



Infrasound Calibration in the Eastern Mediterranean

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The CTBTO has a continuing interest in collaboration on experiments in its monitoring technologies to test, calibrate, and validate its sensors and processing systems. An important class of experiments measures the signals from events generated under controlled, or otherwise well-characterized, environments. The resulting ground-truth datasets provide important information on the usability of the IMS data to detect, locate, and quantify events.

Experiments related to infrasound monitoring are of particular interest, because routine global infrasound analysis is still in its infancy at the CTBTO, and a ground-truth data set is actively being assembled. Equally valuable to the nature of the infrasound sources is the propagation medium which demonstrates significant spatial and temporal variations. Therefore, conducting atmospheric events of known energy release under known conditions provide valuable data on how well the variables can be controlled in the data processing.

Two controlled atmospheric events of known energy release were conducted in the Eastern Mediterranean in January 2011. The first event was carried out on 24 January 2011, with an energy release of 8 tons of TNT equivalent. The second event was carried out on 26 January 2011, with an energy release of 80 tons of TNT equivalent.

In order to better record the infrasound signals at local and regional distances, a large scale deployment was carried out, which deployed over twenty temporary infrasound arrays in over fifteen countries. This collaborative undertaking included over fifty participants from over twenty countries. The equipment used for this temporary deployment included contributions from a number of different countries, as well as from the CTBTO.

This large scale collaborative effort also provided an opportunity to build knowledge and understanding of infrasound technology, through firsthand experience in site selection, deployment, field operation, data acquisition, and station processing. Data from this campaign are being analyzed, and will provide insight into atmospheric propagation and network processing.