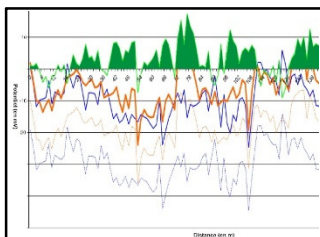
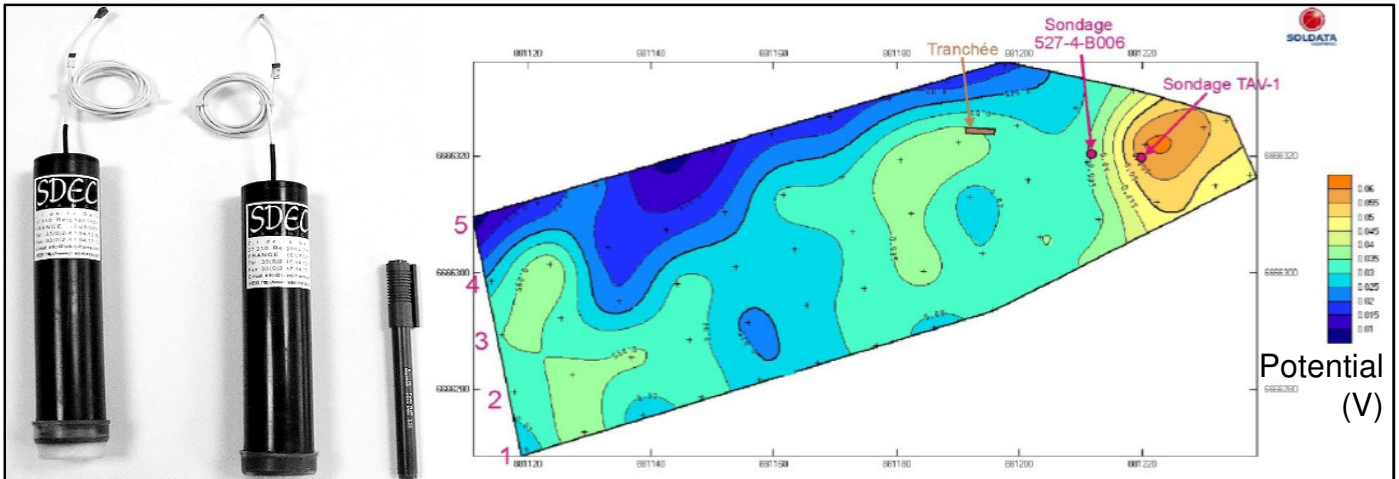




**SOLDATA**  
GEOPHYSIC

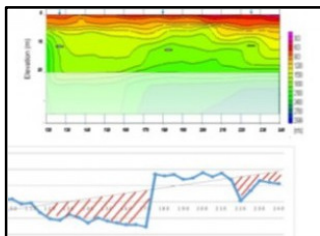
# SPONTANEOUS POLARISATION



The method of spontaneous polarisation is a passive geophysical method, i.e. it measures a natural field. It consists of measuring the natural potential of the ground along a grid, thus allowing a map of the potential to then be created. This method can also be used in a borehole to obtain a log of spontaneous polarisation.

### Applications

- Mineral exploration: redox phenomena take place near the top of different masses, enabling them to be located
- Environment: degradation of certain pollutants leads to measurable electrical imbalances. It then becomes possible to define a plume of pollution.
- Hydraulic: flows affect the spontaneous potential, which allows hydrogeological information to be concluded for areas of leakage to be found.



The measurement is made through the use of a pair (or more) of non-polarizable electrodes, one of which serves as a reference and the other is mobile in order to be moved to the different measurement points. A voltmeter allows the electric potential difference between these two electrodes to be measured.

Spontaneous polarisation at a measuring point can be of diverse origin (circulation of a fluid in a porous medium, a redox phenomenon, thermal diffusion, etc.). These natural phenomena, taking place in the ground, create electrical dipoles that can be observed at the surface. It is therefore possible for a geophysicist to interpret the presence of these potentials in accordance with the objectives.

This method is particularly easy to implement. It can also be combined with other geophysical methods, can be implemented in order to establish a snapshot of the spontaneous polarisation of a site, or alternatively can be installed in a long term manner to monitor this polarisation.



### Legend

1. Non-polarisable electrodes and observed anomalies
2. Results with, in green, the increase after works
3. Results of the spontaneous polarisation for locating recesses in the substratum

### Key figures

- Investigation depth up to tens of metres, depending on the objective and the situation
- 200 to 500 measurements per day
- 2 operators

### SDG Equipment

- Non-polarisable electrodes (2 minimum)
- High impedance voltmeter
- Electrical cables