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real-time monitoring of the IMS event detection capability

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The primary seismic network of the International Monitoring System (IMS) forms the backbone of the CTBT verification regime. The average event detection capability of the primary seismic network is estimated to be within the range mb 3.1 to 3.4 for the northern hemisphere, and between mb 3.4 and 3.7 for the southern hemisphere. However, it is understood that the detection threshold can vary significantly with time during situations such as high station noise levels, large earthquakes or outages of key stations. The continuous threshold monitoring method was developed to address the temporal and spatial variability in network detection capability, and an operational implementation has been running at the International Data Center for several years. The current system provides hourly averaged estimates of the three-station detection capability, as well as the point-wise maxima (worst-case) for each hour. Recent advances in computer technology has allowed for increased temporal and spatial resolution in the calculations, as well as new graphical presentation options of capability estimates. Additionally, the steadily increasing IDC event database is used to obtain higher accuracy and improved uncertainty estimates. We will in this presentation demonstrate new approaches and applications of the threshold monitoring method for continuous assessment of IMS performance.

Primary author: KVÆRNA, Tormod (NORSAR)

Presenter: KVÆRNA, Tormod (NORSAR)

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