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Observing military aircraft activity with the Romanian infrasound arrays

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Presently, National Institute for Earth Physics operates two infrasound stations deployed on the Romanian territory: IPLOR 4-element array of 0.6 km aperture, and, under cooperation with AFTAC (USA), BURARI 6-element array of 0.7 km aperture.

As many military bases are deployed across Europe and Near East region, signals from supersonic aircraft activity are detected routinely at the Romanian infrasound stations. These signals are observed from short/local ranges (140 km) to long-distance ones (2200 km). Several directions of interest were identified: NW (North Sea, Germany), NNW (Norwegian Sea, Northern Norway), NNE (NE Ukraine- NW Russia), SSE (Aegean Sea), SE (Turkey, Sinai Peninsula). Moreover, the two arrays frequently observe supersonic jets flying from military bases located in Romania.

Sonic booms generated by military aircraft could be localized by cross bearing the detections of IPLOR and BURARI arrays. The information released on military exercises and LEB bulletins is used to validate the locations. At local distances, the sonic boom appears as an infrasonic pulse dominated by high frequencies (above 1 Hz), while, for long-ranges, lower frequency drops below 1 Hz as the higher frequency components are rapidly attenuated. Statistical analysis of wave parameters (trace velocity, azimuth, frequency, amplitude) shows seasonal and daily variations.

Promotional text

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