

# SIT4ME: seismic imaging of mineral-hosting structures in Sotiel-Coronada (Spain)

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## 1. Introduction

Our society is greatly dependent on raw materials and their ever-increasing demand puts their supply under strong pressure. The European Institute of Innovation and Technology (EIT) with its RawMaterials Programme promotes research and innovation solutions for sustainable mineral exploration ([www.rawmaterials.eu](http://www.rawmaterials.eu)). Within this framework, the SIT4ME project, supported by the EIT, aims to develop and assess seismic imaging approaches for mineral exploration within crystalline (hard-rock) environment, at a reduced cost. The SIT4ME project seeks to test the efficiency of different seismic approaches for subsurface imaging including: control and natural source seismic data-sets. Two world-class case studies are being developed in active mine sites (in Sweden and Spain).

## 3. Processing Geometry

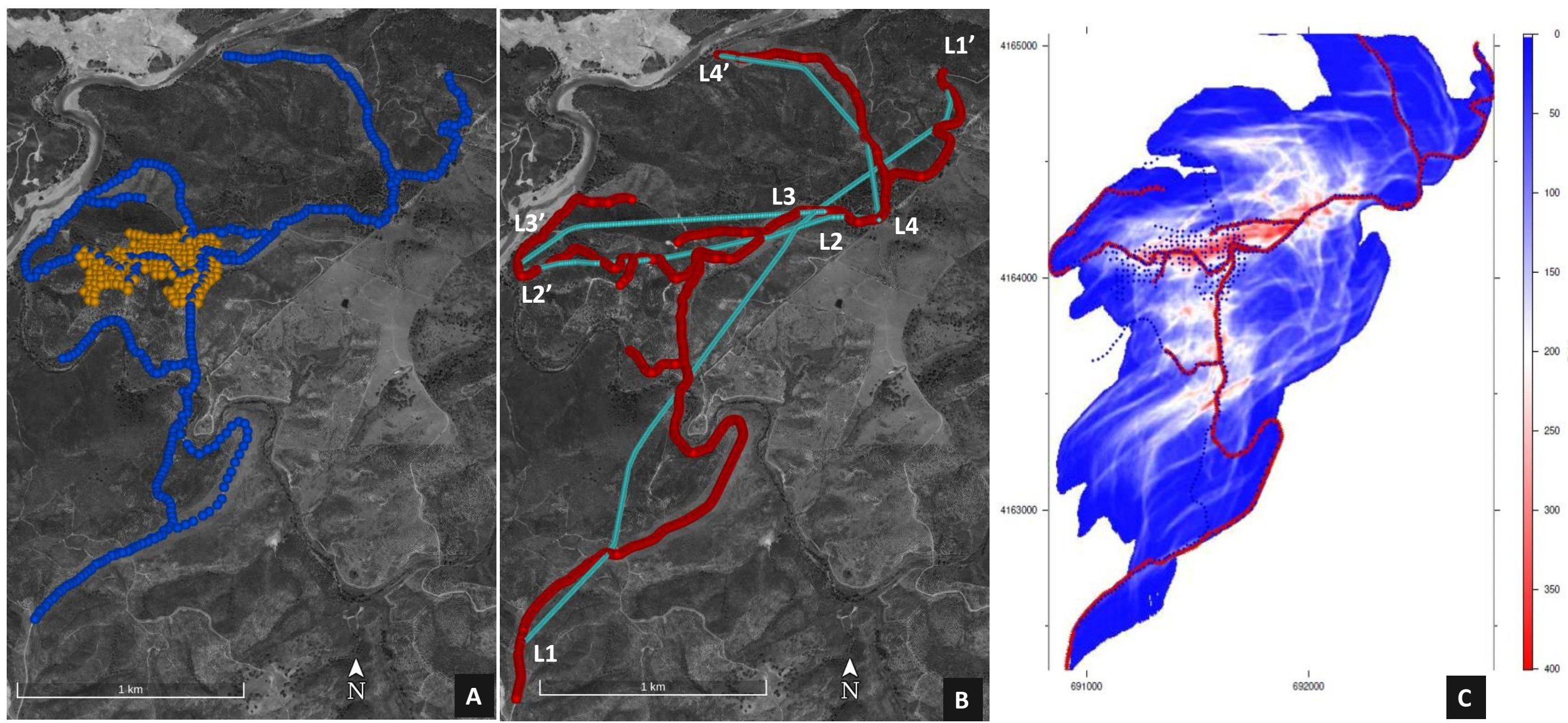


Figure 2: Distribution of the (A) geophones, (B) vibration points across the study area and seismic lines in light blue. (C) CDP fold coverage calculated from a CDP bin size of 5m.

No. of vibration points	875
Vibration points spacing	10 m
Source type	Vibroseis truck (32 t)
Sweep length	15 seconds
Frequency range	10-100 Hz
No. of receiver points	653
3-component receivers	247
1-component receivers	406
Sample rate	4ms
Receiver spacing	20m

Table 1: Data acquisition parameters

## 2. Geological setting

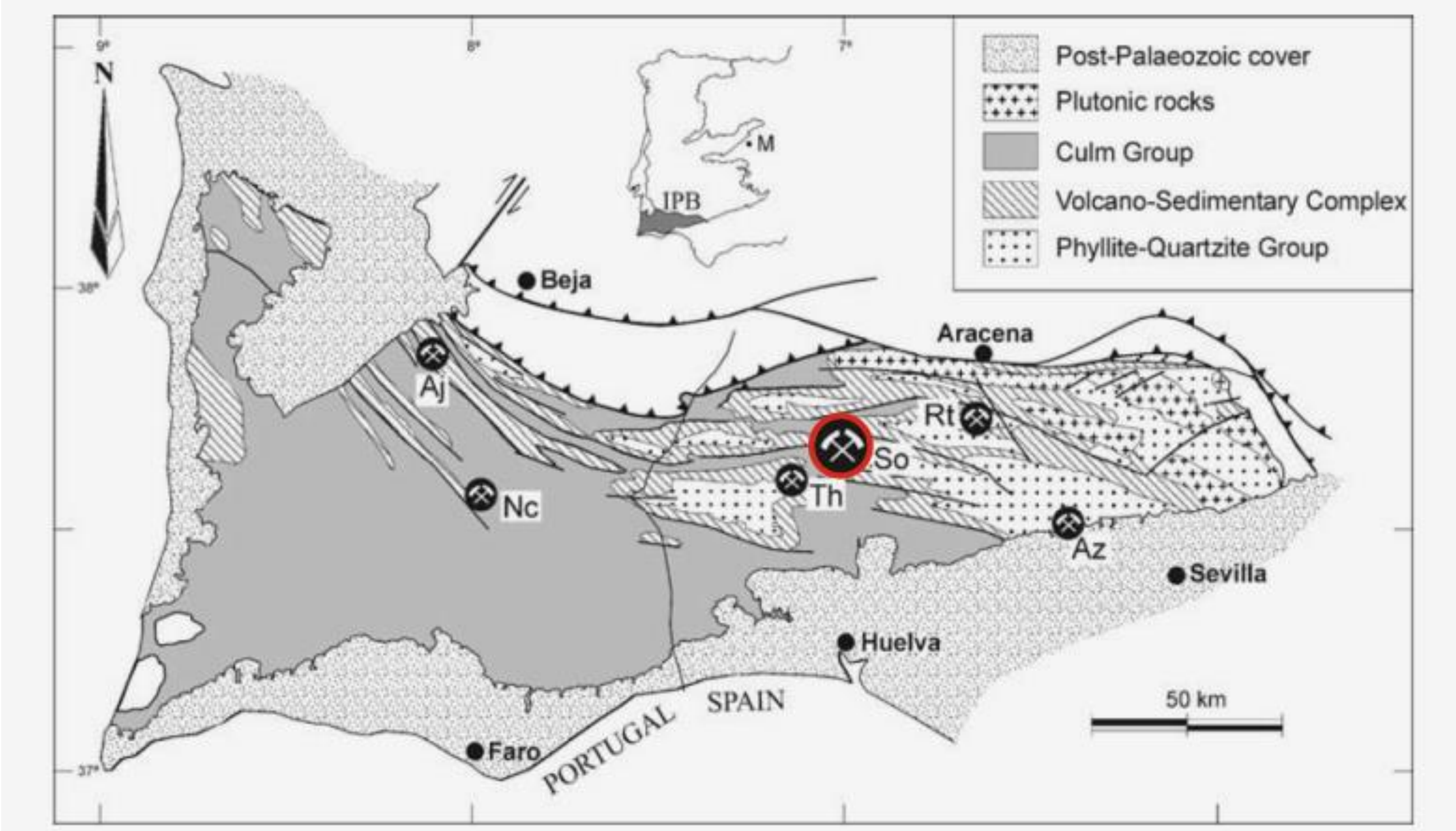


Figure 1: Geological map of the Iberian Pyrite Belt showing the location of the Sotiel Mine and the main mining districts. Gonzalez et al., 2006.

## 4. Data Processing

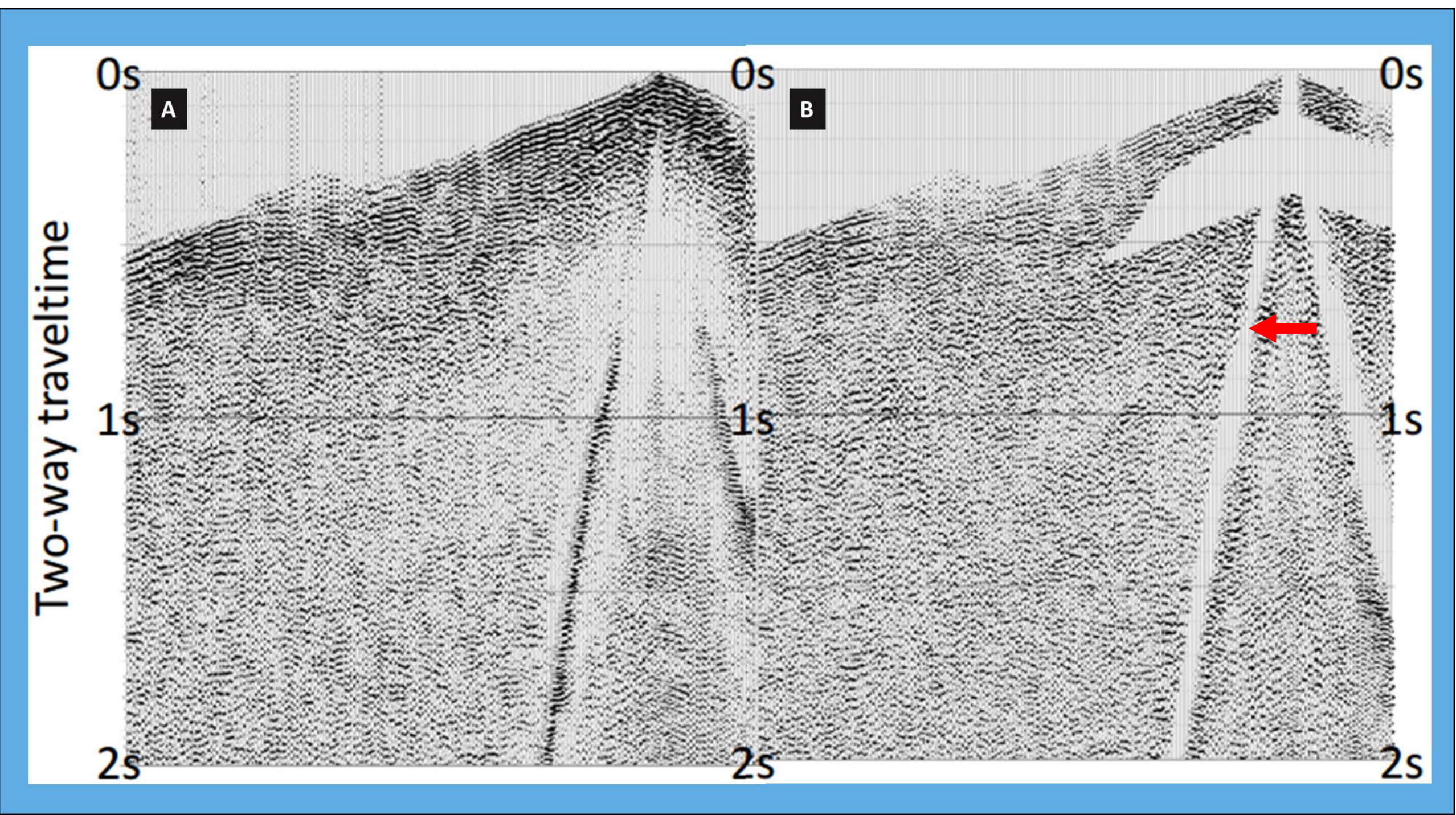


Figure 3: Shot gathers example from L1. A) Raw data and B) processed shot with a reflection marked by a red arrow. The data processing applied consist oy fin: noise trace edition, static corrections (elevation + refraction statics), airy wave mute (340m/s), surgical mute, amplitude equalization, frequency filter (20-30-65-90 Hz) and notch (50Hz).

## 5. Results

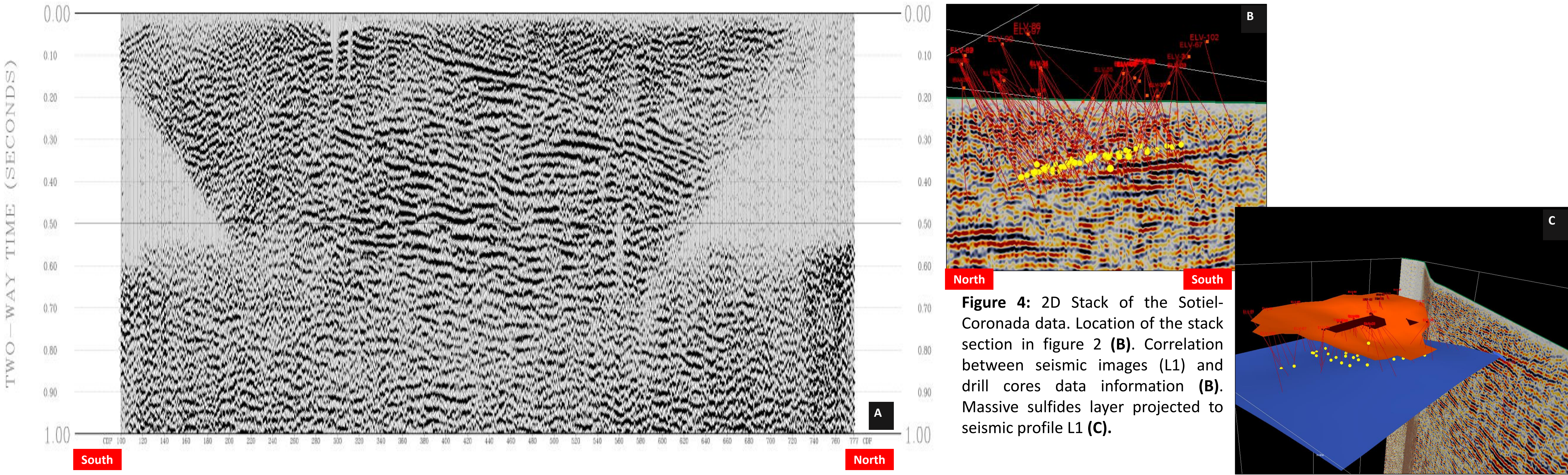


Figure 4: 2D Stack of the Sotiel-Coronada data. Location of the stack section in figure 2 (B). Correlation between seismic images (L1) and drill cores data information (B). Massive sulfides layer projected to seismic profile L1 (C).

### Acknowledgements

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### References

Gonzalez, F., Moreno, C., and Santos, A., [2006], The massive sulphide event in the Iberian Pyrite Belt: confirmatory evidence from the Sotiel-Coronada Mine. Geol. Mag. 143 (6), pp. 821–827.