismic stations and its expected impact on the association (or hit) rate and added phases (or miss) rate.

Primary authors: Mr SARAGIOTIS, Christos (CTBTO Preparatory Commission, Vienna, Austria); Mr KITOV, Ivan (CTBTO Preparatory Commission, Vienna, Austria)

Presenter: Mr SARAGIOTIS, Christos (CTBTO Preparatory Commission, Vienna, Austria)

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