

use of IDC bulletins in assessing of Romanian infrasound stations performance to detect coherent infrasound sources at near-regional distance

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Two infrasound stations are deployed on the Romanian territory: IPLOR 4-element array of 0.6 km aperture, and BURARI 6-element array of 0.7 km aperture. Infrasound data are processed and analyzed on routinely basis at NIEP by using infrasound detection-oriented software (DTK-GPMCC and DTK-DIVA) packaged into NDC-in-a-Box. This study focuses on the high frequency signals (above 1 Hz) detected by the two arrays mainly from sources related to the intense military activity (bombardment and shelling) during Ukraine war. In order to automatically associate these signals with LEB events provided by IDC/CTBTO, observed and expected values of backazimuths and arrival times for LEB events were compared. The expected arrival time of infrasonic signal was estimated by adding time of infrasound wave to propagate to arrays straight from source, with an average speed of 0.34 km/s, to origin time of the LEB event. Allowed deviations between observed and expected values were considered as ± 10 degrees for backazimuth and ± 10 minutes for arrival time. Approx. 30% of LEBs could be associated to infrasound detections. Almost 60% of associated events are ranging between 230 and 1000 km from arrays, whilst for 93% of these events backazimuth interval is between 10 and 120 degrees.

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