

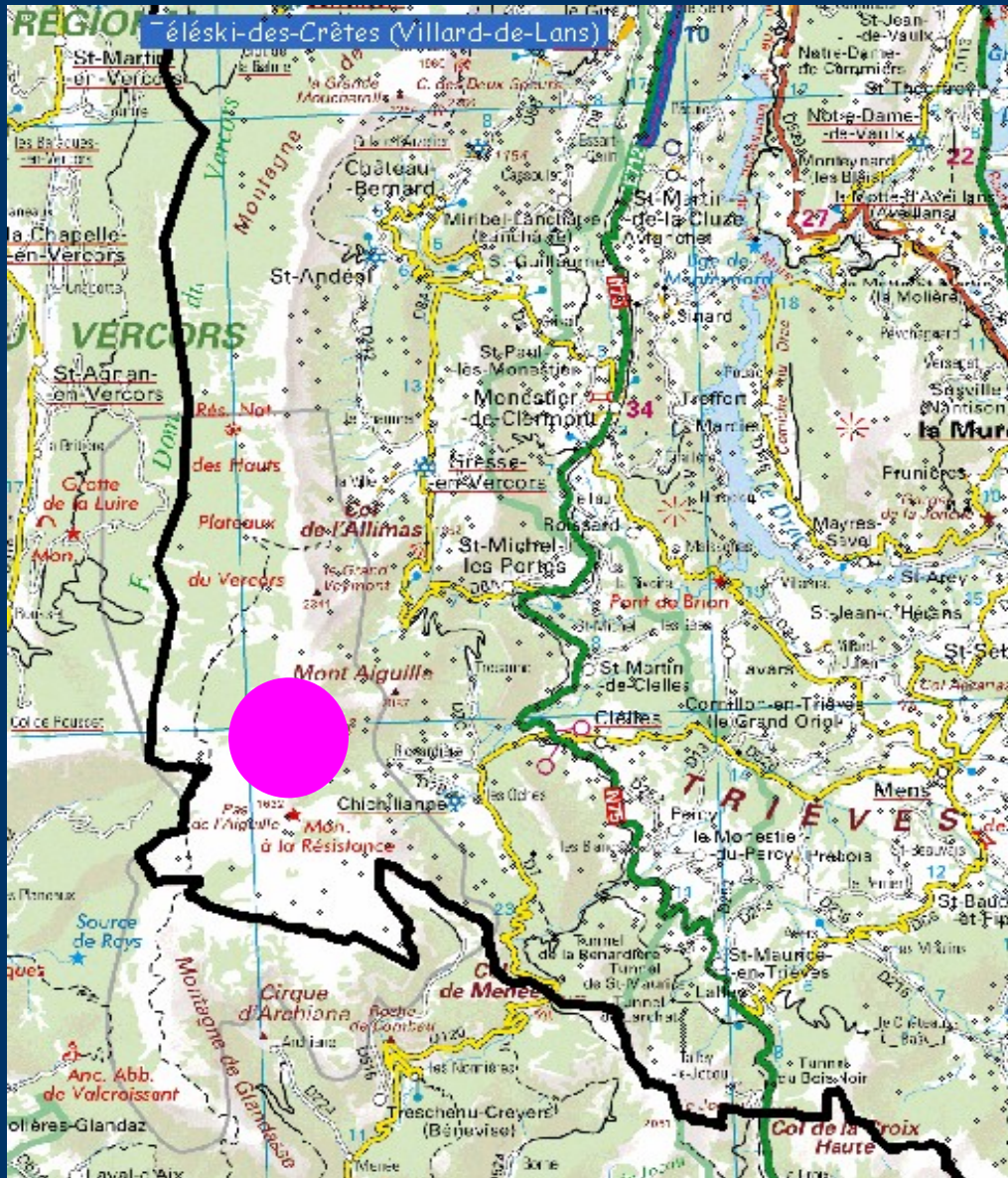
Eboulement *Ecaille de Chamousset*



**Équipe Mouvement
de terrain**

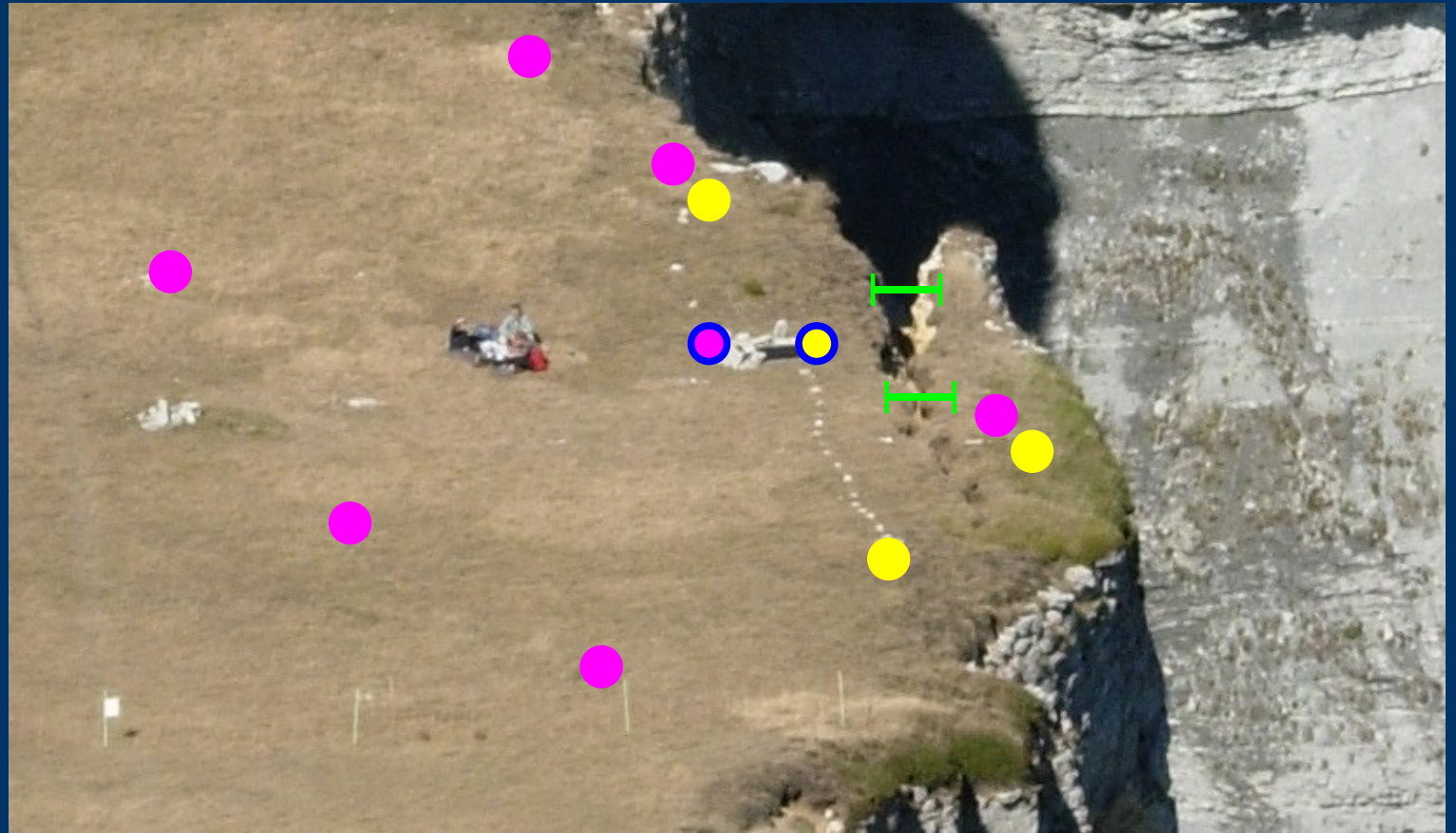
Philippe, Clara,
Laurent, Didier

Situation



Écaille rocheuse sur
la falaise Sud Est
du Vercors,
Surplombant
Chichilianne et
face au Mont
Aiguille

Instrumentation



Ecoute sismique avec
une station IHR et
7 geophones (1 Geo3D +
6V) du 13/07 au 10/10

Auscultation extenso (2)
et écoute sismique
(1 Geo3D + 3V)
du 1/08 au 26/11

Station IHR



- Station Osiris
- 6 sismo verticaux 1Hz
- 1 sismo 3 composantes 1Hz
- Mode déclenché
- F.ech = 1000Hz

Station MYOTIS

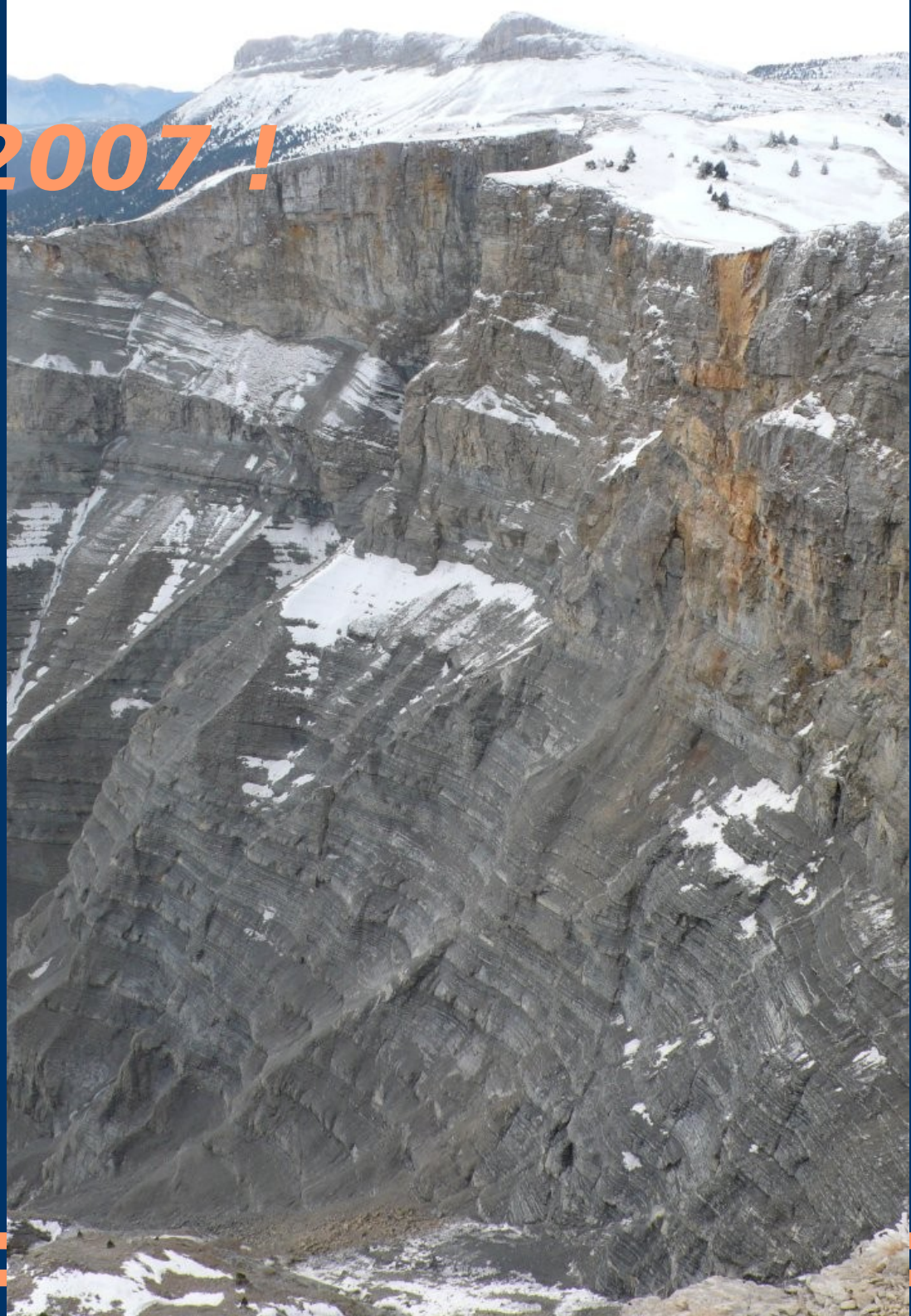


- 2 extenso à cable (100mm/375mm, précision 1%)
- 3 géophones 4,5Hz verticaux
- 1 géophone 4,5Hz 3 composantes
- Enregistrement continu @1000Hz

La fracturation



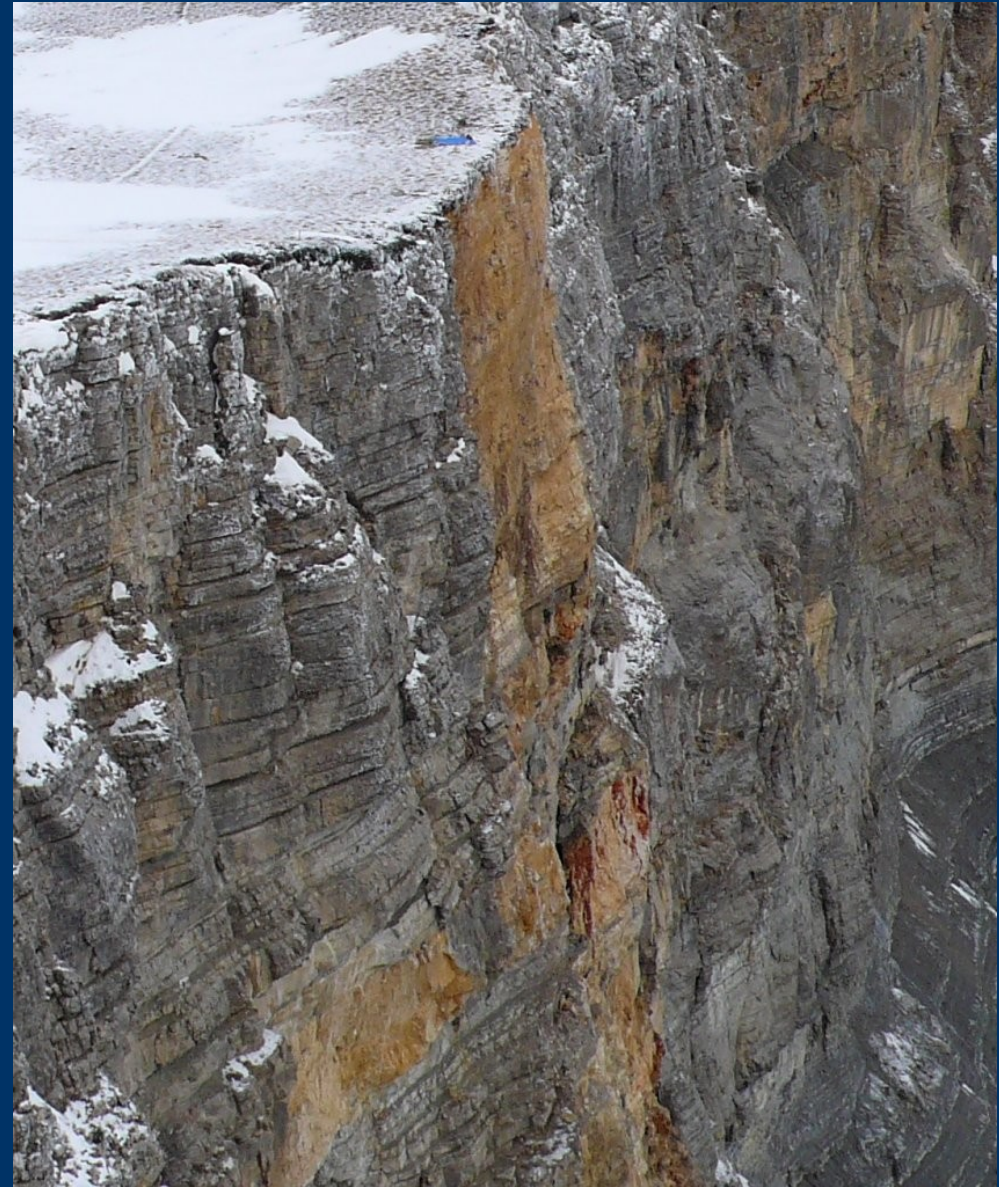
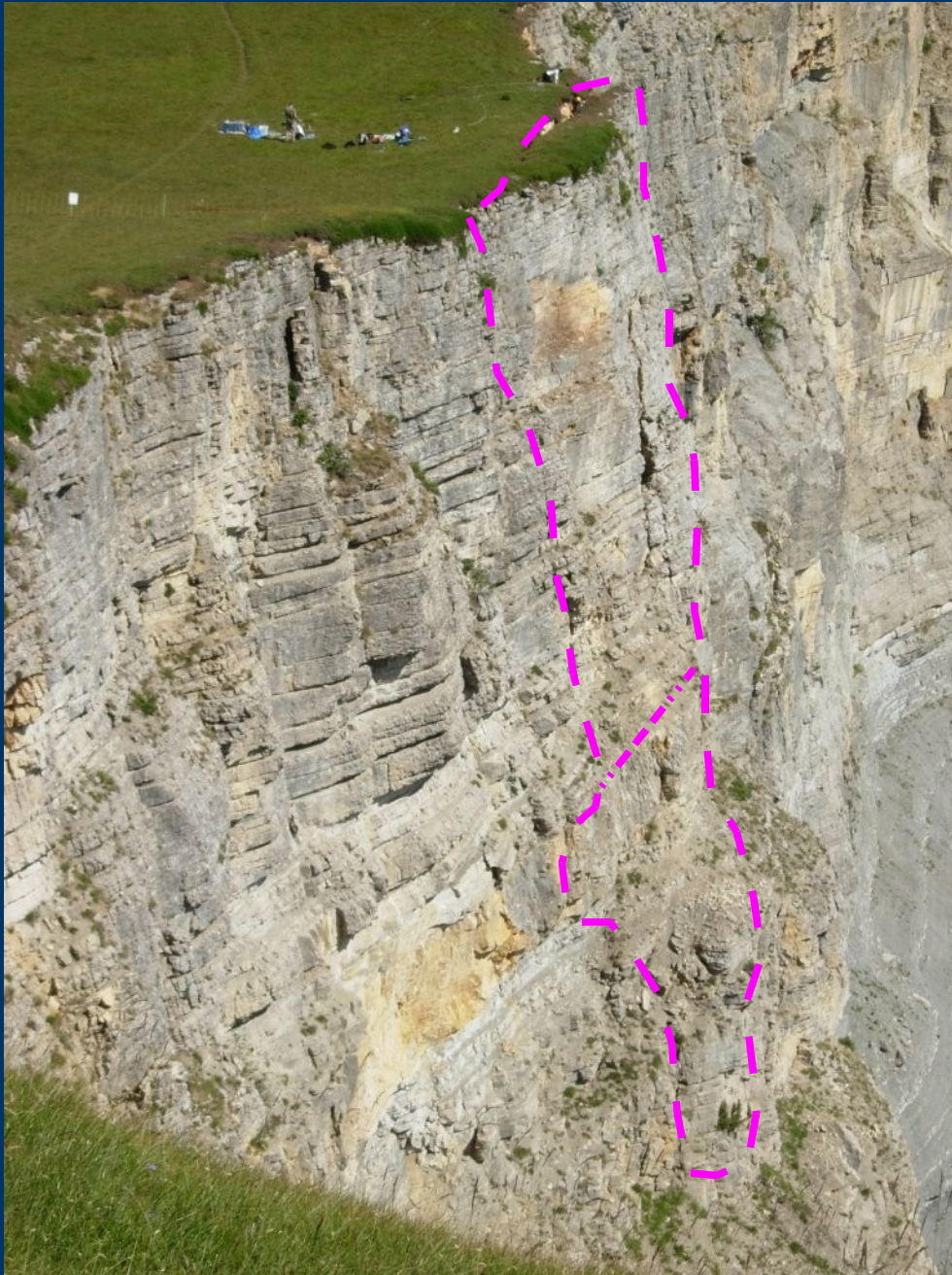
... Le 26 nov 2007 !



Cicatrice

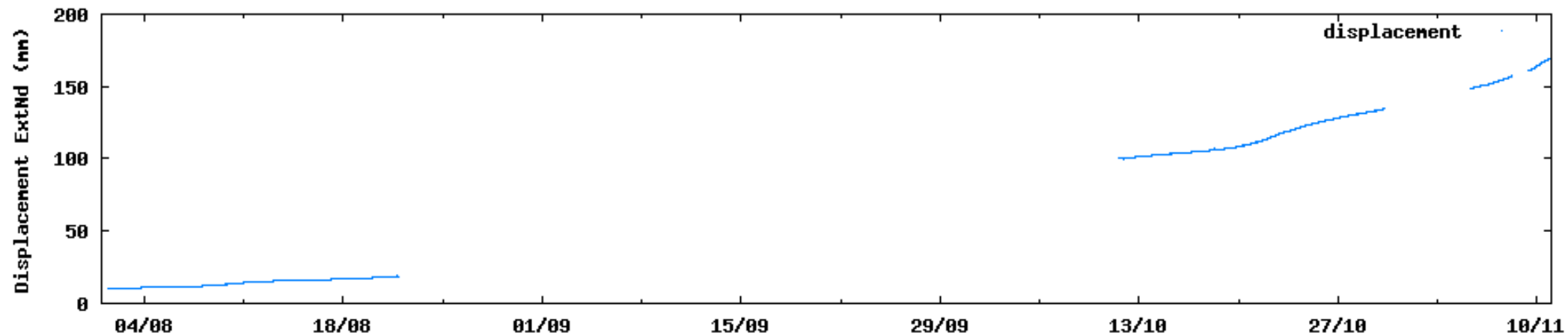


Avant ... Après

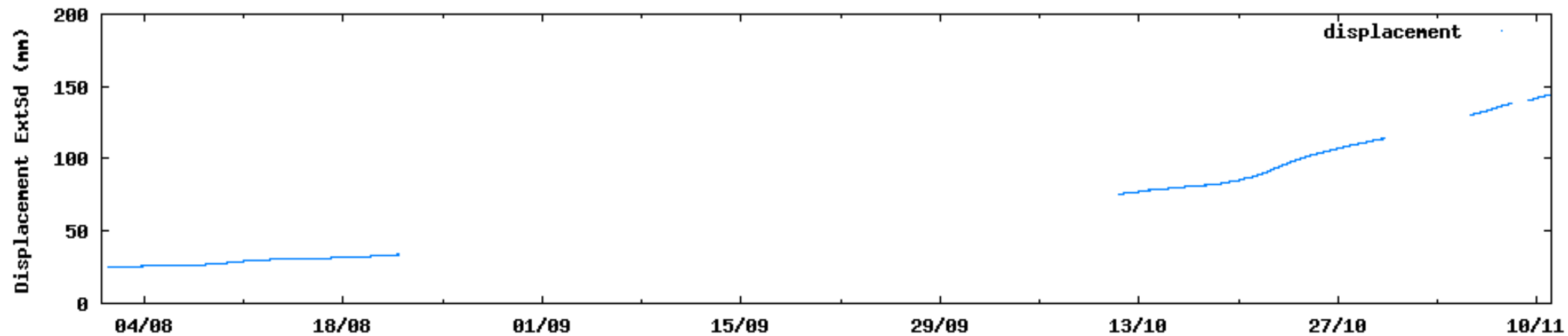


Mesures de déplacement

Rockfall monitoring at Chanousset (Vercors, France)

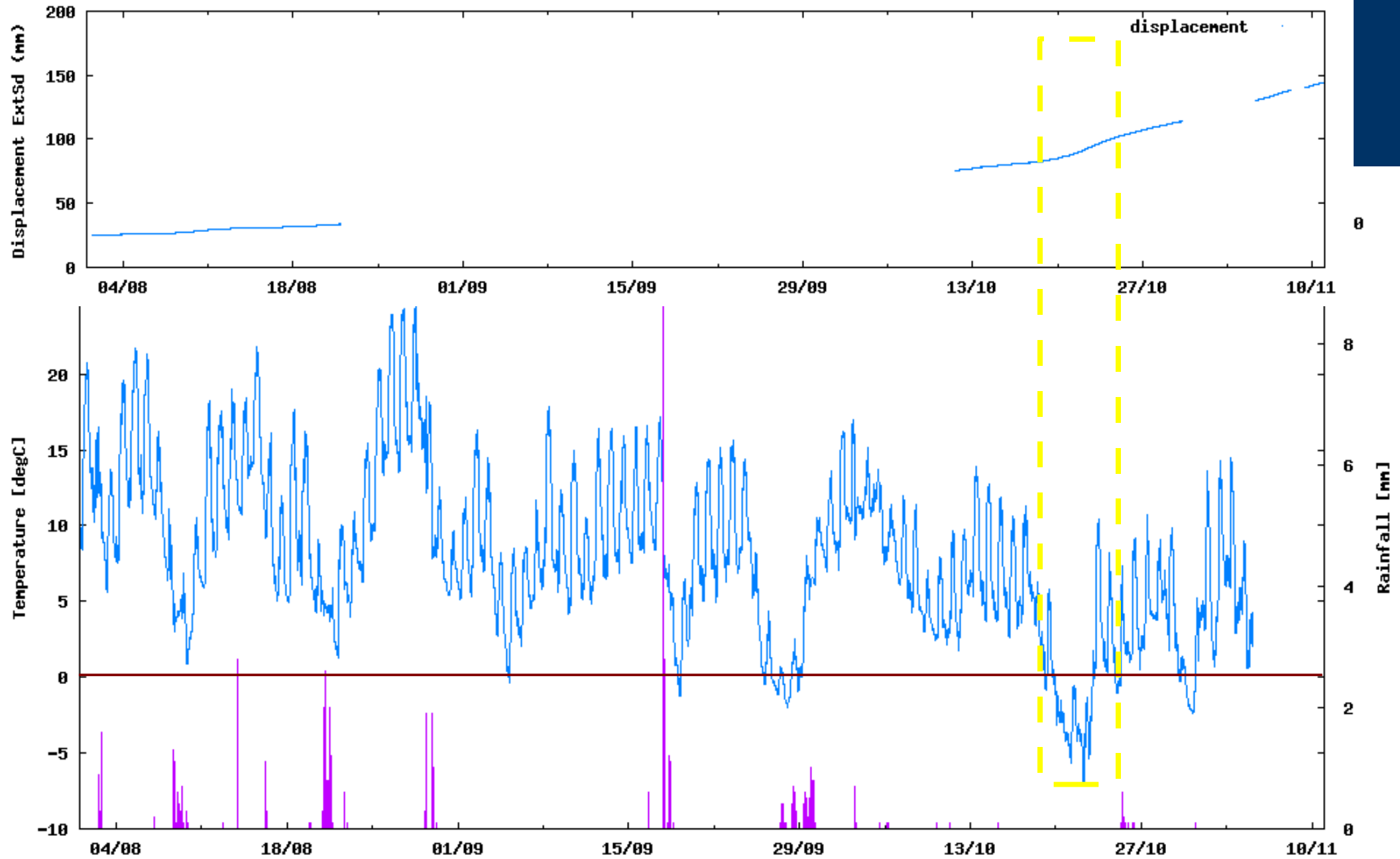


Rockfall monitoring at Chanousset (Vercors, France)

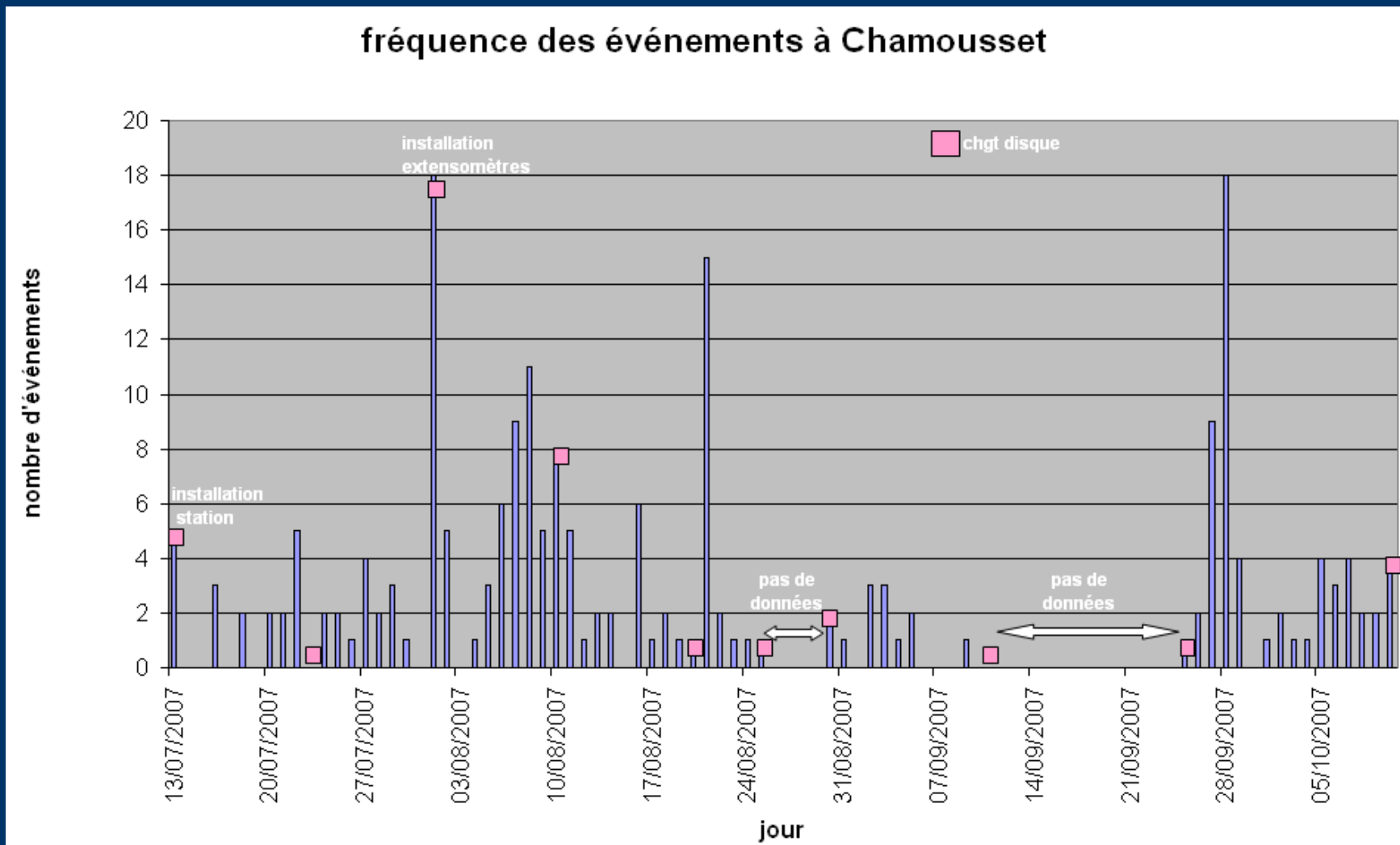


Facteurs climatiques

Rockfall monitoring at Chamousset (Vercors, France)

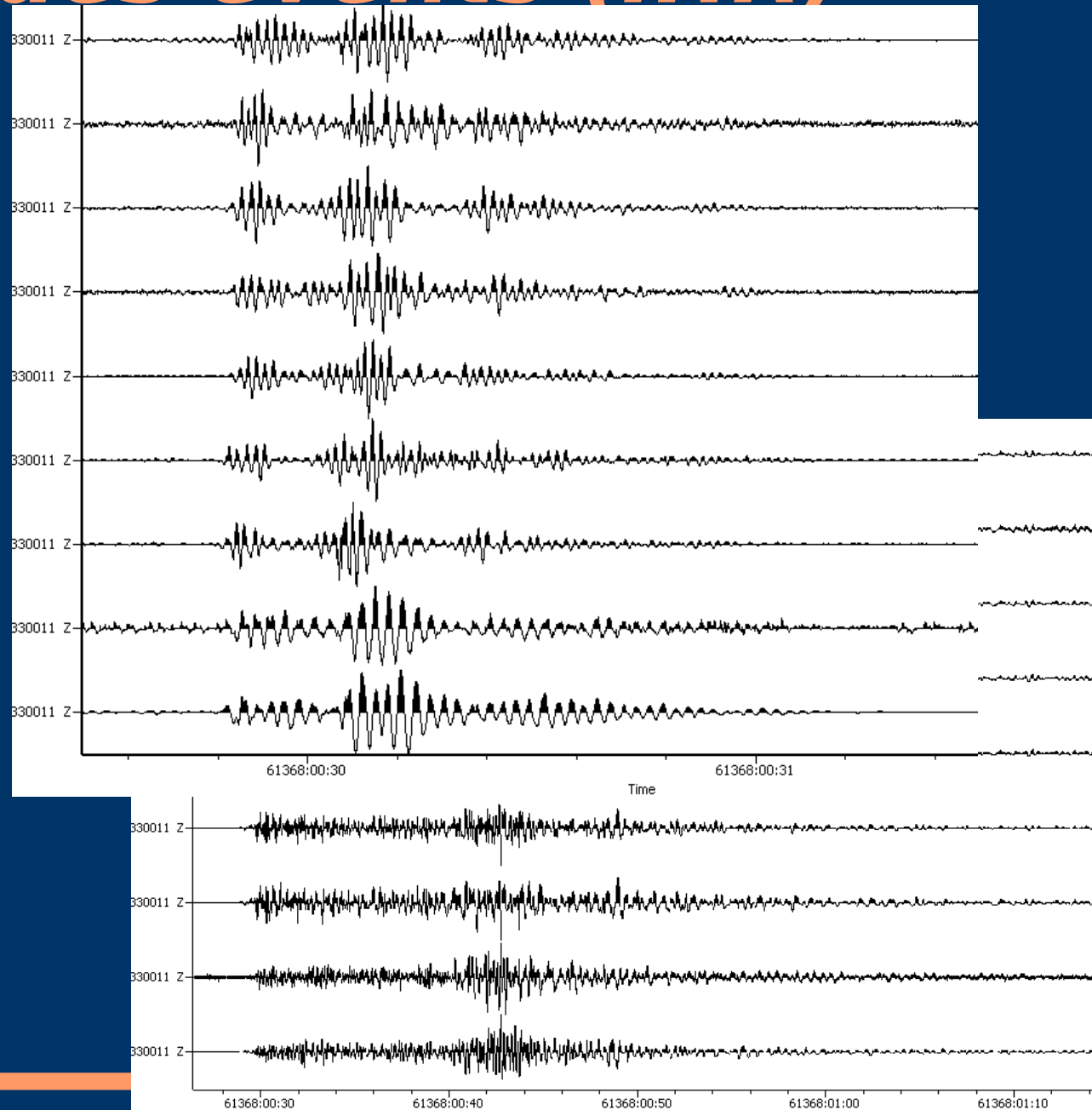


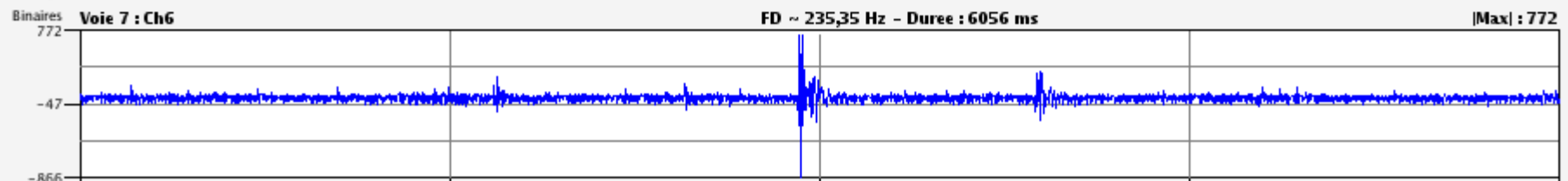
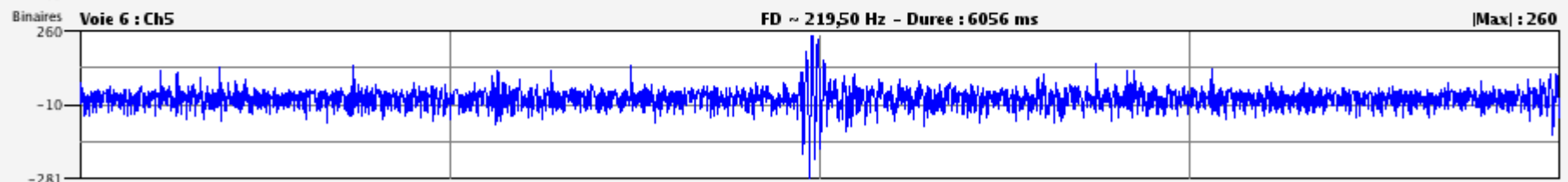
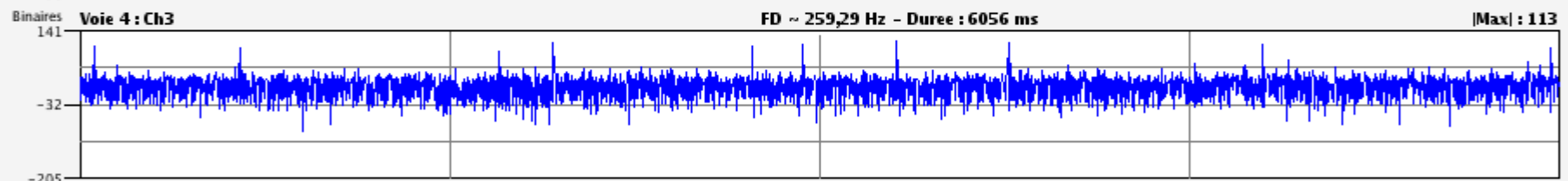
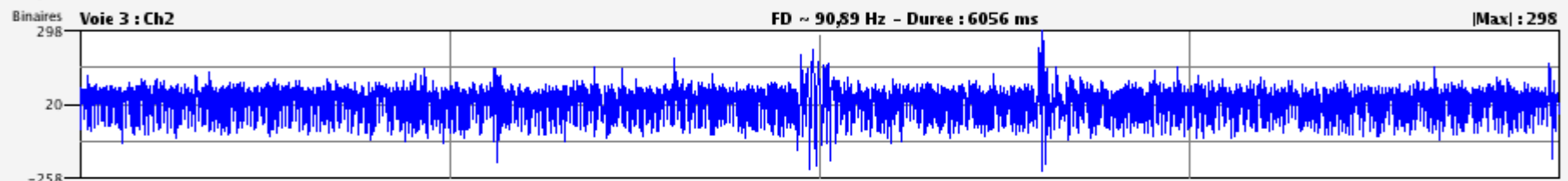
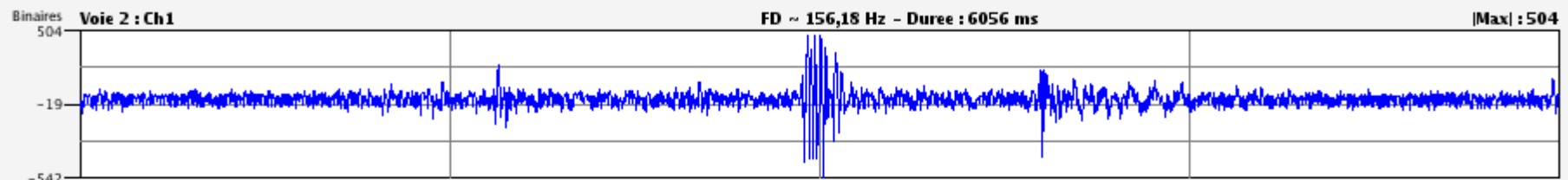
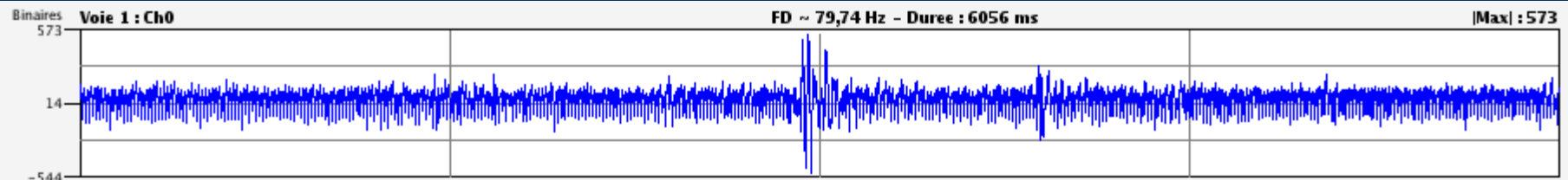
Distribution des events (Osiris)



Catalogue des events (IHR)

- 212 événements au total avec des signatures très hétérogènes
- 1 séisme (Le-Monestier-les-Bains (05), le 5/10/07, M=3,3)





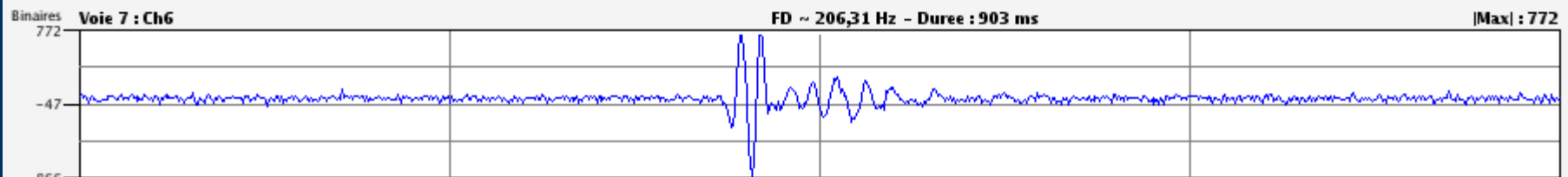
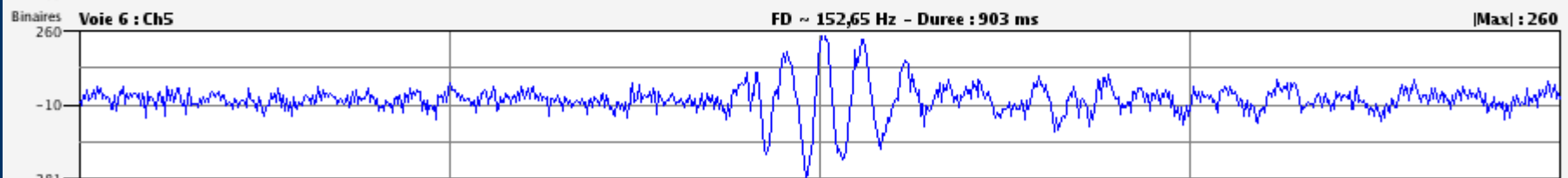
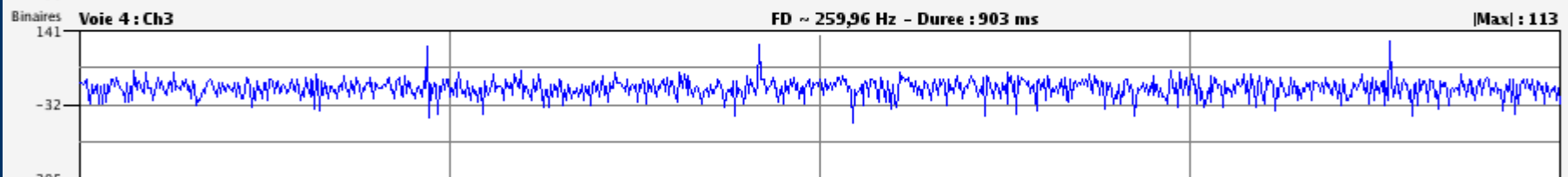
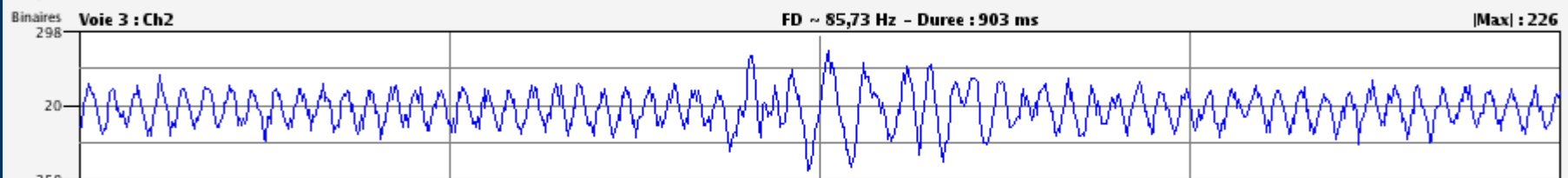
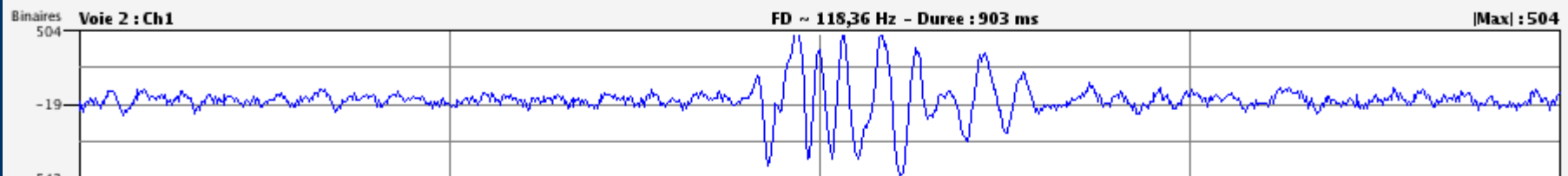
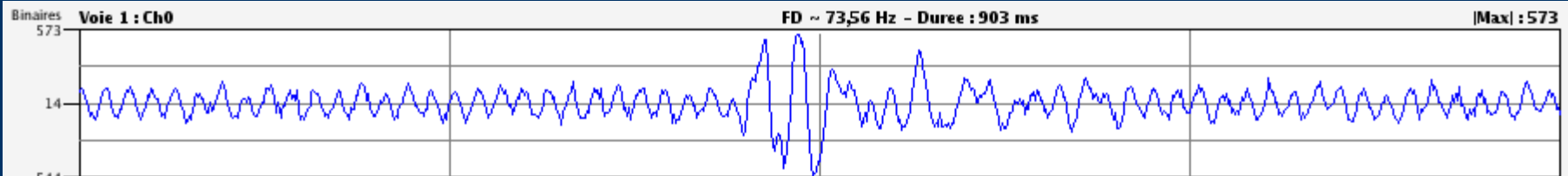
10:45:52:222

10:45:53:736

10:45:55:250

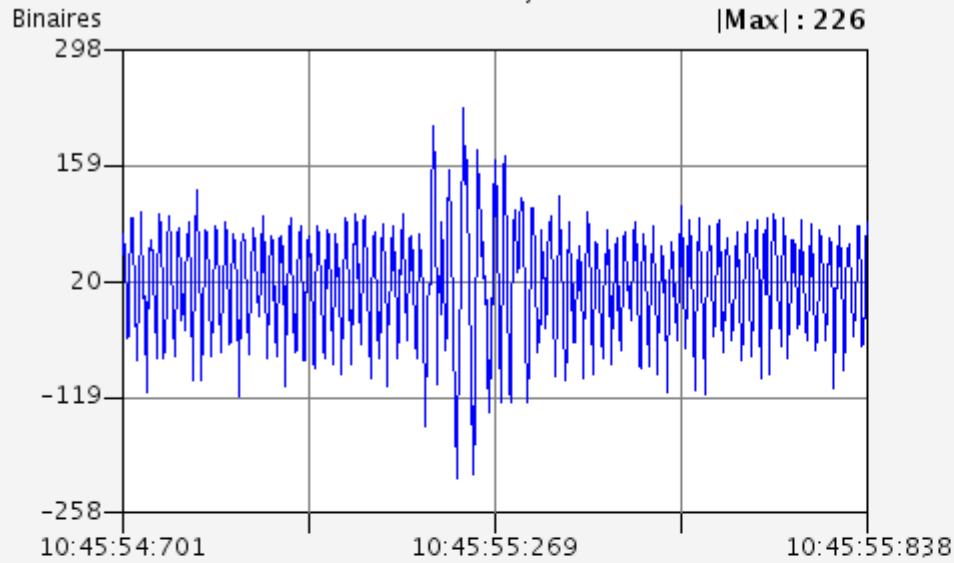
10:45:56:764

10:45:58:278



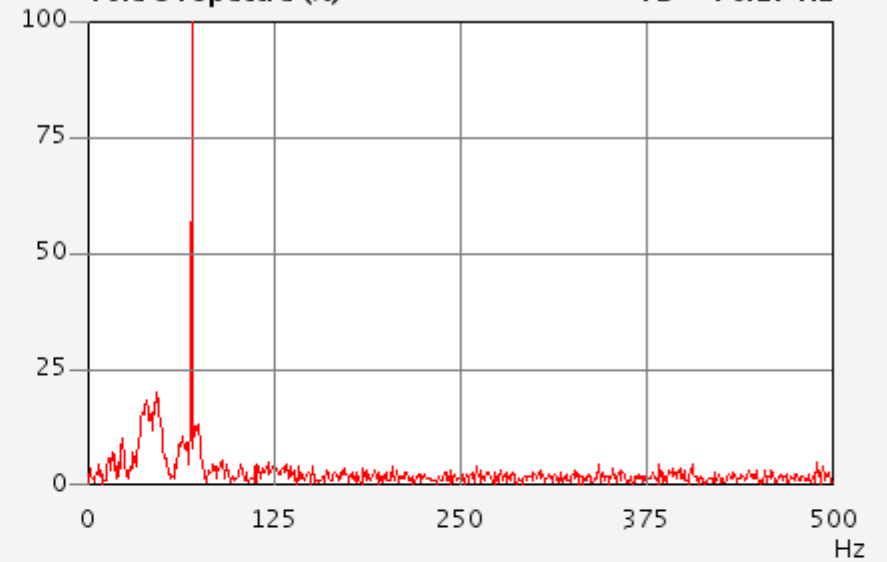
10:45:54:766 10:45:54:991 10:45:55:217 10:45:55:443 10:45:55:669

FD ~ 87,43 Hz - Duree : 1137 ms
|Max| : 226

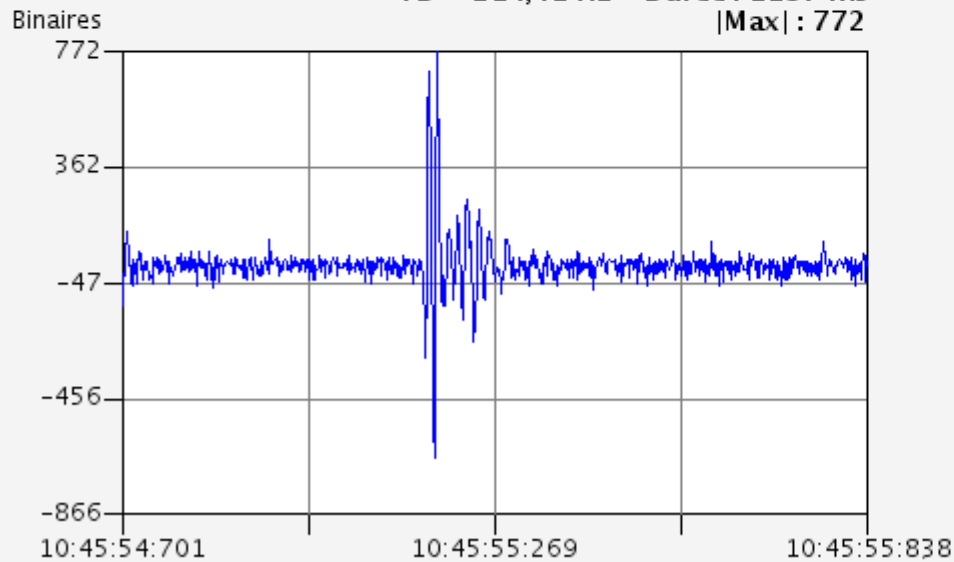


Voie 3 : Spectre (%)

FD = 70.17 Hz

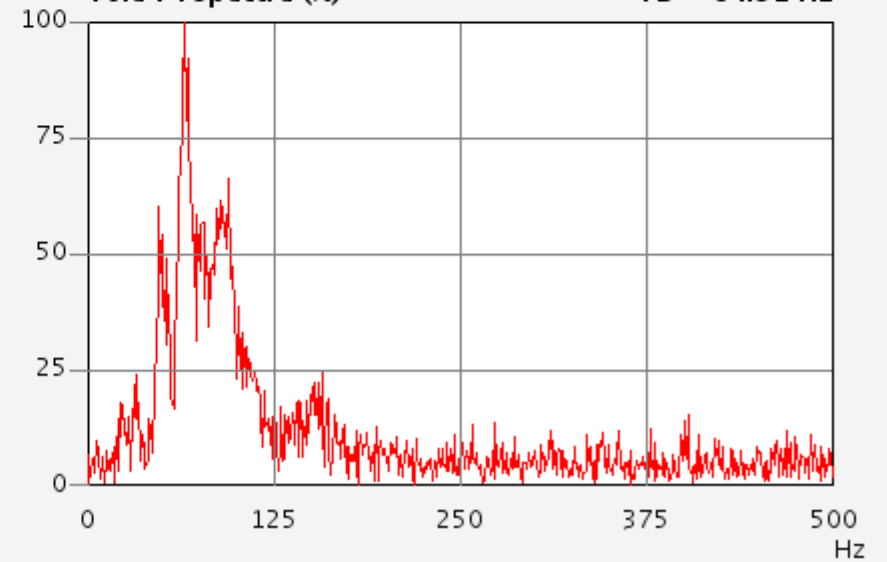


FD ~ 214,41 Hz - Duree : 1137 ms
|Max| : 772



Voie 7 : Spectre (%)

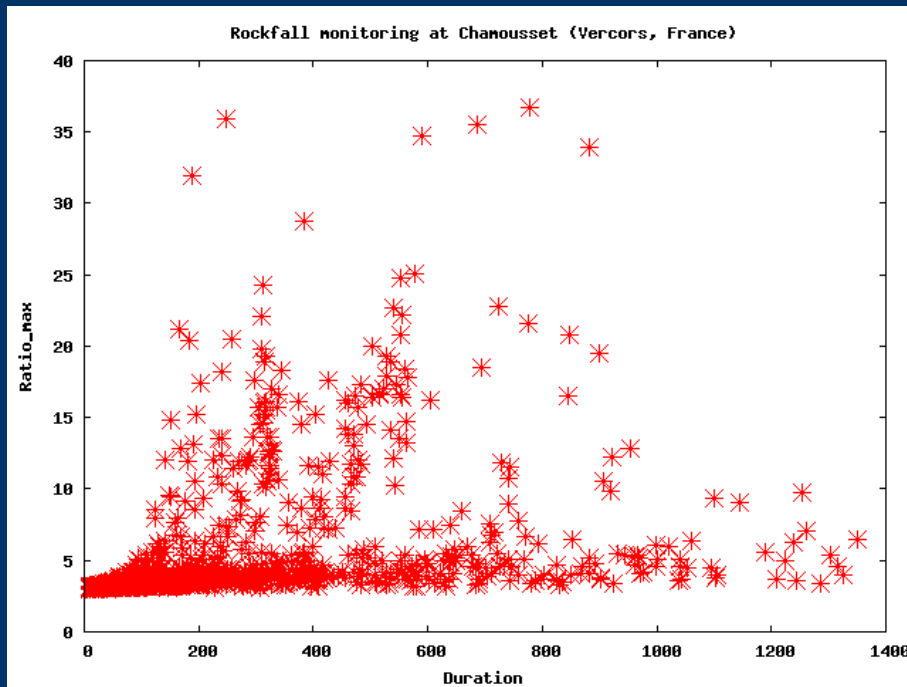
FD = 64.91 Hz



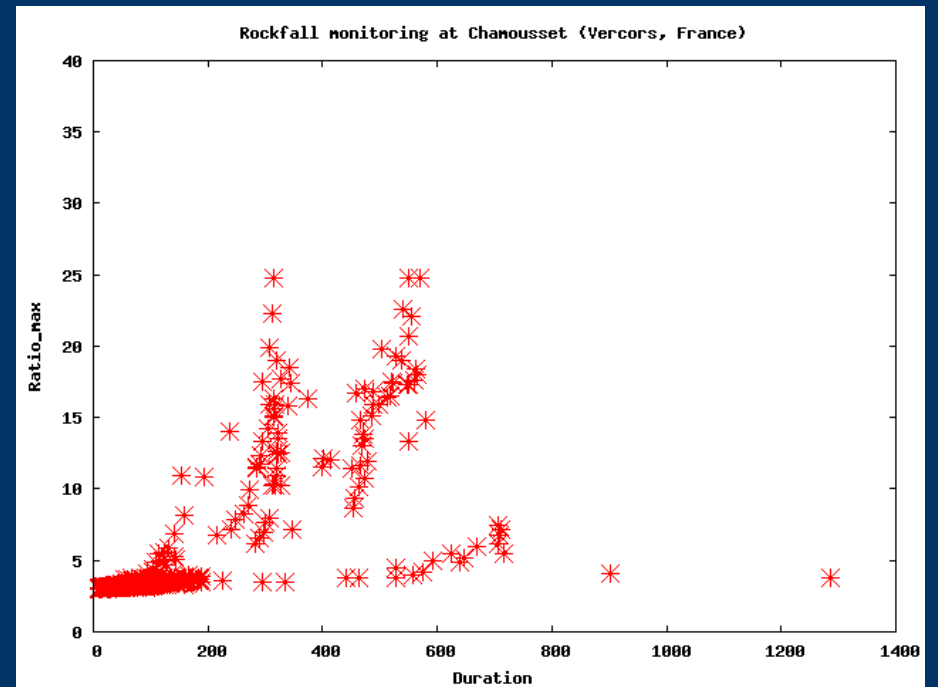
Étude en cours

- LIDAR (vol hélicoptère du 19/10, T. Villemin) Vol post-éboulement ?
 - Essai acoustique sur échantillon pour caractérisation du milieu
 - Bruit de fond sismique
 - Localisation de source, caractérisation
 - Modèle numérique
 - ...
-
-

Classification

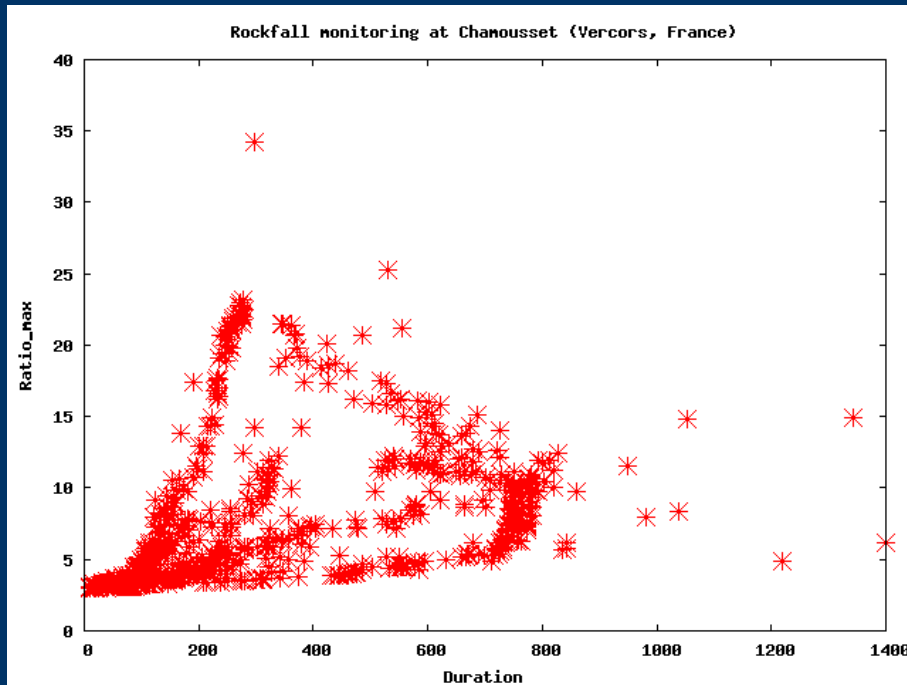


CH3- nov07

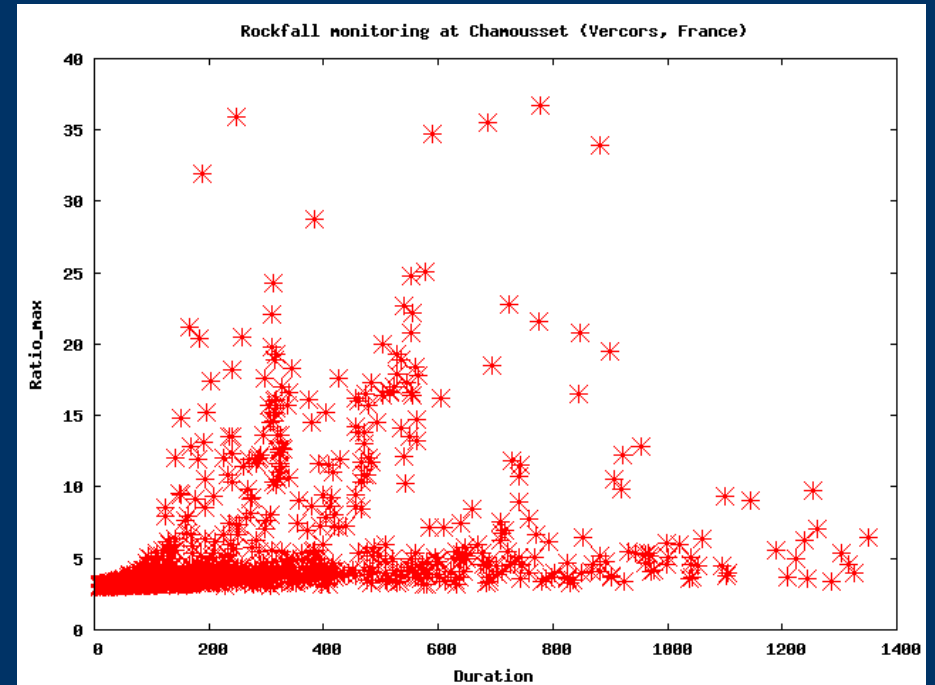


CH7-nov 07

Classification

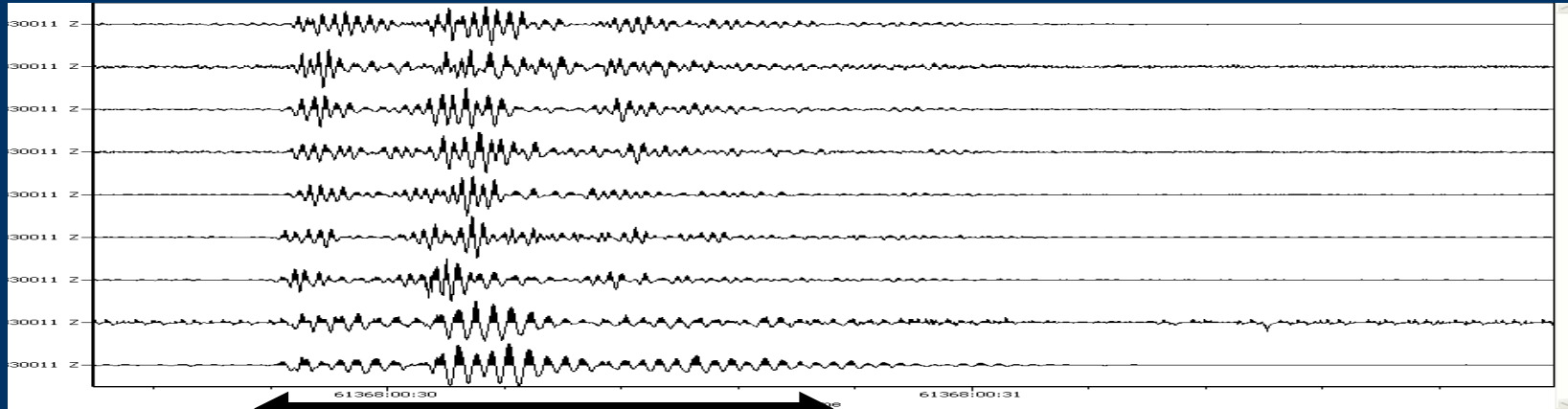


CH3- aout07

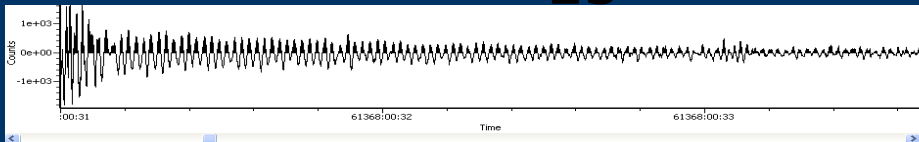


CH3-nov 07

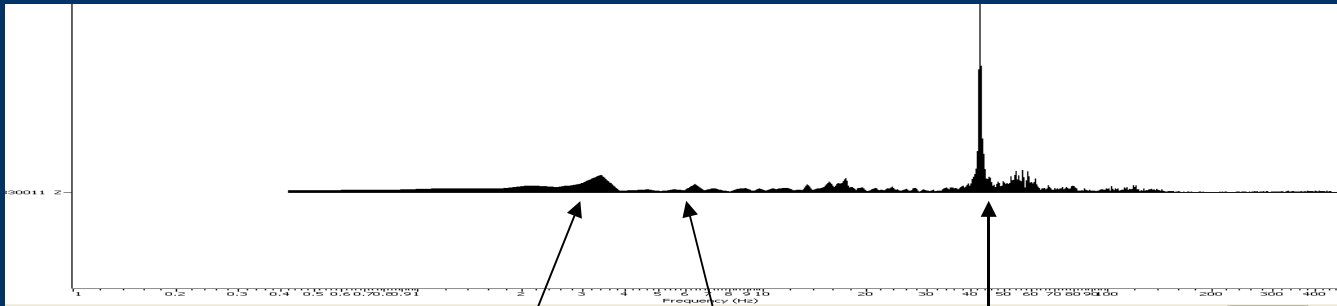
Un événement:



1s



La coda du signal sur l'échelle



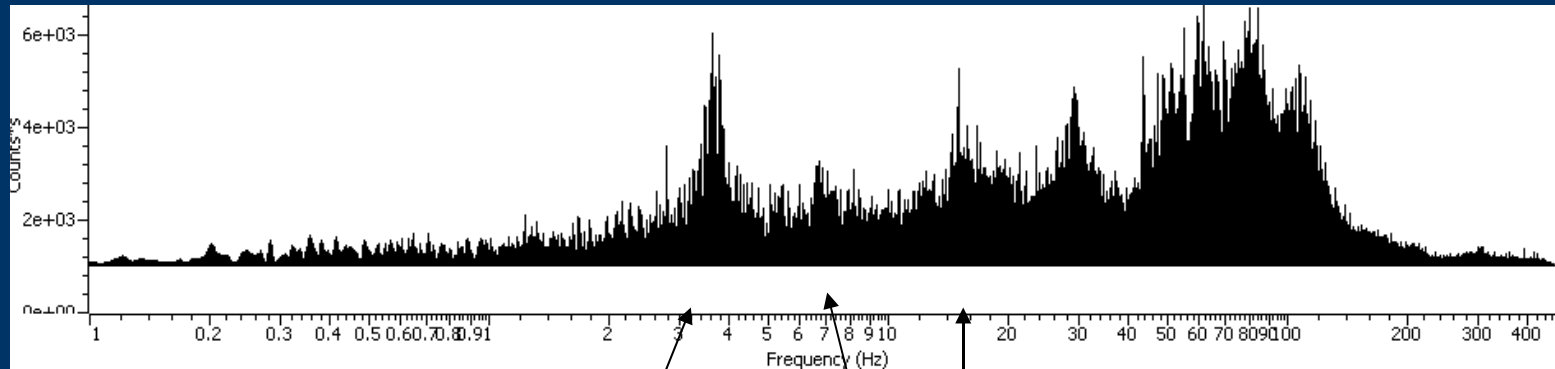
La fft de la coda

3.5Hz

6.5Hz

43Hz

Exemple de spectre de bruit:

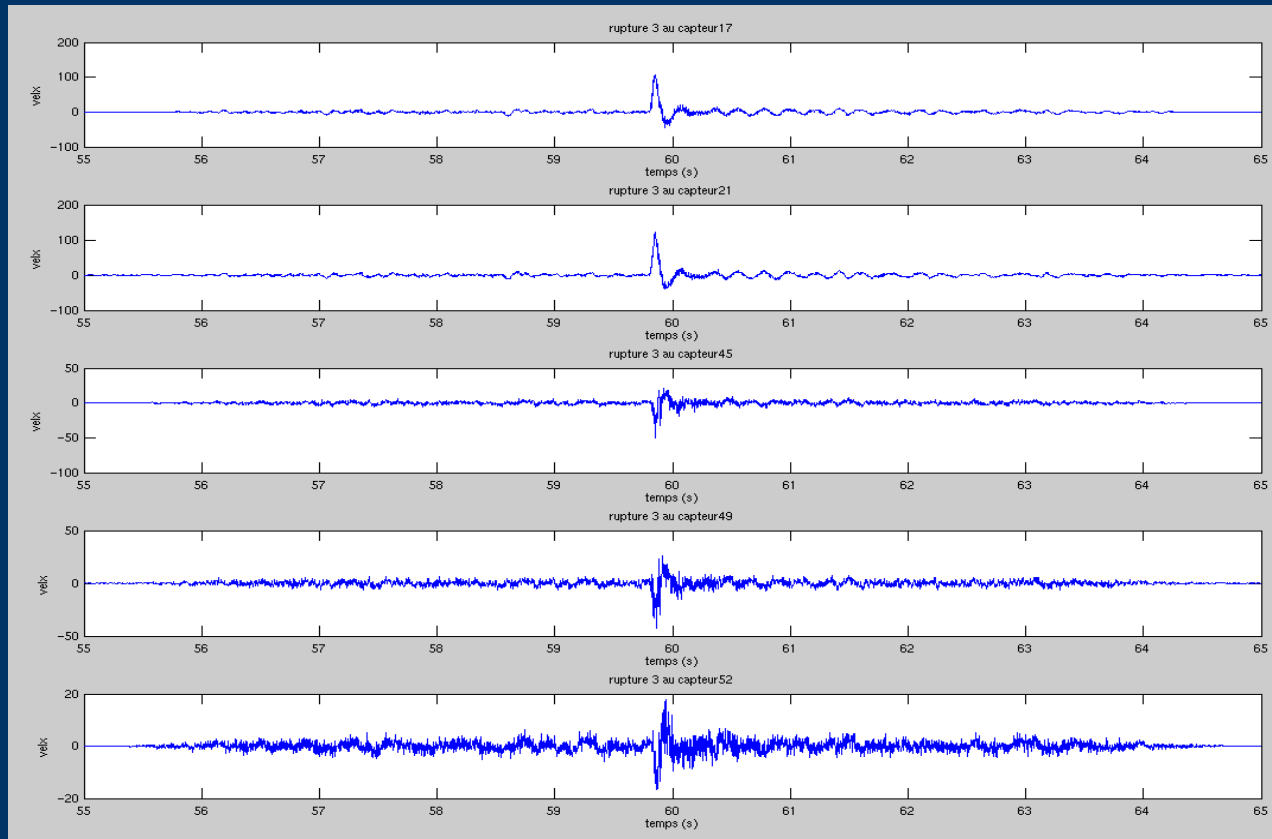


3.5Hz

6.5Hz

12.5Hz

Modélisation numérique

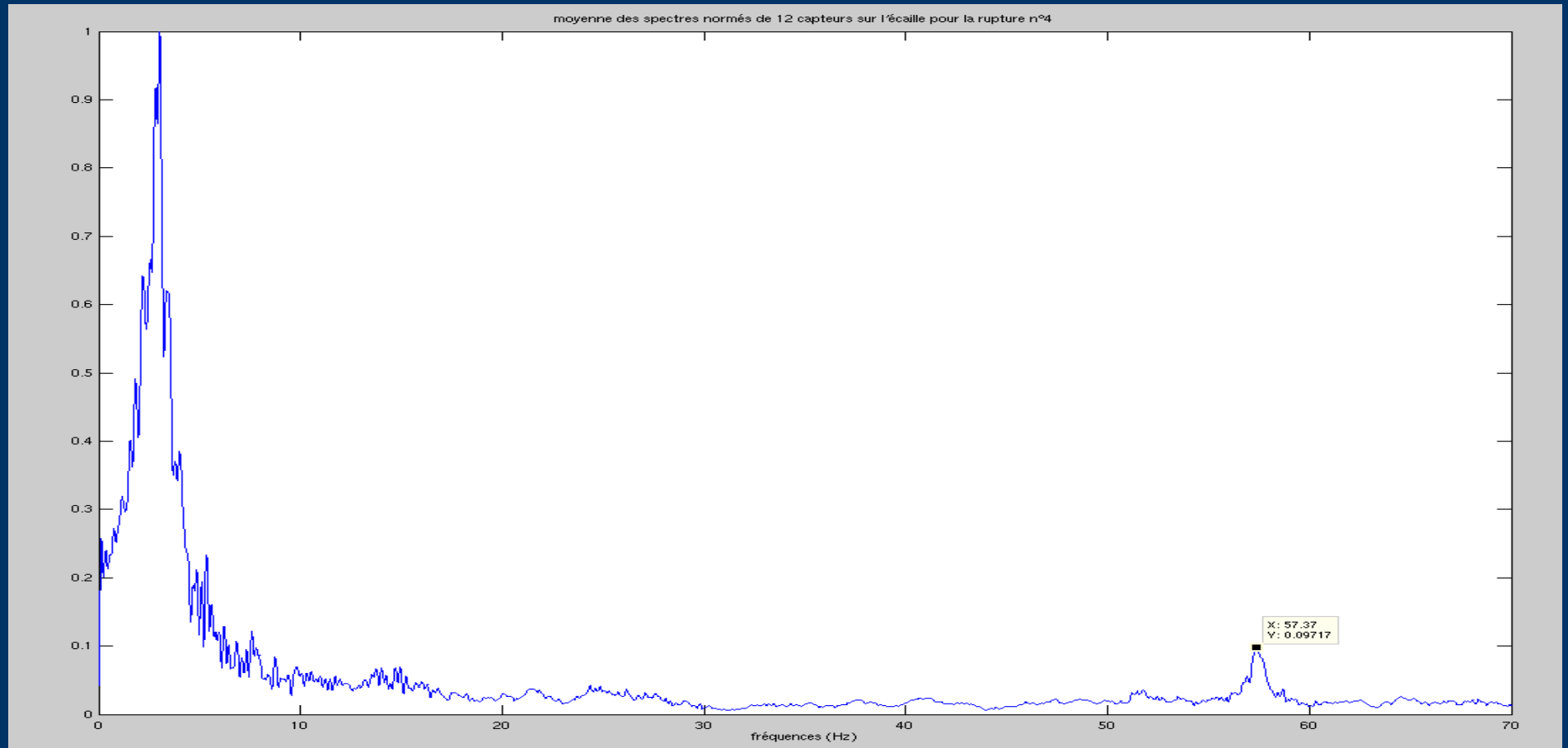


Sur
l'écaille

Sur le
massif

Exemple de signal

Modélisation numérique



La somme des spectres d'une rupture pour 12 capteurs sur l'écaille

Les problèmes ...



- Ne pas négliger **l'alimentation** !
- Mise en place du temporaire comme du long terme
- Site isolé => penser **téléométrie**

A défaut ... il y a les voisines !



*... et à
moyen
terme*

