# Detecting meteorites with Infrasound

Ulrike Mitterbauer

**Within the framework of a co-operation with the German Institute BGR (Bundesanstalt für Geowissenschaften und Rohstoffe) a mobile Infrasound-Array was deployed for the first time in Austria. Data were collected and processed using WinPMCC (Pouillot et al., 2008) and Seimic Handler. Several signals of interest were detected and compared with ground truth information.**

A mobile station consisting of four sites was deployed and tested in the timeframe between January and April 2013. All sites were equipped with MB2000 sensors. Figure 1 shows the sensorbox with microbarometer included.


Figure 1: Sensorbox.

On 15th of February a meteorite entered the atmosphere around 9:20 local time close to the city Tschjelabinsk in a distance of 3200 km from the station. Signals arrived from 7:00 UTC at the station (Figure 2). Due to the small aperture and the long periods of the signal it was not possible to calculate a clear azimuth and velocity, but a comparison with signals of station IS26DE of the IMS-Network showed a similar signal at that time. A FK-Analysis calculated with Seismic Handler of the data resulted in an azimuth North East of the array.

On the 14th of February the Austrian Military tested a supersonic aircraft in the close vicinity (25 km distance) of the array. The boom can be seen clearly in the registration as a N-wave signal (Figure 3). The detected back-azimuth and the calculated velocity (363 m/s) are in good agreement with the expectations.

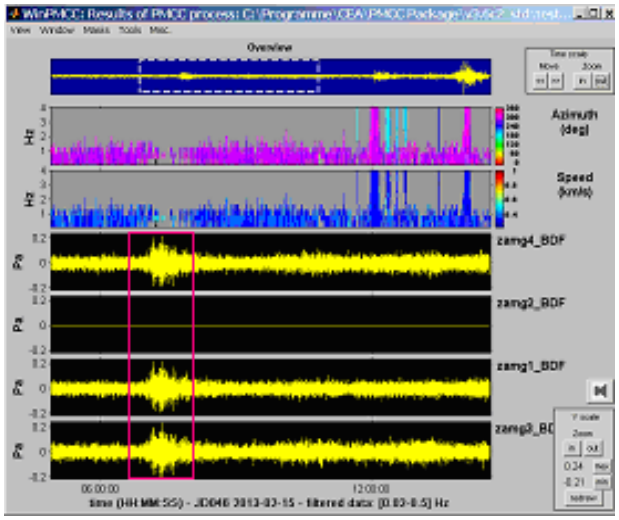


Figure 2: Registrations zamg1-4 of the meteorite (Filter 0,02-0,5Hz).

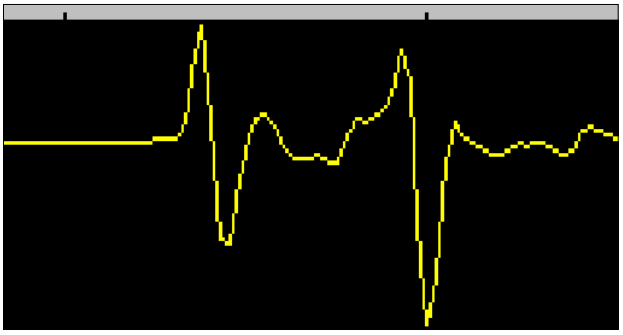

Figure 3: N-shaped signal of a supersonic aircraft.

**References:**
Pouillot Ch., Chavy C., Quicke G. (2008): WinPMCC User Manual, Axlog Ingenierie, 64p.

*Seismic Handler: http://www.seismic-handler.org/*

**Author:**
U. Mitterbauer[1]
1) Austrian National Data Centre (NDC-AT) at the Central Institute for Meteorology and Geodynamics, Vienna

**Corresponding author:**
Ulrike Mitterbauer
Central Institute for Meteorology and Geodynamics
Hohe Warte 38, 1190 Vienna, Austria
Tel.: +43-1-36026 2527
e-mail: ulrike.mitterbauer@zamg.ac.at