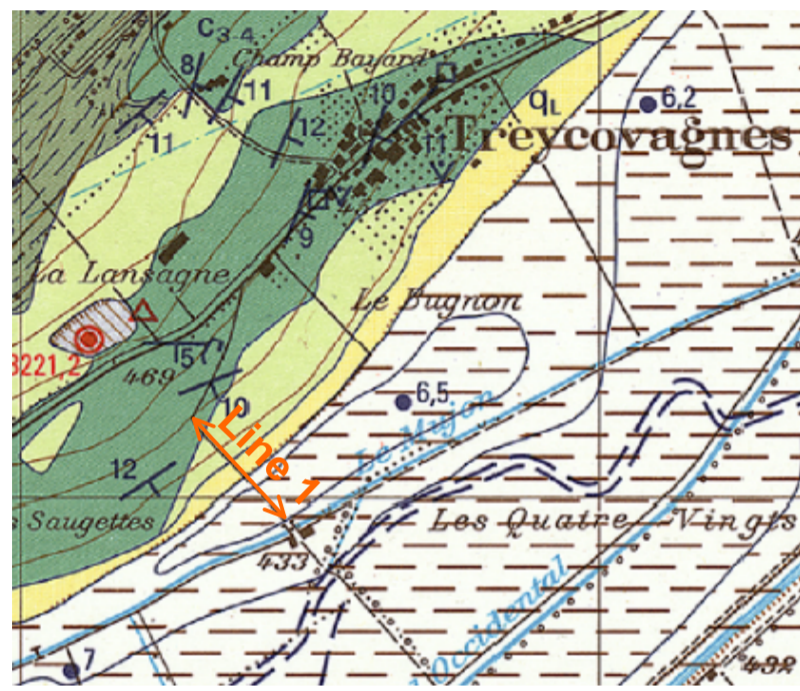


# COMPARISON OF DIFFERENT SHEAR WAVE SOURCES FOR HIGH RESOLUTION SEISMIC REFLECTION SURVEY





High resolution seismic reflection has become a very useful tool for geotechnical and hydrogeology issues. To increase resolution, shear waves (Swaves) are used as they have lower velocity than compression waves (Pwaves). Different shear wave sources have been tested in a site with a big contrast at different depths. Treycovagnes site has been chosen with a limestone dip under quaternary layer between 0 and 40m. Lightning vibrator from Seismic Mechatronics gave the best results.

## Geological background

In Treycovagnes (Switzerland), the limestone dip rising up the quaternary basin of the Orbe gives a big contrast between the two geological environments. The limestone is a yellow urgonian facies from the Early Cretaceous (dark green). The quaternary basin is a sequence from top to the plain of rhodanian moraine (light green), silt (yellow) and peat (dashed brown line on white).

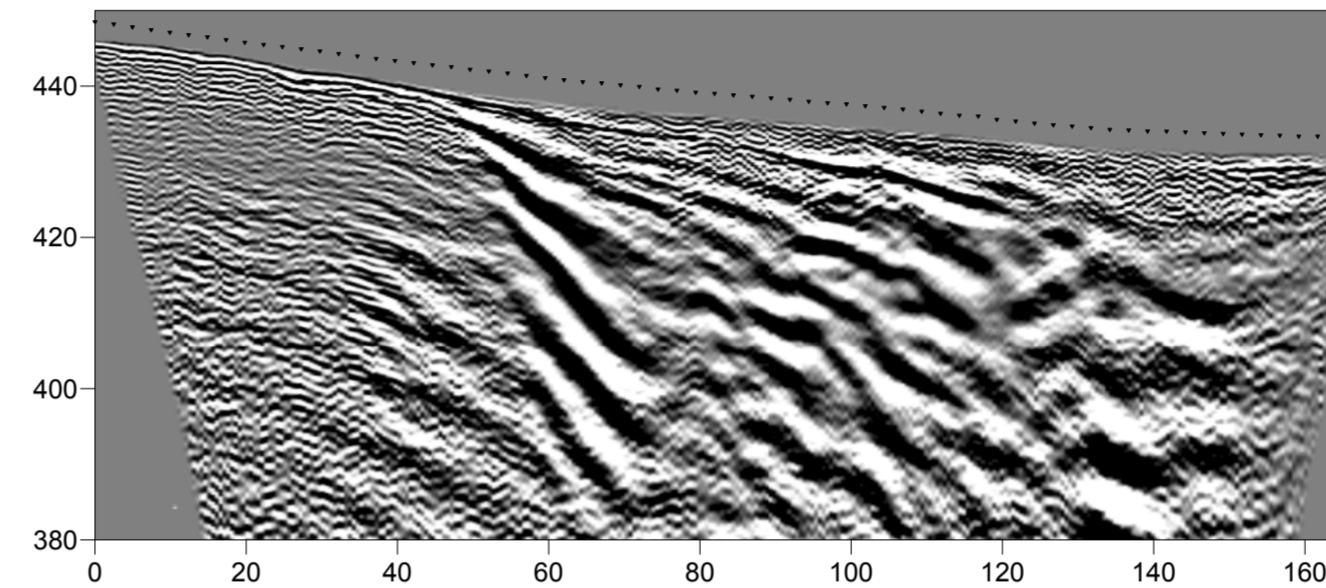


### LEGEND

-  Early Cretaceous limestone
-  Rhodanian moraine
-  Silt
-  Peat



## ELVIS Swave vibrator



### PARAMETERS

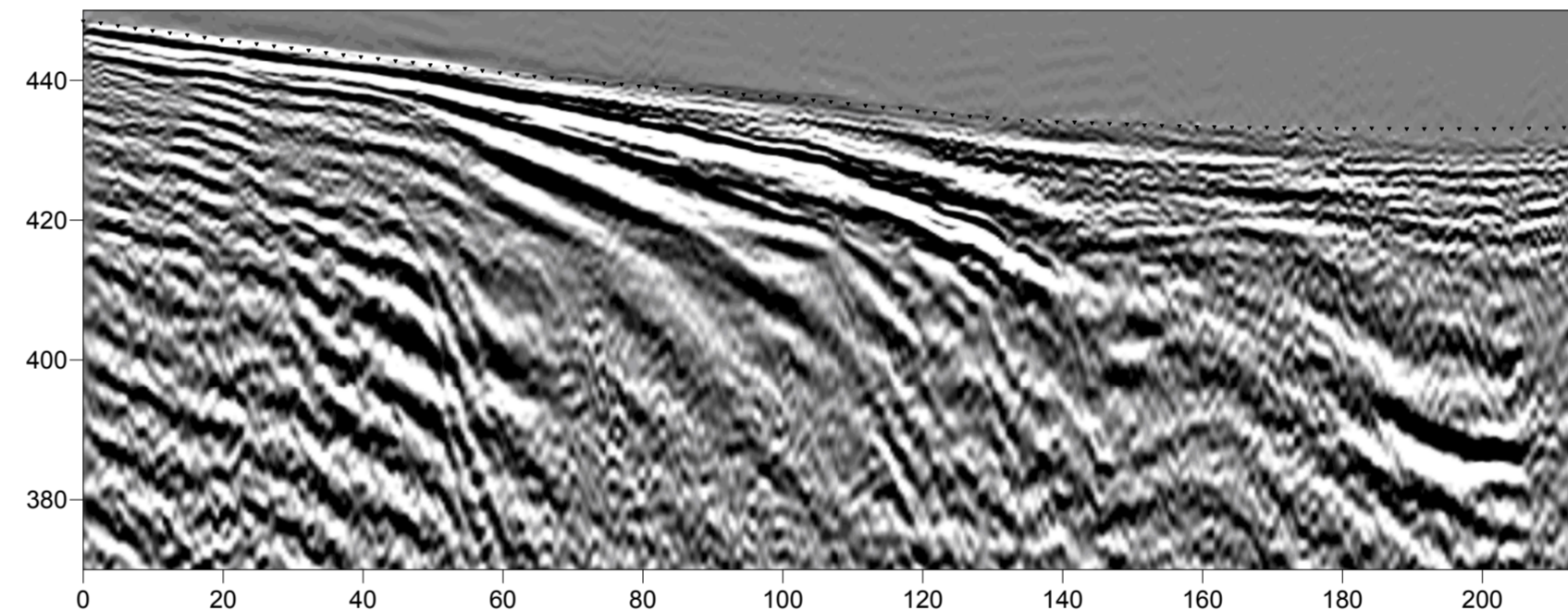
Line length: 168m  
Station interval: 1m  
Receiver: SM-6 14Hz horizontal geophone

Source: Elvis (GEOSYM)  
Sweep: 20-160Hz, 10s  
Shot interval: 1m  
Summing: 2 sweep/station

Seismograph: Geode (Geometrics)  
Sample rate: 1ms  
Uncorrelated record length: 11s  
Number of channels: 96



## Swave hammer



### PARAMETERS

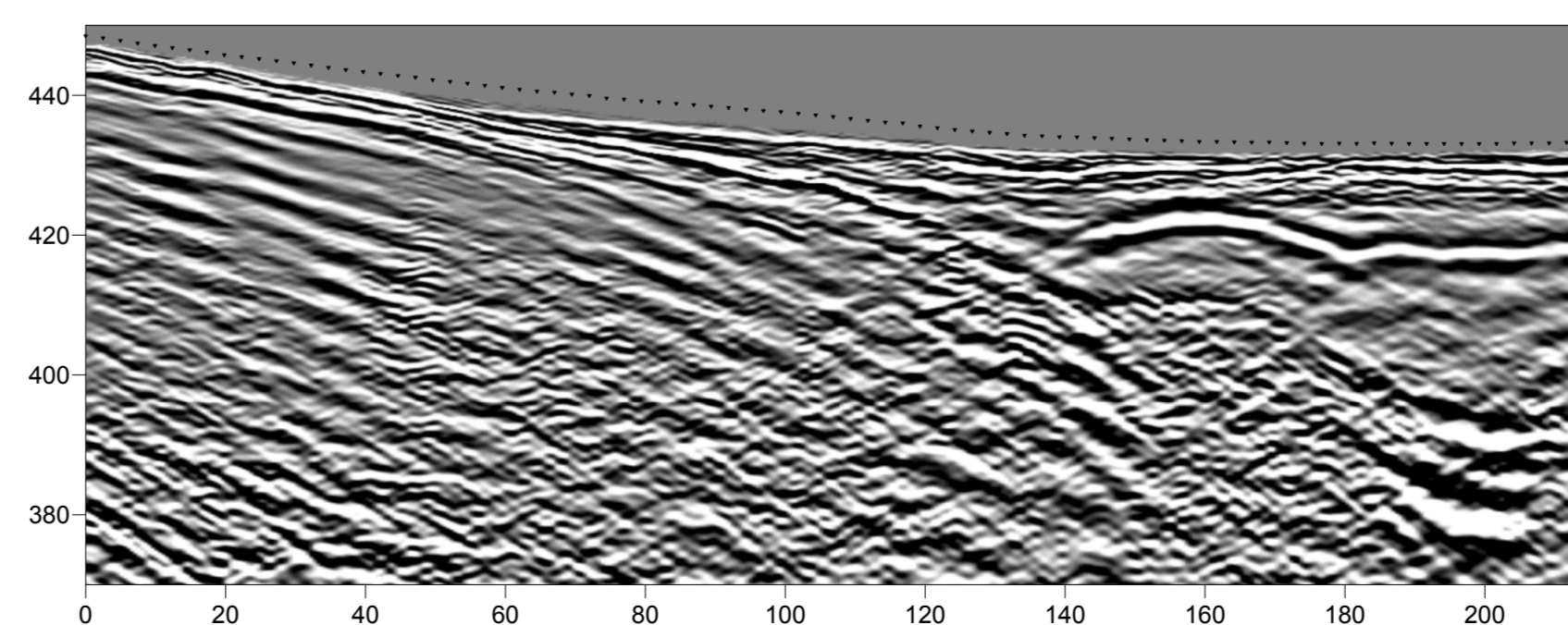
Line length: 215m  
Station interval: 1m  
Receiver: SM-6 14Hz horizontal geophone

Source: Swave hammer  
Shot interval: 1m  
Summing: 2 stack+, 2 stack- per station

Seismograph: Geode (Geometrics)  
Sample rate: 0.5ms  
Correlated record length: 1s  
Number of channels: 216



## LIGHTNING Swave vibrator



### PARAMETERS

Line length: 215m  
Station interval: 1m  
Receiver: SM-6 14Hz horizontal geophone

Source: Lightning (Seismic Mechatronics)  
Sweep: 20-500 Hz, 7s, 500N  
Shot interval: 1m  
Summing: 1 sweep/station

Seismograph: Geode (Geometrics)  
Sample rate: 0.5ms  
Correlated record length: 1s  
Number of channels: 48 (roll along)

