



## **Methodology for infrasound sources localization using global propagation tables**

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Methods to build global infrasonic propagation tables centred on infrasound station are being investigated. The main goals are to take into account the atmospheric space and time variations on a global scale for specific dates and times in order to define their interest toward infrasound source localization. Such tables also offer a unique snapshot on the infrasonic propagation parameters for each group of ray paths. Localization is a complex matter with some crucial prerequisites which are accurate phases identification and careful association of detections at the contributing stations. The global propagation tables are centred on the IMS (International Monitoring System) stations from the CTBTO (Comprehensive Test Ban Treaty Organization) with a source meshing radially covering the space around it. For each grid cell simulations are carried out with WASP 3D a long range propagation tool ray-tracing theory based (WASP 3D: Windy Atmospheric Sonic Propagation in three dimensions) combined with semi-empirical (NRL-G2S Naval Research Laboratory - Ground to Space) and statistical (HWM Horizontal Wind Model and MSIS-E Mass Spectrometer, Incoherent Scatter - Extended) atmospheric models. The method to build the propagation tables as well as their quality and performance will be of interest. The procedure is then being used for the Buncefield oil refinery fire in Hemel Hempstead, 40km north of London, on December 11, 2005 at 06:03 UTC. This event has been recorded on numerous stations all over Europe (Germany, Sweden, The Netherlands, and France). The precision of the localization as well as its optimization will be furthermore discussed.