

## Detection and classification of lightning events

Electromagnetic pulse has been excluded from the IMS technologies because its high false alarm rate due to lightning discharges. Here we examine a possible method of overcoming this obstacle by merging infrasound data with electromagnetic measurements. The proposed method is based on the fact that all known sources of infrasound, with the exception of a nuclear event, do not emit an electromagnetic signal except for lightning. Therefore, the ability to detect and classify lightning events is a necessary condition for the use of an EM signal for the purpose of the IMS. The data set is taken from an antenna that has been located adjacent to the Mt. Meron infrasound array, and the measured EM fields have been recorded for several days in times of lightning storms. Then we used methods of spectral analysis and machine learning in order to detect and classify lightning events in EM signal. We present here examples and statistical analysis of the results. These results give hope that the proposed data fusion method can be implemented to enhance both detection and discrimination capabilities of the IMS.

**Primary author:** KAHLON, Maayan Ainas (Soreq Nuclear Research Center)

**Presenter:** KAHLON, Maayan Ainas (Soreq Nuclear Research Center)

**Track Classification:** Theme 3. Verification Technologies and Technique Application