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”Ground Coupling Experiment”: Comparison of firework acoustic signals on co-located pressure and seismic sensors

We performed a seismo-acoustic “Ground Coupling Experiment” at the CTBTO infrasound test site near the Conrad Observatory, Austria. Seismic and acoustic signals were generated by hammer beats, fireworks (rockets and crackers), human steps and wind. Seismo-acoustic signals were recorded by 99 Fairfield ZLand geophone nodes and four Hyperion IFS 5111 seismically decoupled infrasound sensors, as well as by several smartphones using the RedVox app. In this work we present a first comparison of seismo-acoustic records from co-located pressure and seismic sensors. Using the Hyperion IFS 5111 as reference sound sensors we evaluate the sensitivity of nodal geophones to acoustic perturbations and compare buried vs. surface installations. We also study how we can characterize stationary and moving sources and we analyze the impact of wind noise. By comparing seismo-acoustic records of surface sources (~1m height) with those of sources at height (~40 m height) we investigate the effect of incidence angle on the seismo-acoustic coupling efficiency.

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