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IDC Infrasound Pipeline initiative for technology development

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The first atmospheric event built exclusively from infrasound arrivals was reported in the Reviewed Event Bulletin (REB) of the International Data Centre (IDC) of the Comprehensive Nuclear Test-Ban-Treaty Organization (CTBTO) in 2003. In the last decade, 48 infrasound stations from the International Monitoring System (IMS) have been installed and are transmitting data to the IDC. The infrasound component of the IMS daily registers infragenic signals originating from various natural sources such as volcanic eruptions, earthquakes, microbaroms, meteorites entering the atmosphere and anthropogenic sources such as mining and accidental explosions. The IDC routinely processes infrasound data and creates automatic bulletins which are then reviewed interactively..
The IDC advances its methods and continuously improves its automatic systems, including the infrasound technology. The IDC focuses on enhancing the automatic system for the identification of valid signals and the optimization of the network detection threshold by identifying ways to refine signal characterization methodology and association criteria. The current operational system handles seismic, hydroacoustic, and infrasound technologies within the same instance of the Global Association (GA) automatic association algorithm. The Infrasound Pipeline initiative consists in separating the infrasound technology at the stage of automatic association. An objective of this study is to reduce the number of automatically associated infrasound arrivals that are rejected by the analysts. This study also prepares the way for the implementation of the next generation of automatic waveform association algorithms. Infrasound processing in Global Association (GA) is revisited to pursue a lower ratio of false alarms. Tests are performed using historical events from IDC bulletins and the Infrasound Reference Event Data Base (IRED).