

3.3-P32. Seismic Event Detection by Correlation at Stations in the Middle East

The number of seismic networks and stations in the Arabian Peninsula/Middle East is rapidly increasing. Even so, due to heterogeneous geometries, the network coverage is insufficient to fully describe the wide range of seismicity (e.g., mining and small aftershocks). Although seismic networks primarily employ incoherent detectors, Junek et al. (2014) demonstrated a reduction in magnitude completeness of more than one magnitude unit by processing the 2008 Storfjorden sequence observed at IMS auxiliary seismic station AS72 (SPITS, Spitzbergen, Norway) with subspace detectors. Also, Dodge and Walter (2015) have shown that at distances less than ten degrees a very high fraction of events can be detected by correlation. Because nearly all Middle East seismicity falls within this distance range, we believe there is potential to improve bulletin completeness in the Middle East by augmenting the network pipeline software with pattern-matching detectors (e.g., correlators and subspace detectors). We test waveform correlation detection performance using broadband station data from Kuwait and nine-element seismic array data from Saudi Arabia. We process continuous data at station MIB and the QWA seismic array. For configurations, an autonomous event detection and clustering framework is employed to build a more complete catalog with lower magnitude thresholds.

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