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Insights into the Dead Sea Transform Fault Seismicity Gained from the IFE2014 Seismological Recordings

In this study we apply a newly developed automatic detection and location method to a dataset compiled for the period of the IFE14 exercise in 2014 in Jordan. The aim is to compare results of the new techniques to outcomes of the exercise and to discriminate better between natural and artificial weak events in the Dead Sea basin. We complemented the IFE14 dataset by 5 permanent broad band, 8 short period stations and a temporary array of 15 stations. The analysis is based on coherency analysis of traces, stacked using synthetic P and S phase arrivals, calculated for each grid node of a discretized volume covering the region under investigation. In order to further enhance the detection performance, we combine this method with standard array techniques. The onset detections and the crude localizations are refined in a subsequent step employing a different characteristic function based on an STA/LTA window. We compare the detection performance of our method with that of the IFE14 focusing on the magnitude of completeness. We are able to detect and locate several local small events in the study region confirming previous results on the complex transtensional setting of the Dead Sea basin. Acknowledgements: DESERVE Project

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