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Signals from Quarry Blasts at Eastern Helwan, 2022.

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Although Seismometers are usually used for monitoring such these quarry blasts, a part of the explosion energy emits on atmosphere and make a clear remark for these surface explosions. A temporary infrasound array station with small aperture of 150 meter, was deployed in Helwan since May 2022. The array consisted of five infrasound sensors and one collocated seismometer.

In this study we addressed our infrasound acquisition system in Helwan. MB3d was compared with a inexpensive sensor manufactured in Japan (INF04). Several seismo-acoustic signals were detected in our array for a period of six months. Moreover, these impulsive signals were declared by applying a recursive Short term average / Long term average (STA/LTA) trigger algorithm to all sensors. The recorded events were compared by the Egyptian Seismic Bulletin records. In addition, the infrasound propagation models from the quarries location toward our infrasound array and the FK-analyses of the events were investigated.
In conclusions, our infrasound system could be able to detect the near quarries in Eastern Helwan using recursive trigger algorithm. The FK-analyses and infrasound propagation models support the directions and the locations of the recorded quarries. For events involving higher frequencies, inexpensive sensors can be a convenient solution.

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