

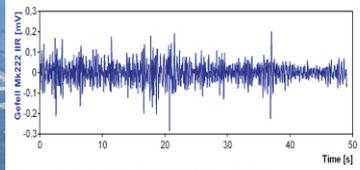
Introduction to Infrasound:

Infrasonic sound is too low frequent to hear; its acoustic spectrum covers frequencies below 20Hz which are generated by the compressibility of the air. These low frequency signals have the ability to propagate long distances through the atmosphere with a velocity of 344m/s which is about the same as that of audible sound. This is due to the low absorption of the air and the high reflectivity of the ground. Infrasound monitoring systems are used to detect hazards such as avalanches, landslides, nuclear explosions and debris flows.

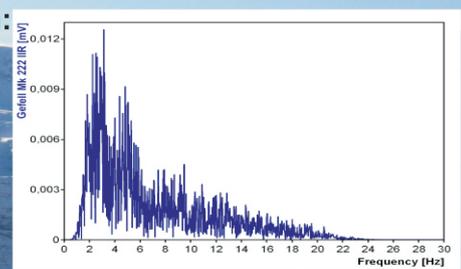
Avalanches:

The following results have been monitored on the 27.02.2007, at Col du Lautaret (2058m), an avalanche test side of the Cemagref Grenoble, France; pictured is a class 2 avalanche with average wind speed of 11,2 m/s. Avalanche generated infrasound has a predominant frequency between 2-8 Hz.

Raw data:



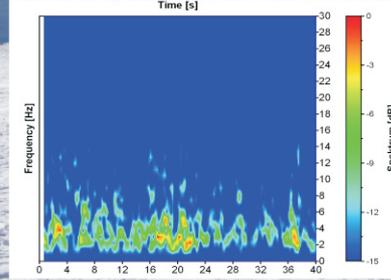
Frequency spectrum:



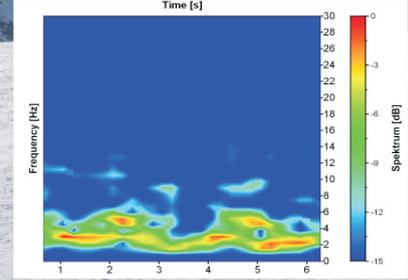
Sensor:



STFT spectrum:



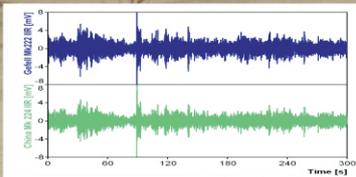
Extract of the STFT spectrum:



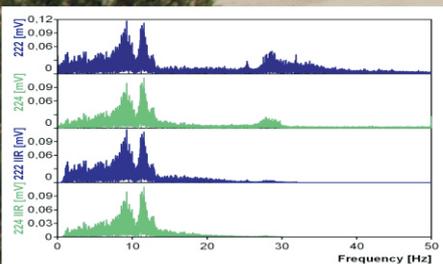
Debris Flow:

The results shown below have been monitored on the 25.07.2007 in the Jiangjia Gully, Yunnan, China. Debris flow starts when rainfall intensity increase and wave trains of debris flow occur lasting 10-20 minutes but can last up to 10 hours. Debris flow has peak intensity around 10 Hz and another peak value around 30 Hz ("audible sound").

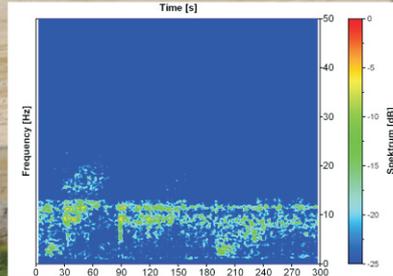
Raw data:



Frequency spectrum:



STFT spectrum:



Extract of the STFT spectrum:

