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Evaluating the Reverse Time Migration Method on the dense Lapnet / Polenet seismic array in Europe

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In this study, results are obtained using the reverse time migration method used as benchmark to evaluate the implemented method by Walker et al., (2010, 2011). Explosion signals recorded by the USArray and extracted from the TAIRED catalogue (TA Infrasound Reference Event Database user community / Vernon et al., 2012) are investigated. The first one is an explosion at Camp Minden, Louisiana (2012-10-16 04:25:00 UTC) and the second one is a natural gas explosion near Price, Utah (2012-11-20 15:20:00 UTC). We compare our results to automatic solutions (www.iris.edu/spud/infrasoundevent). The good agreement between both solutions validates our detection method. In a second time, we analyse data from the Lapnet / Polenet dense seismic network (Kozlovskaya et al., 2008). Detection and location in two-dimensional space and time of infrasound events presumably due to acoustic-to-seismic coupling, during the 2007-2009 period in Europe, are presented. The aim of this work is to integrate near-real time network performance predictions at regional scales to improve automatic detection of infrasonic sources. The use of dense seismic networks provides a valuable tool to monitor infrasonic phenomena, since seismic location has recently proved to be more accurate than infrasound locations due to the large number of seismic sensors.