



## **Recording the sounds of small earthquakes: preliminary experimental results**

**M. Sylvander**, J.-F. Fels, S. Benahmed, and C. Ponsolles

Observatoire Midi-Pyrénées, Toulouse, France (Matthieu.Sylvander@cnes.fr / Phone +33 5 61 33 29 82)

Small earthquakes are frequently accompanied by the occurrence of sounds, in particular in regions where the seismicity rate is moderate. A preliminary experiment has been conducted in order to record such sounds in the central part of the French Pyrenees. The signals recorded by a short-period seismometer and a capacitive microphone have been continuously monitored for a few months by a simple PC-based acquisition system. The heart of the device is the Ishmael 1.0 software, designed by D. Mellinger of the NOAA for acoustic analysis. The recording of both voltage signals is controlled by a triggering algorithm on the seismic signal ; the recorded series are then digitized at audio frequencies (up to 44 kHz). The data are stored as sound files in the Microsoft WAV format.

The acoustic and seismic signals of two small ( $M_l < 3$ ) earthquakes were successfully recorded at hypocentral distances of about 10 and 20 km. Sounds associated to the direct P transmission and SV-to-P conversion into the atmosphere are clearly identified. The dominant audio frequencies are recorded within the 20-40 Hz band, i.e. at the lower bound of human audibility. The time series and spectra of these signals will be presented here, as well as the audio recordings.