

West Eurasian Clusters of Infrasound Arrivals in Analyst-Reviewed Bulletins of the International Data Centre

Five years (2010-2015) of infrasound arrivals, included in International Data Centre (IDC) analyst-reviewed bulletins, detected across the International Monitoring System (IMS) show clusters in West Eurasia of up to 268 infrasound only events (no associated seismic phases). Ground truth information is unavailable for these clusters, although one large cluster (North Sea region) is associated with sonic booms from supersonic aircraft activity. A comparison of IMS data with infrasound waveforms from the Netherlands supports the existence of these North Sea events and allows the determination of common characteristics. Subsets of 20 randomly selected events from each of three other large clusters in West Eurasia are studied, with every reported infrasound array arrival re-analysed using an F-detector to objectively assess the REB arrivals. Approximately 60% of events studied fulfil the event definition criteria of ≥ 3 station detections, suggesting that caution should be exercised when using the Reviewed Event Bulletin (REB) published by the IDC as a benchmark for studies aimed at improving IDC products. The IMS infrasound network is shown to be particularly sensitive to sonic booms because the elevated source height reduces the anisotropy of infrasonic propagation within a stratospheric duct and allows for episodic upwind propagation.

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