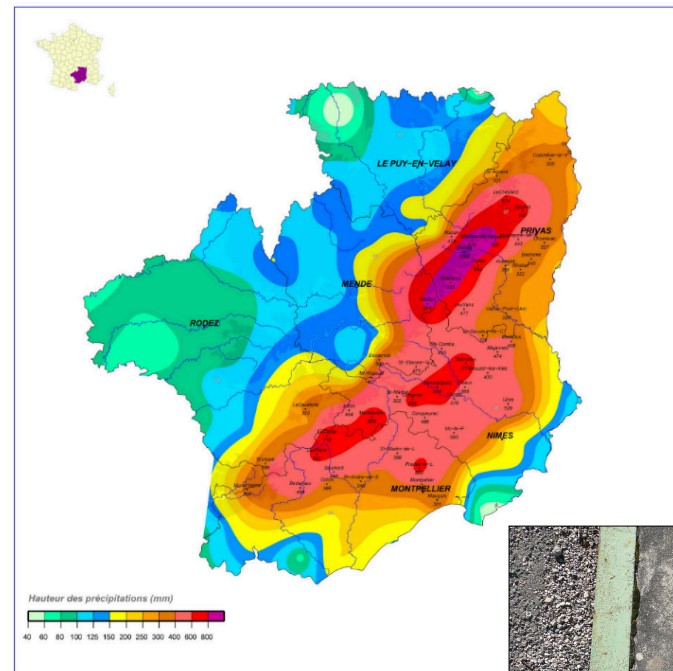
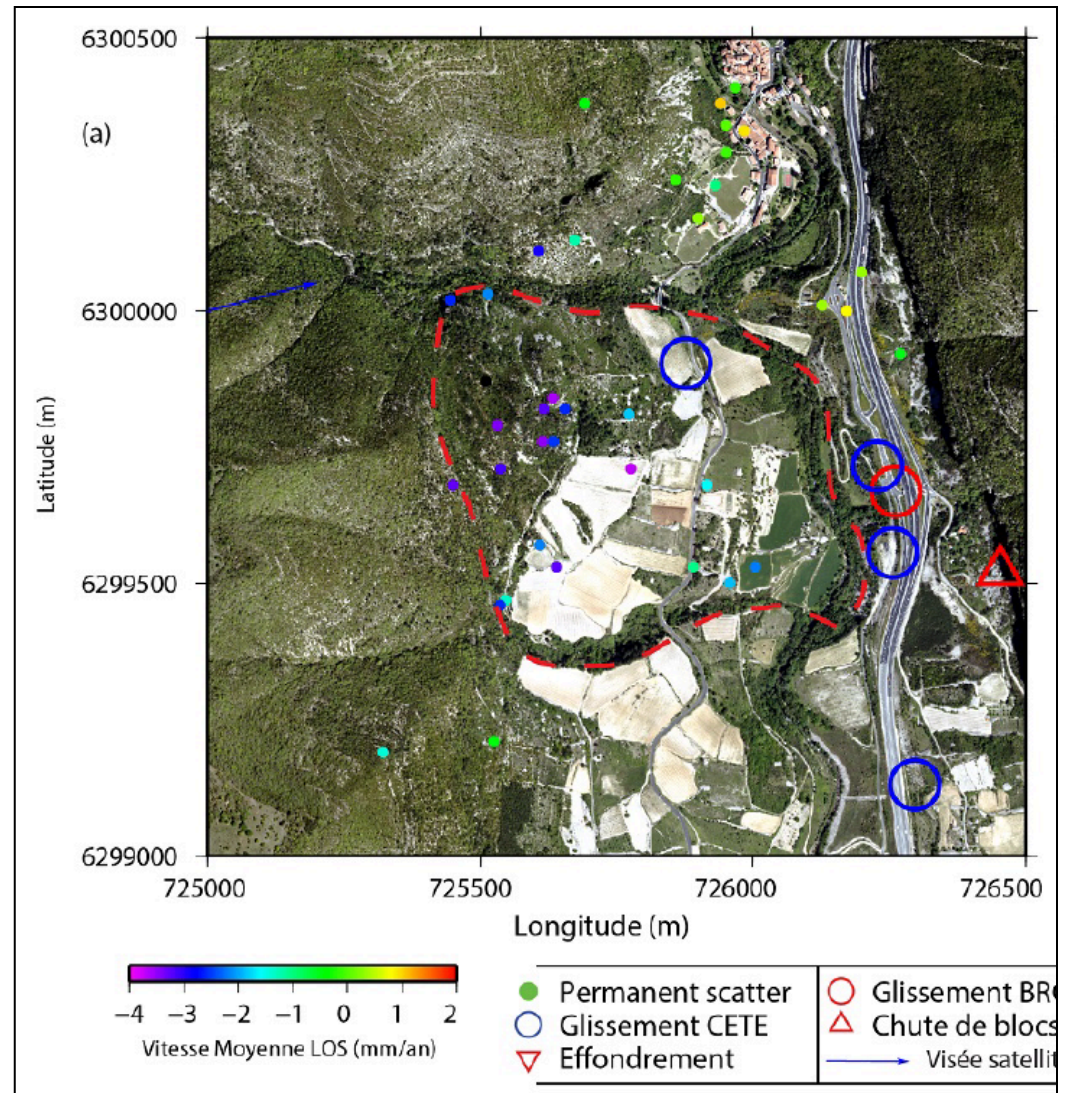


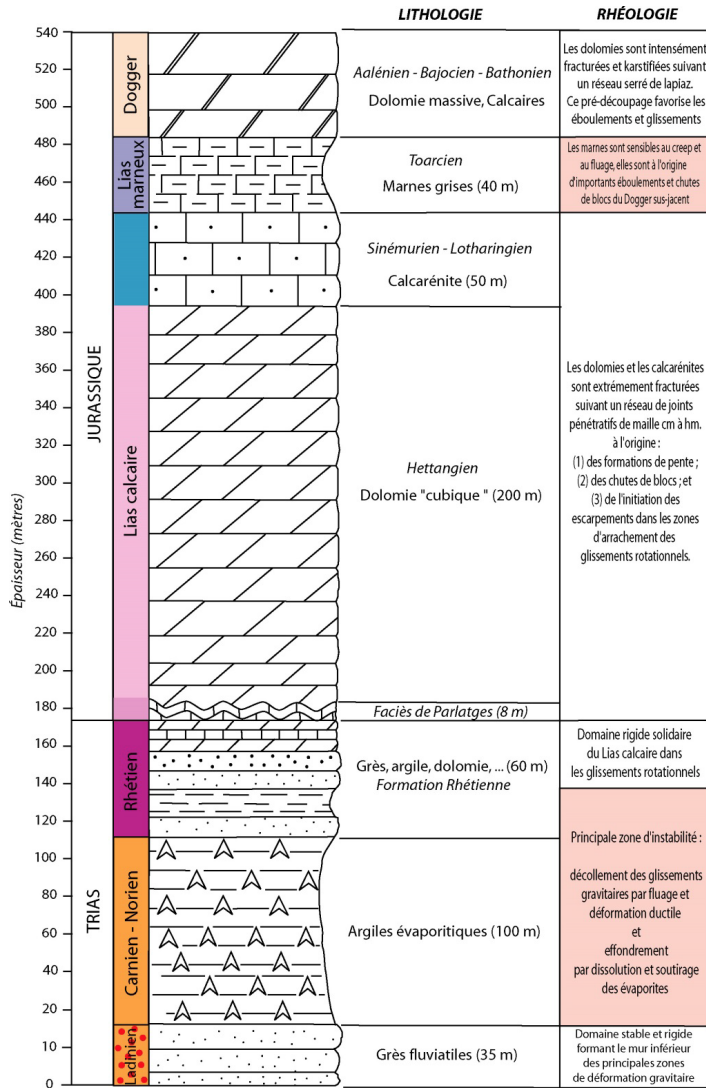
## Glissement de Pégairolles de l'Escalette.

- Glissement profond (50 m) et lent (3-4 mm/an)
  - Pluies cévenoles
- ➔ Impact sur les infrastructures

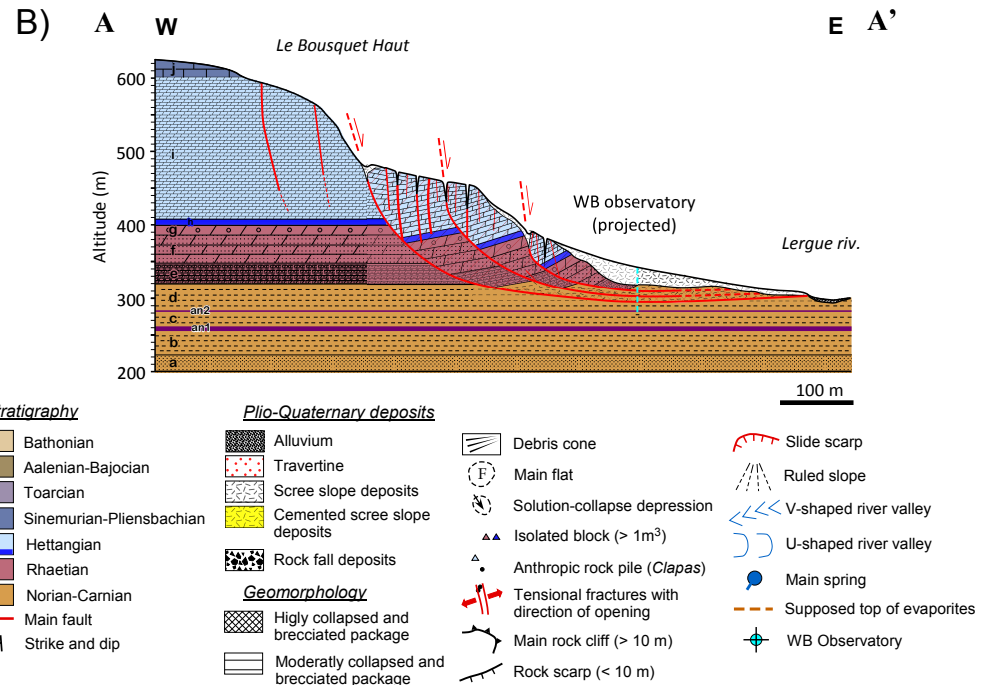




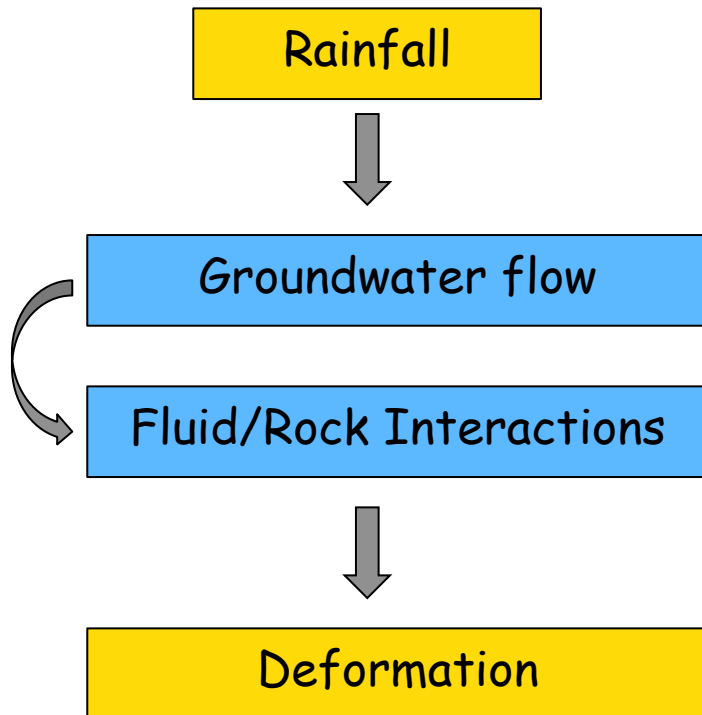
# Glissement de Pégairolles de l'Escalette.



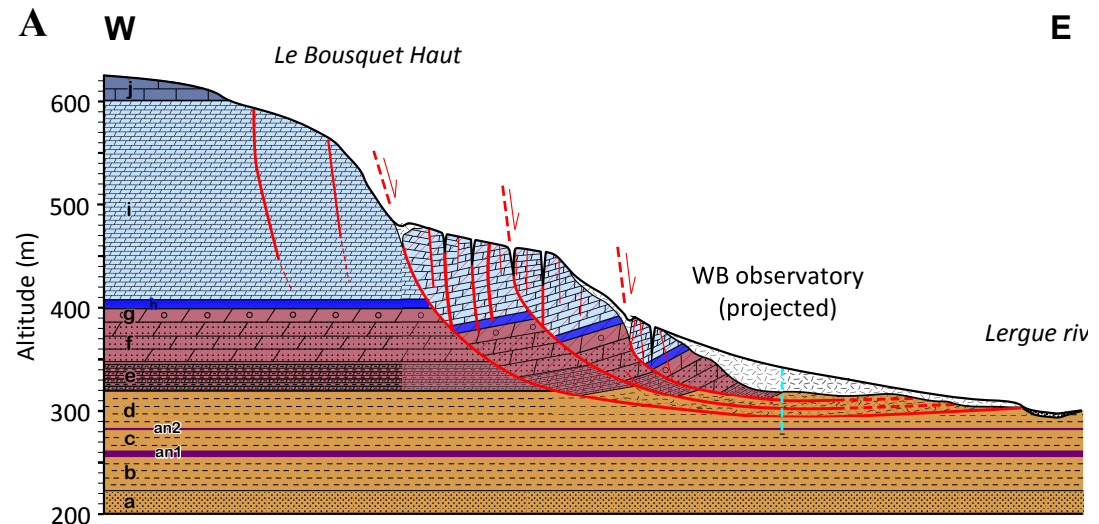
- Glissement profond (50 m) et lent (3-4 mm/an)
  - Pluies cévenoles
- ➔ Impact sur les infrastructures

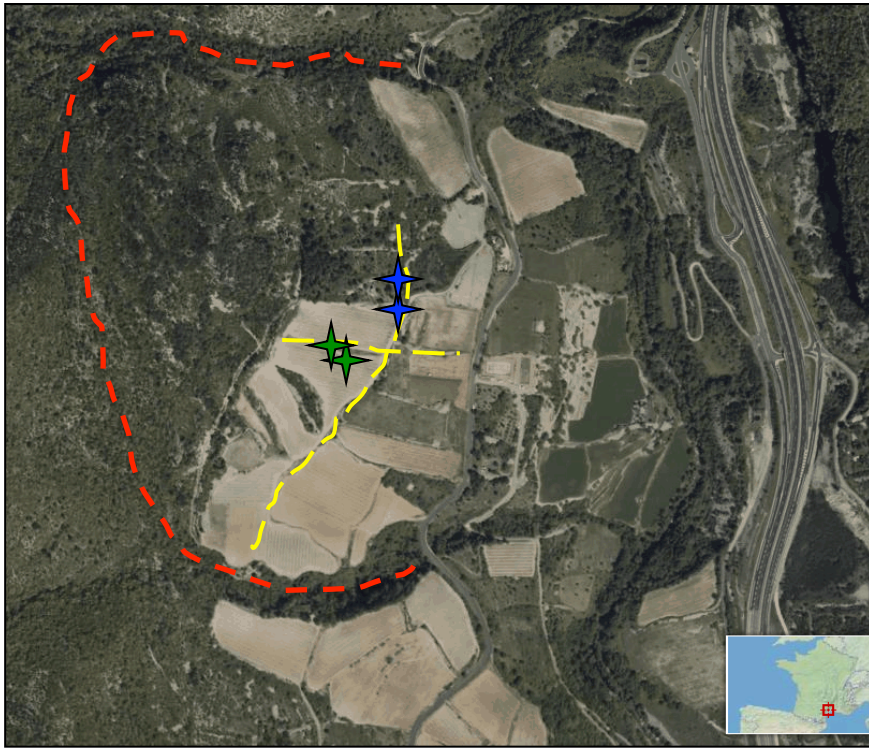


# Relations entre les pluies et la dynamique du glissement?



- Géométrie de la zone déformée
- Structure à l'échelle du versant
- Relations pluie / déformation
- Processus internes / circulations eau





- Profils électriques

- ✓ Profil 1 = 475m

96 électrodes, spacing 5m,  $z \approx 70$  m

- ✓ Profil 2 = 235m

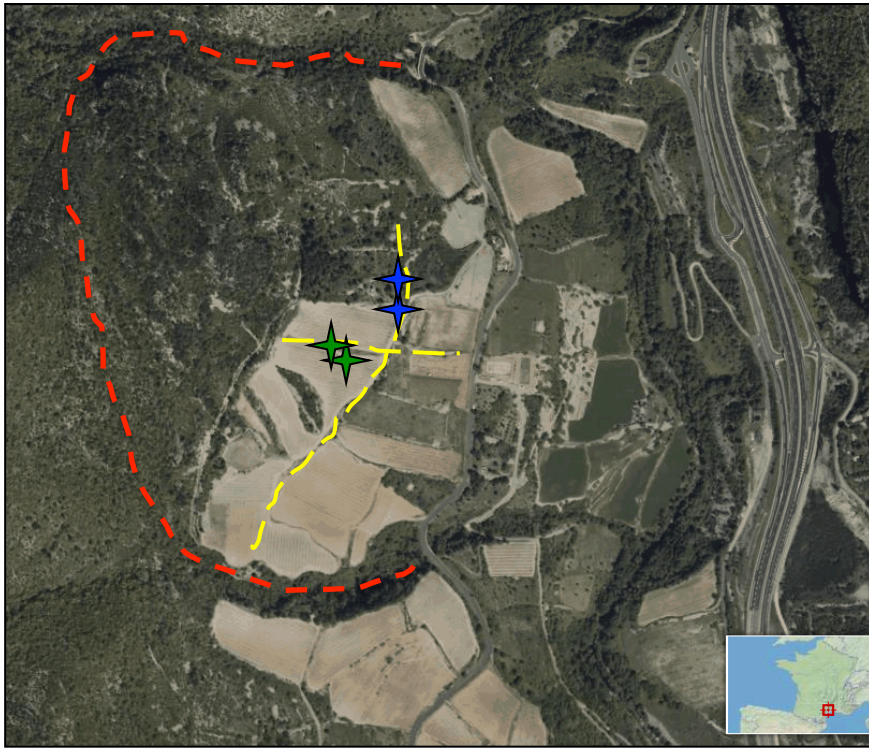
48 électrodes, spacing 5m,  $z \approx 40$  m

- Sismique réfraction

- 1 pluviomètre

- 1 station GPS

- 2 forages



- Profils électriques

- ✓ Profil 1 = 475m

96 électrodes, spacing 5m,  $z \approx 70$  m

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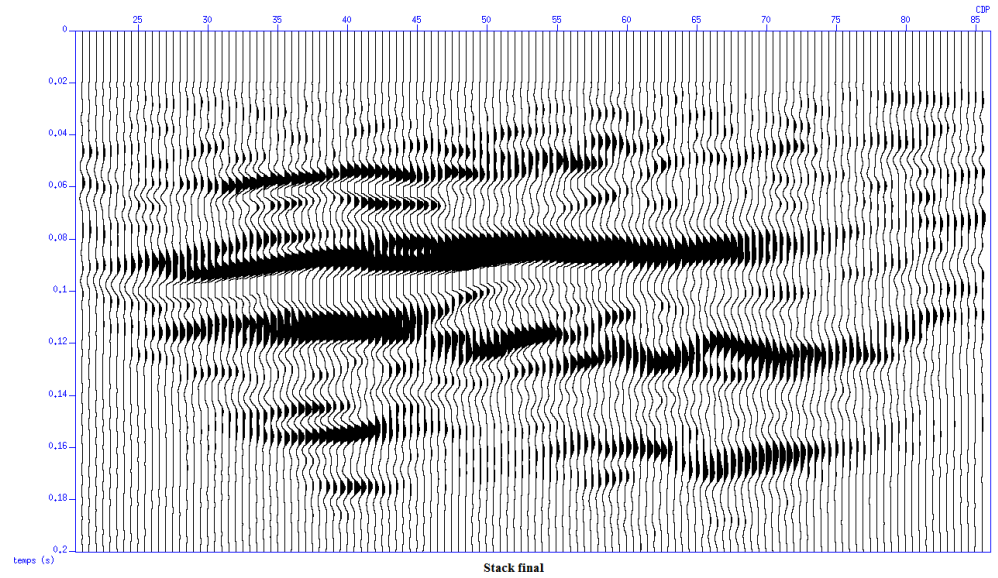
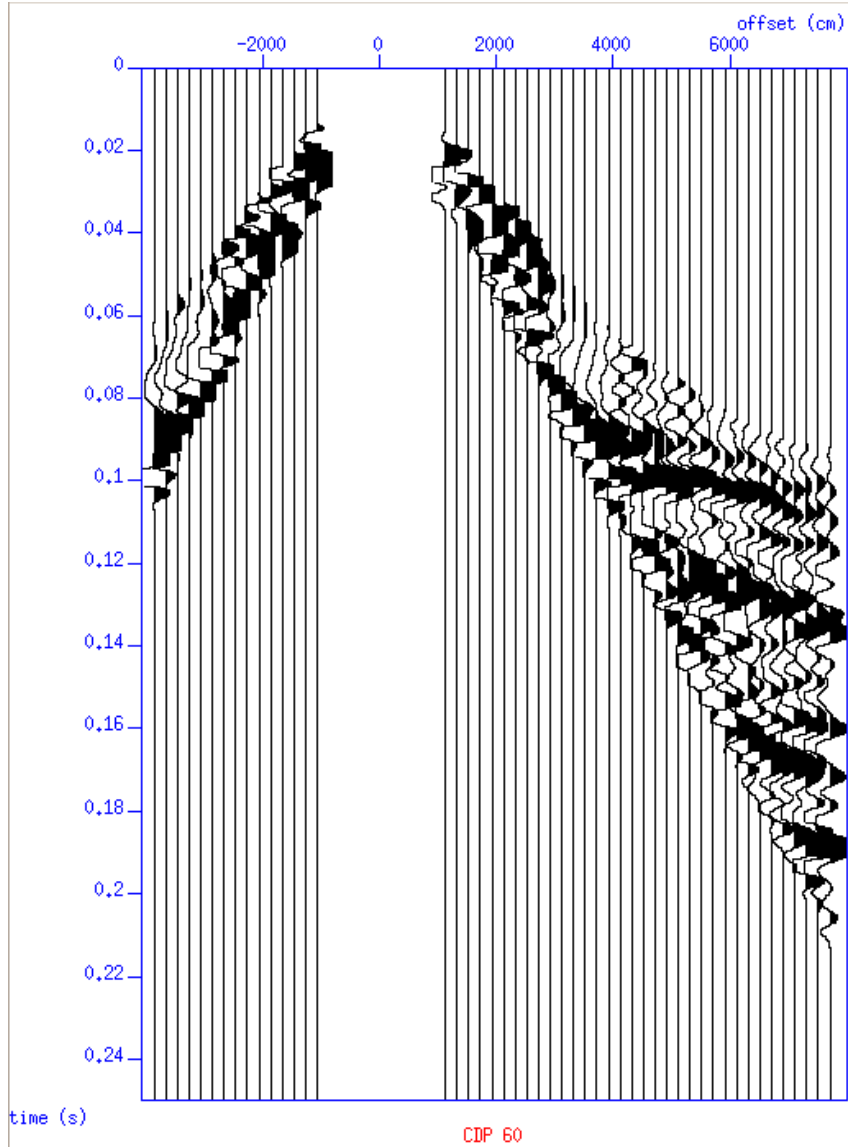
- 1 pluviomètre

- 1 station GPS

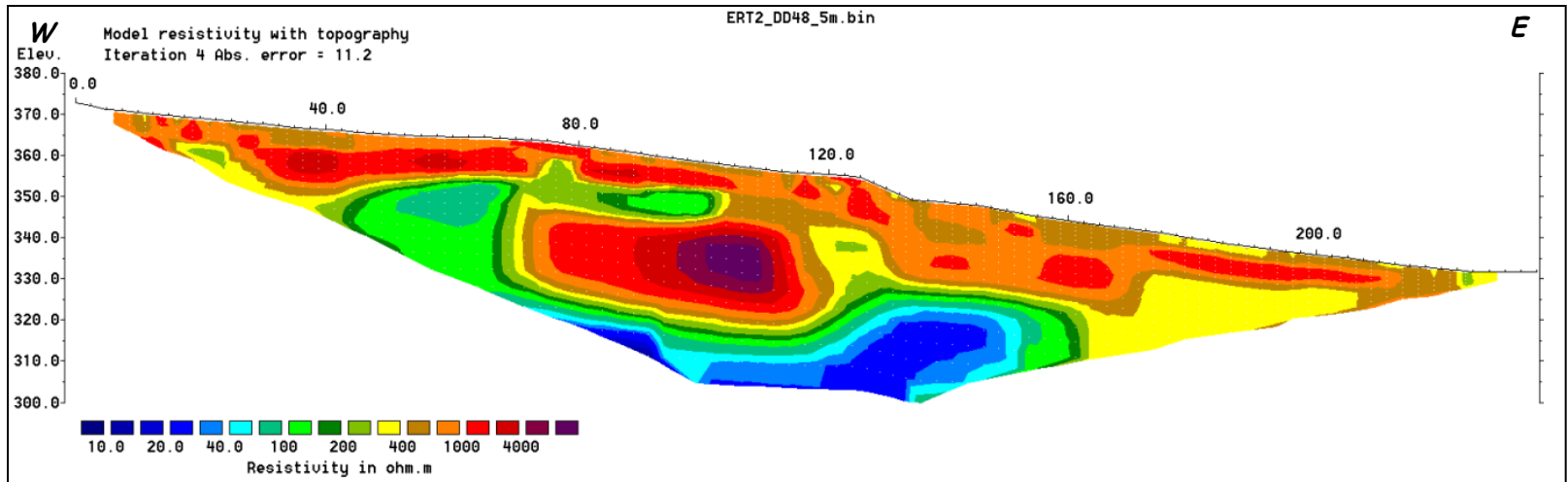
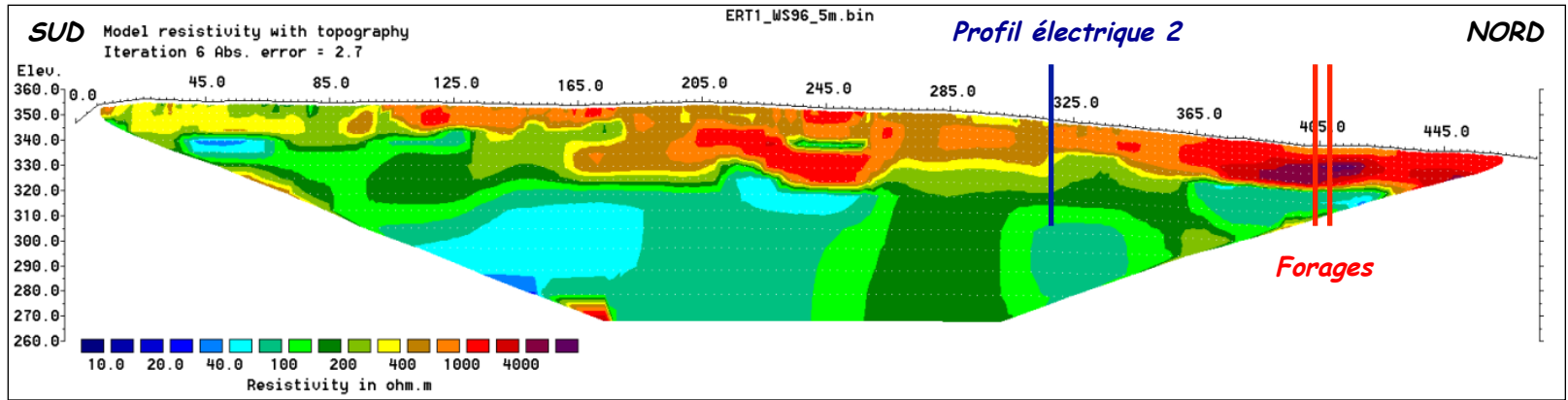
- 2 forages

➔ accès direct à la zone déformée

# Sismique



# ERT

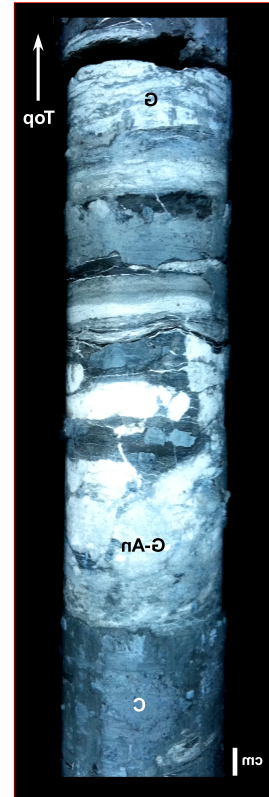




# Forage : carottes



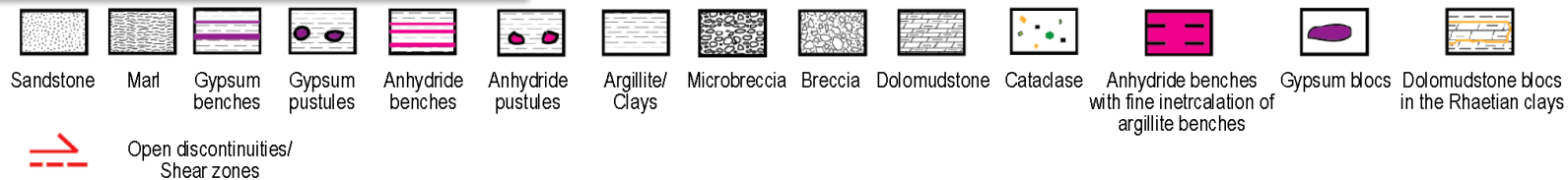
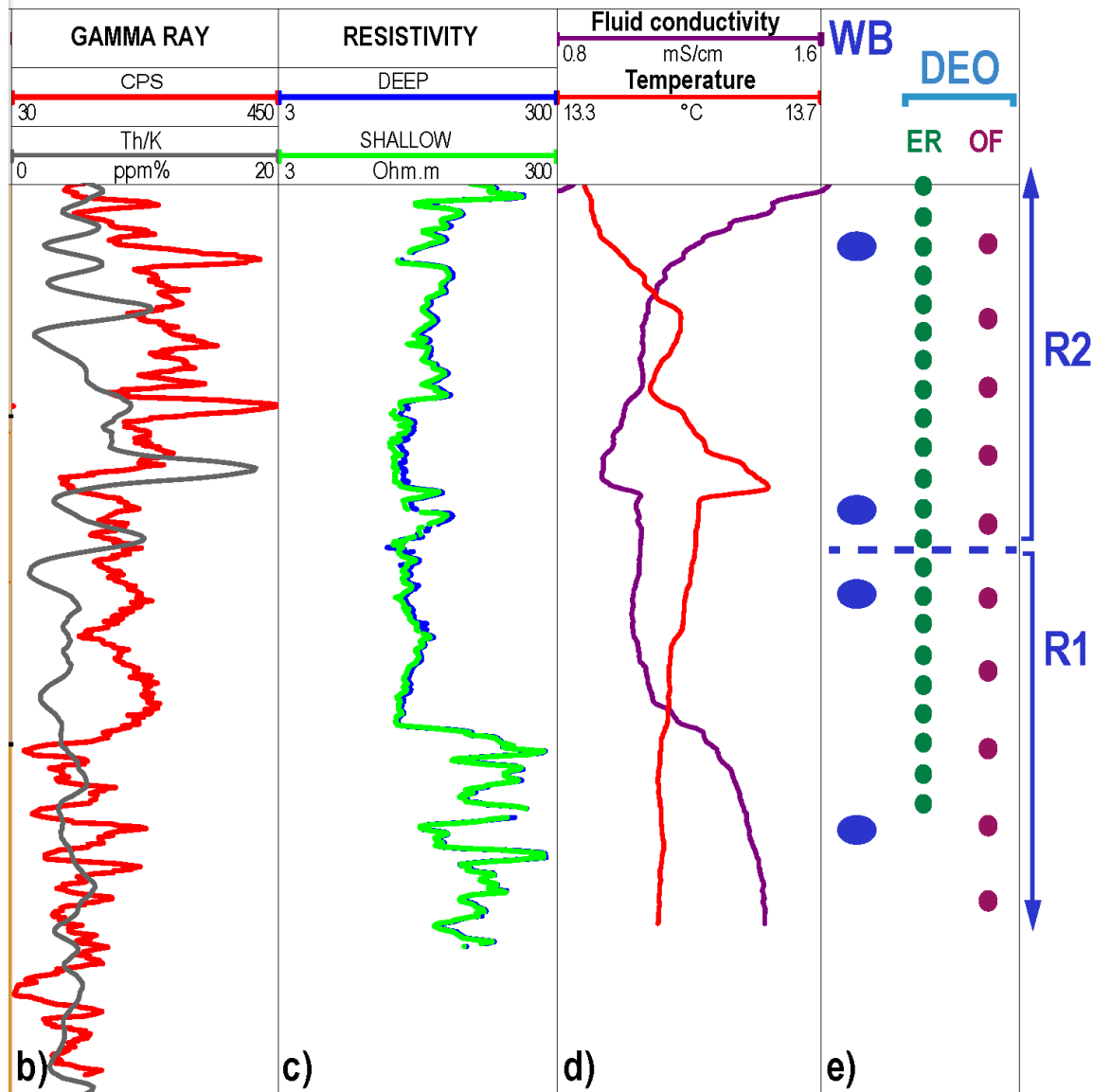
2 boreholes (60m, 1 cored)



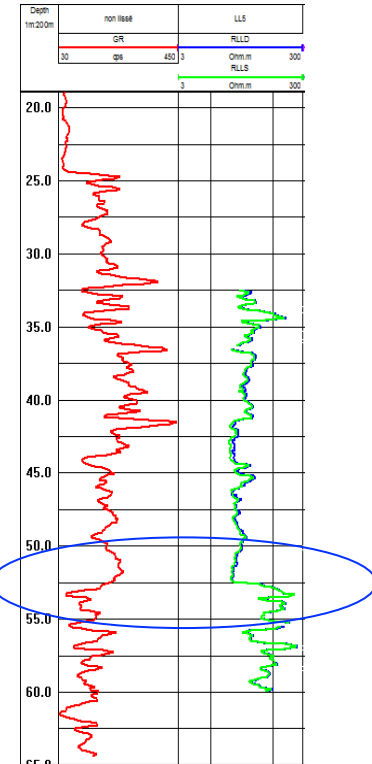
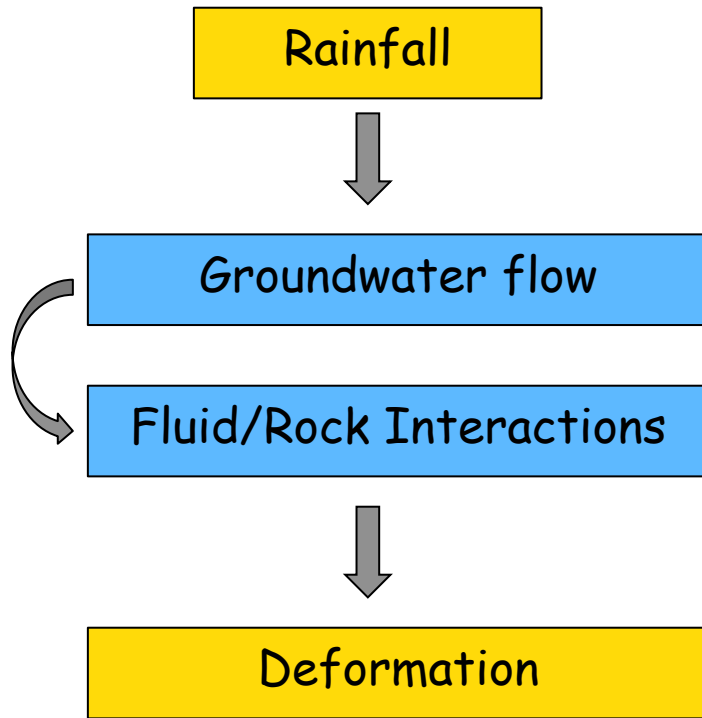
Breccia  
Water flow  
Evaporite layers



Rapport Nicolas → Lithologie?



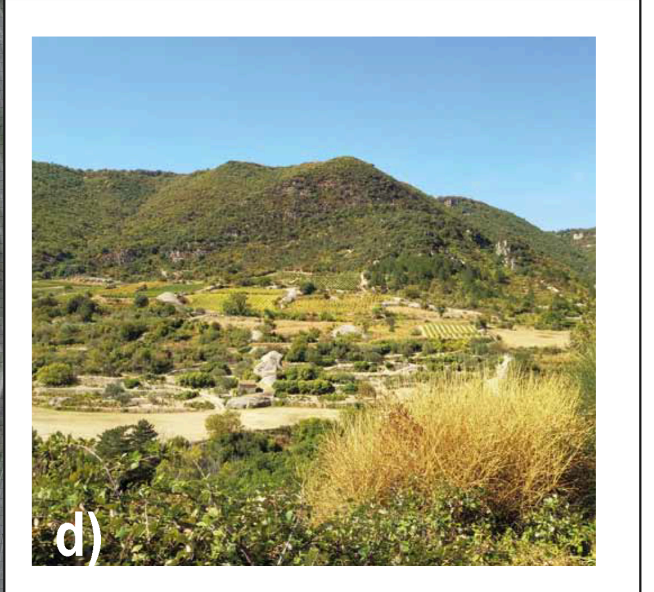
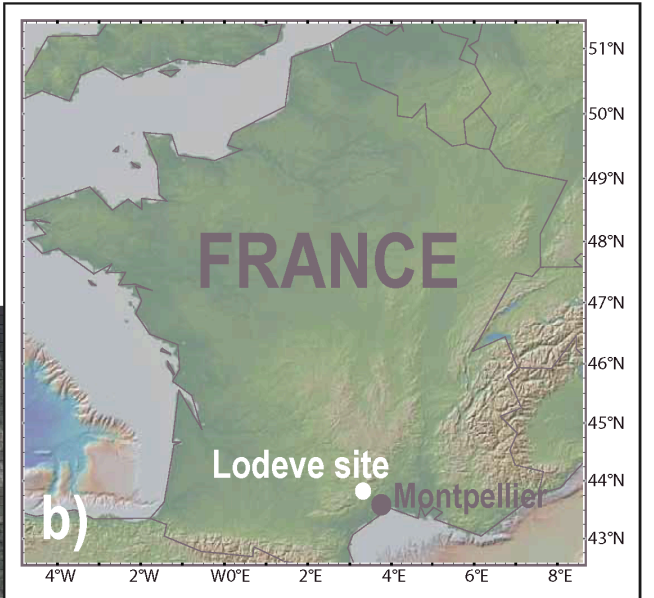
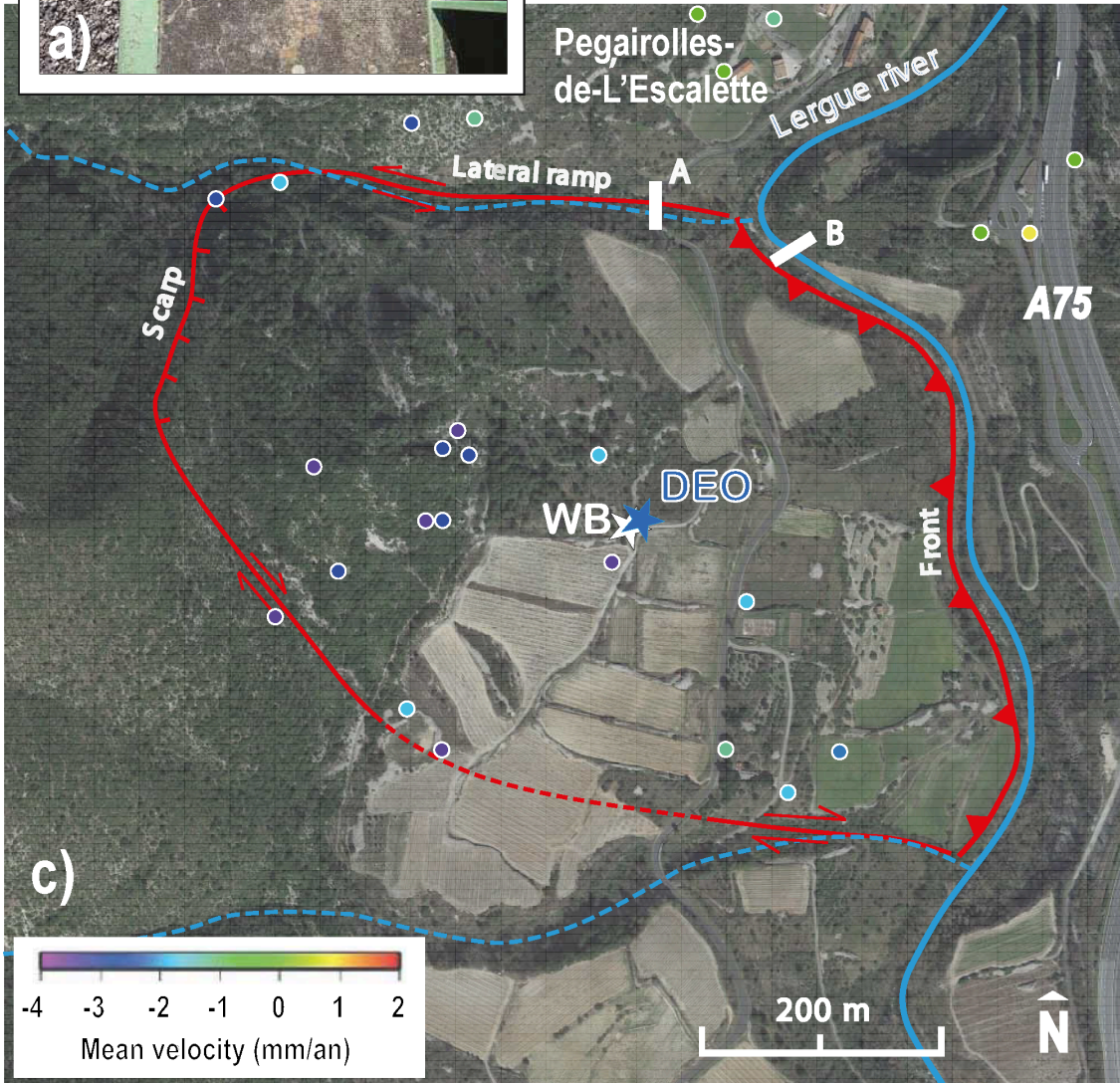
# Relations entre pluie et dynamique du glissement?

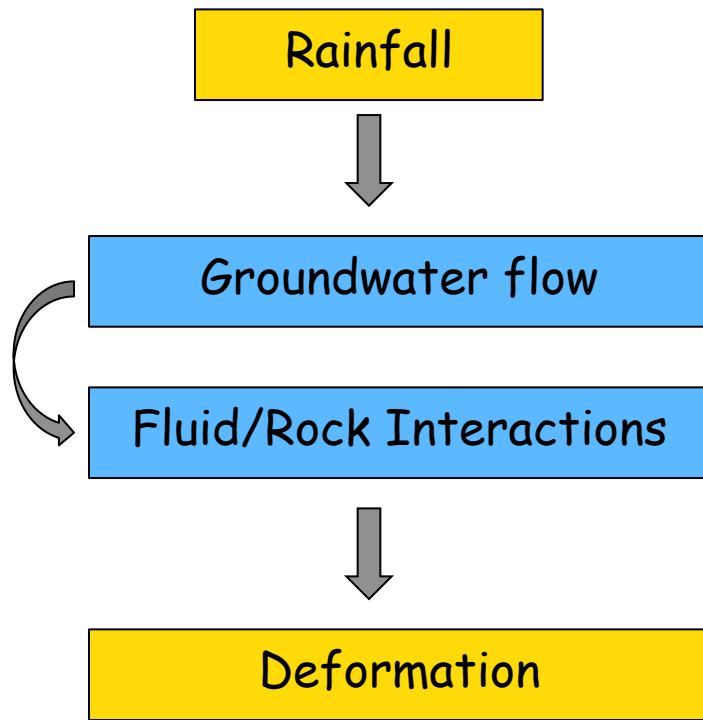


Observatoire en forage

=

Suivi continu de la zone déformée

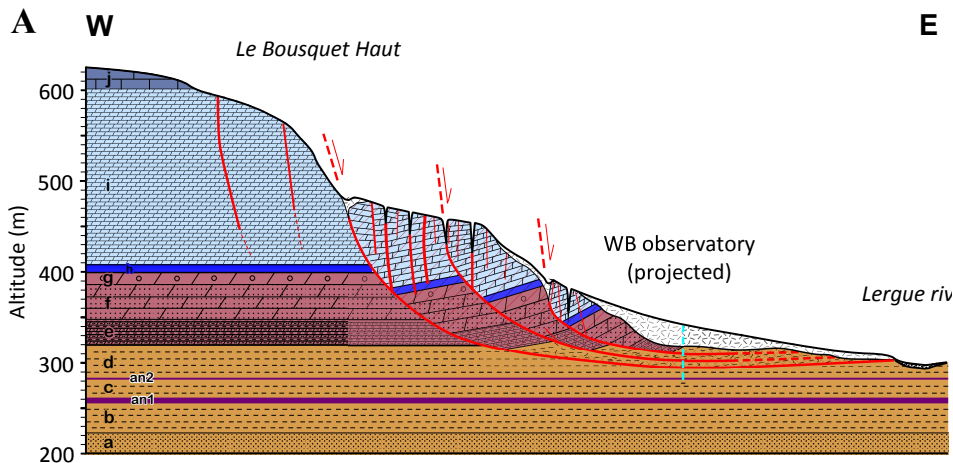








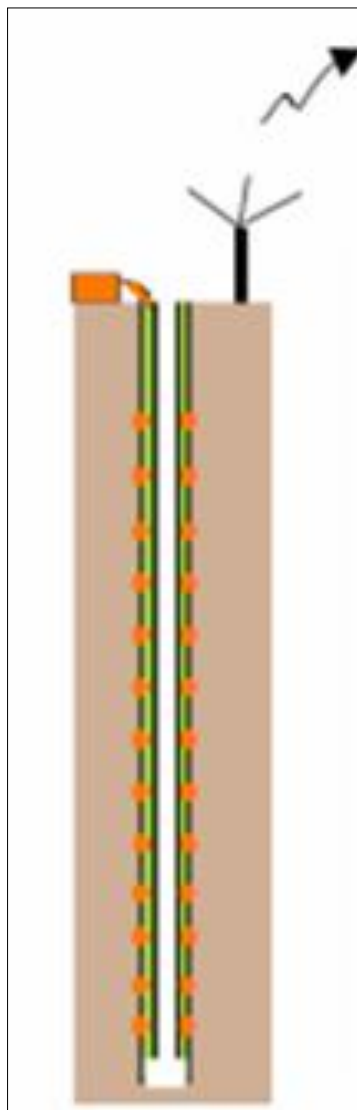
Observatoire en forage  
 =  
 Suivi continue de la zone déformée

Objectifs:

- ✓ Circulations d'eau dans le versant
- ✓ Processus internes
- ✓ Pluie : volume, durée, ...
- ✓ Signatures géophysiques



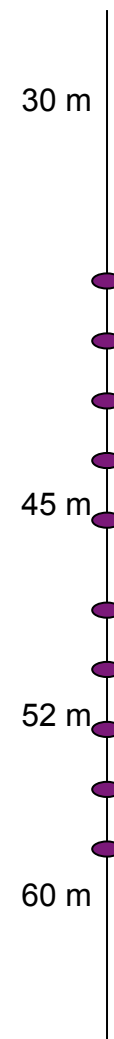
-  Argile évaporitique
-  Brèches
-  Zone de drainage
-  Zone déformée



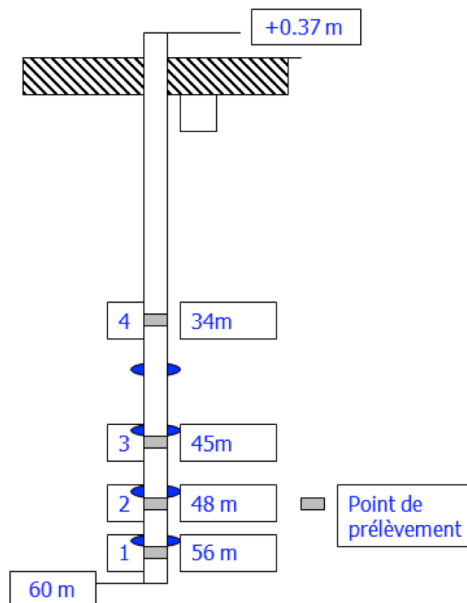
Résistivité électrique



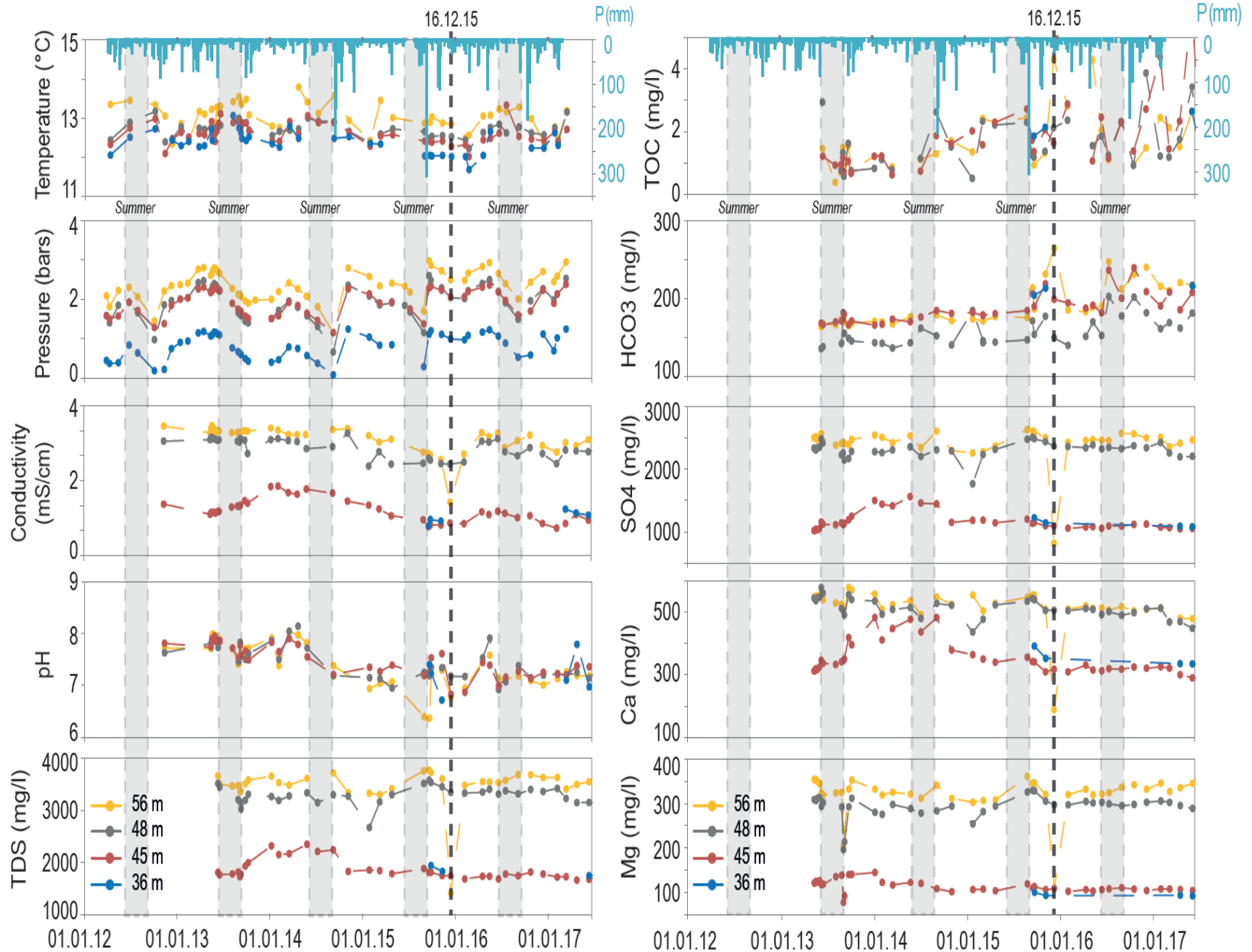
Déformation



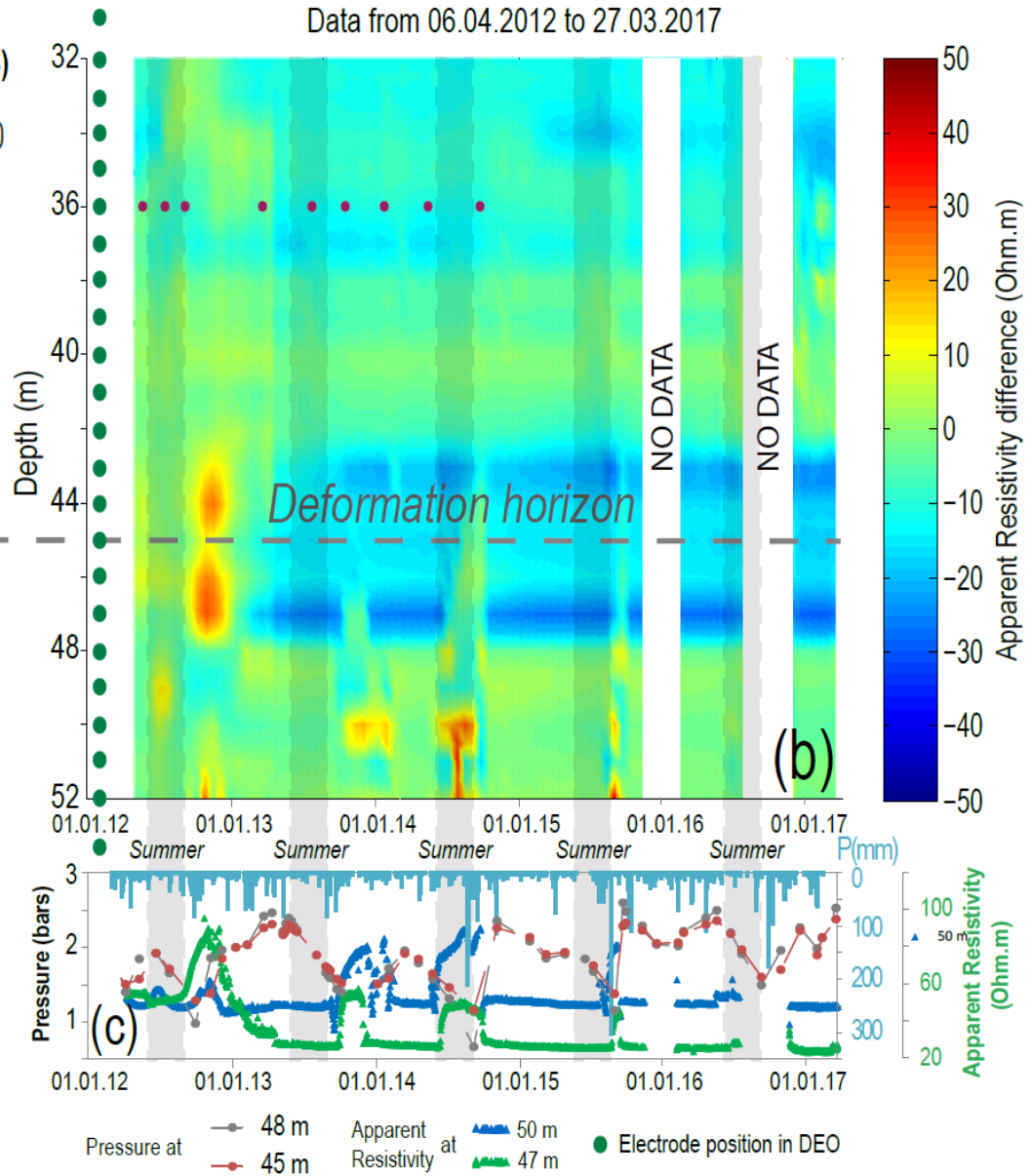
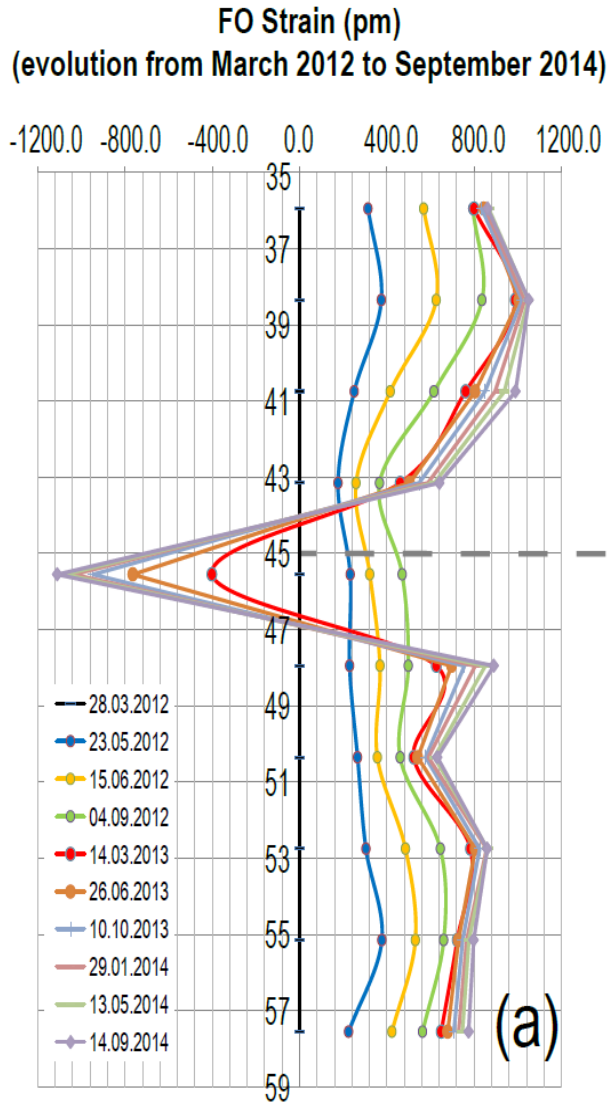
Observatoire Multi-piézomètres



# Suivi hydrodynamique et hydrogéochimie.

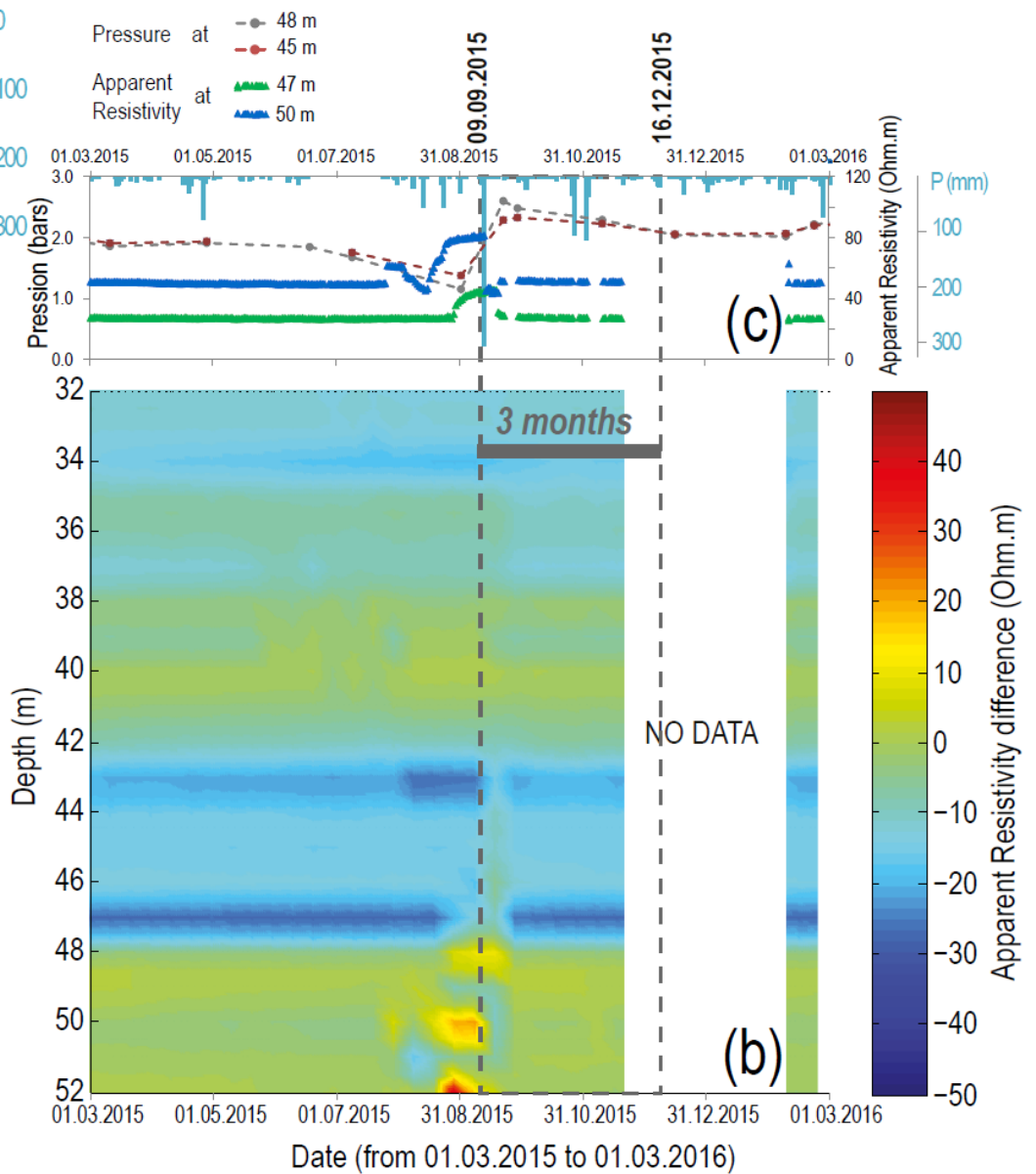
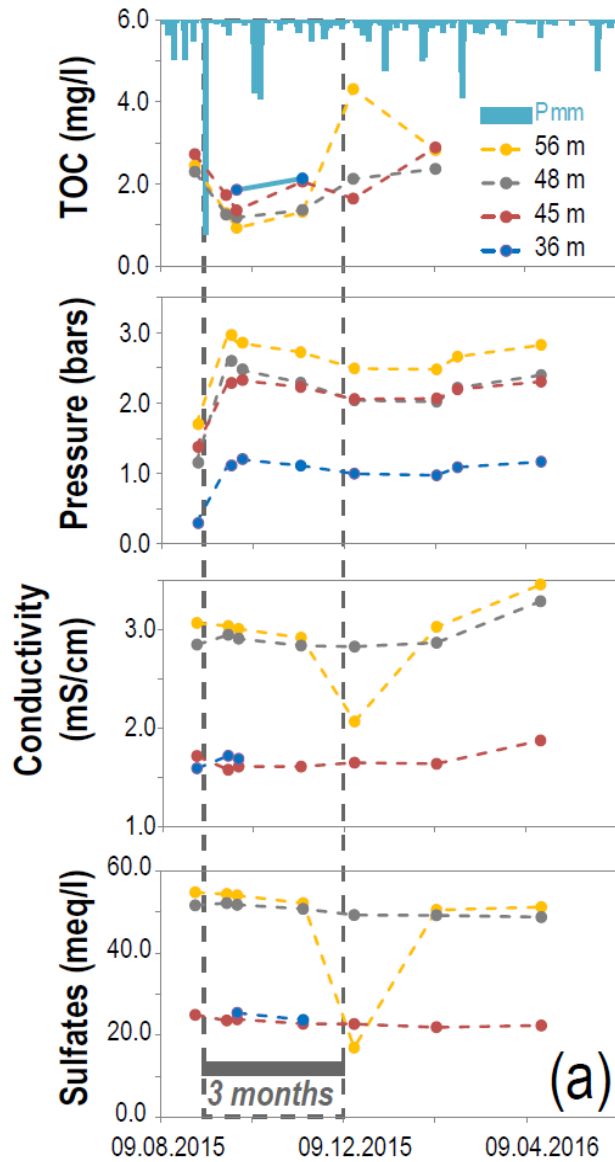


# Suivi géophysique: résistivité électrique et déformation





# Evènement cévenol



# OBJECTIFS

## 1/ Logs forage et carottes

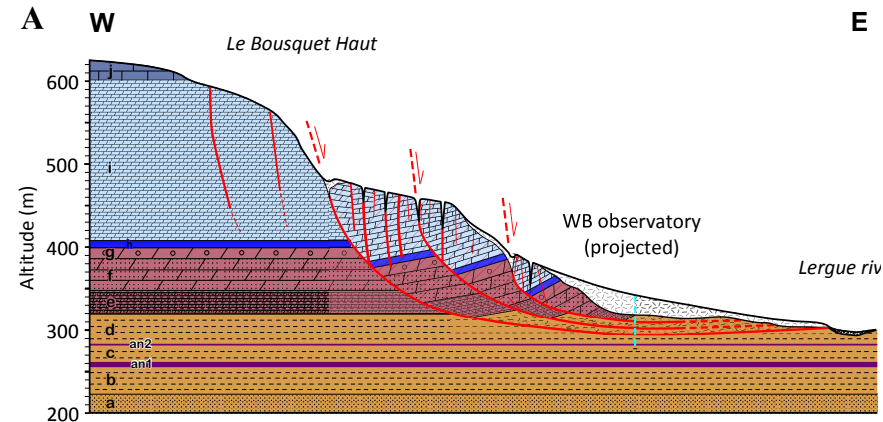
- Log lithologique
- Zones d'arrivée de fluides
- ➔ **Zone de glissement active?**

## 2/ ERT

- Structure 3D de la zone déformée?
  - ➔ **Mesures complémentaires sur le glissement?**
- PLANNING MESURES**

## 3/ Observatoires

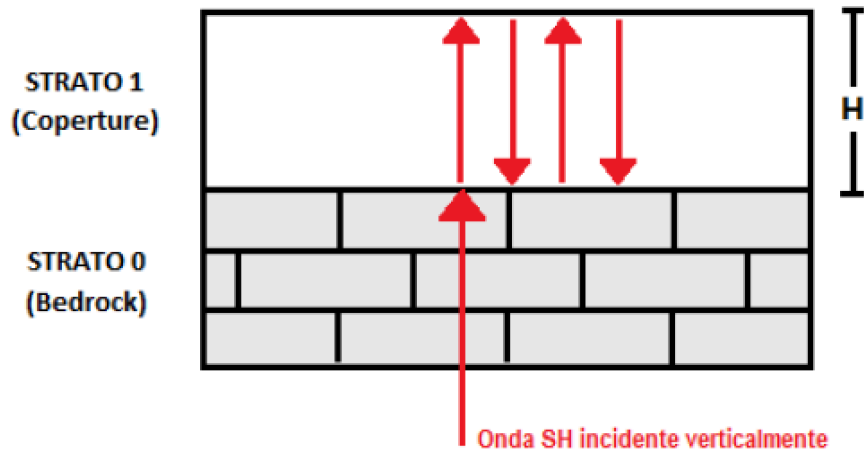
- Dynamique des réservoirs (cycle saisonnier)
- Relation fluides et signatures de résistivité pendant un cycle saisonnier
- Relation fluides et signatures de résistivité pendant un événement cévenol



# The resonance theory

Resonance is due to the trapping of vertically incident S wave (especially the horizontal component) between two surfaces characterized by an high impedance contrast ( $\rho V$ ).

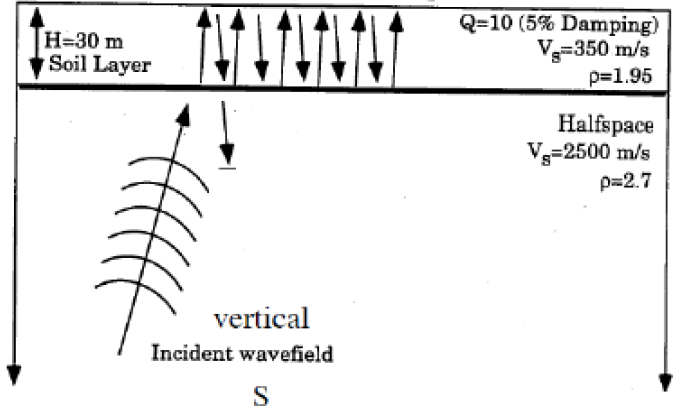
**Natural (or fundamental) frequency.** It is the frequency at which a system, excited by an impulse, vibrates with the maximum amplitude.



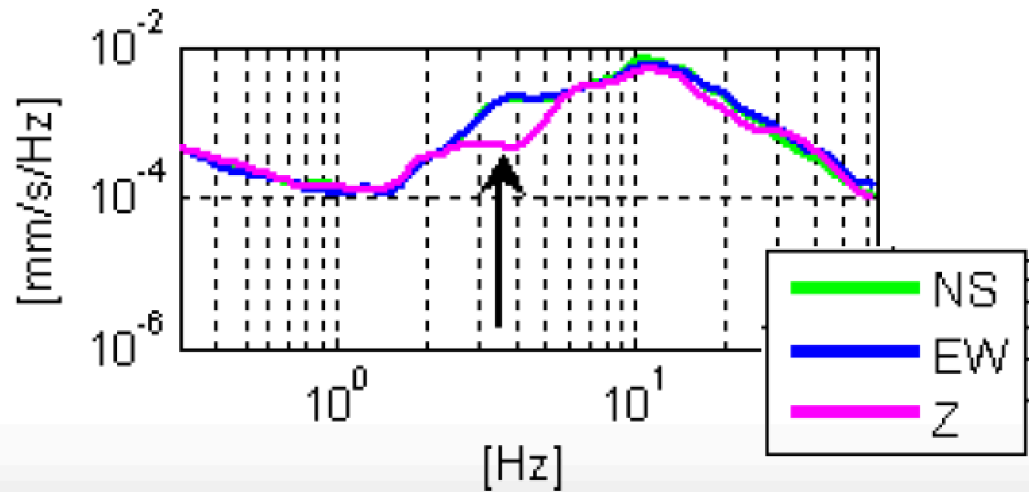
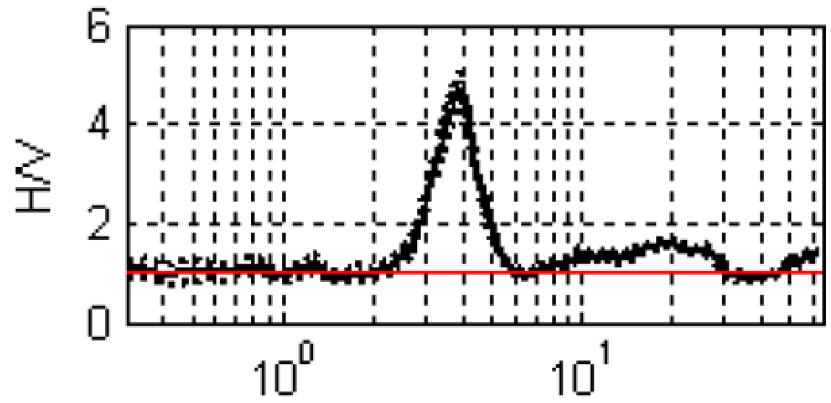
$$f = \frac{V}{4 H} n \quad n = 1, 3, 5 \dots$$

**Natural (or fundamental) frequency:**  
for  $n = 1$  in the above equation

### Simple Layer over a halfspace model



trapped !



Passive seismic method is a rapid, low-cost and non-invasive technique.

