

Geoelectrical surveys can be used to determine the resistivity distribution in the subsurface.

They are applicable for various uses including geologic, geotechnical and environment.

Electrical resistivity tomography

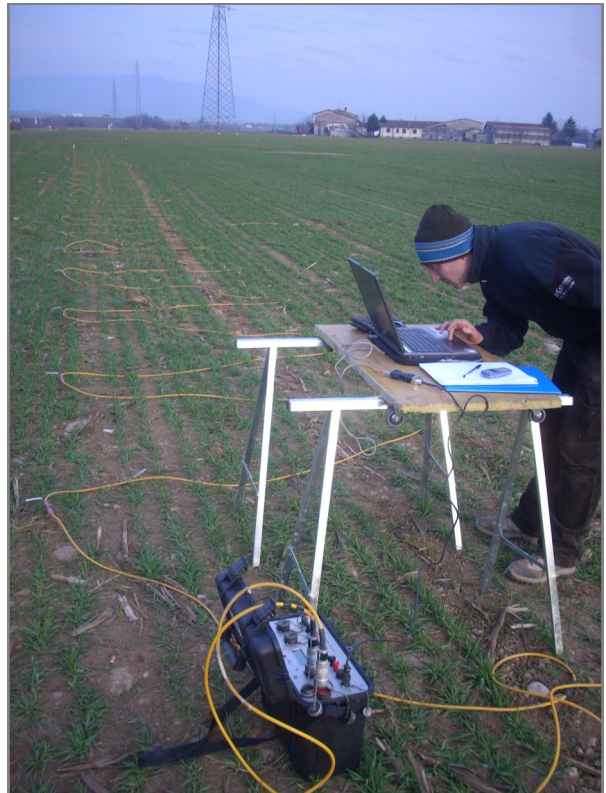
Resistivity measurements are made by injecting current into the subsurface between two electrodes and measuring the resulting voltage between two other electrodes.

Electrical resistivity tomography is an advanced developed of the traditional method that uses tens of electrodes set-out in a regularly spaced array. The electrodes are connected to a switching unit to be alternatively used for both potential recording and current injection.

This technique produces two or three dimensional images of the subsurface that show not only vertical changes in resistivity but also lateral changes.

Ground resistivity is related to various geological and hydrogeological parameters such as mineral and fluid content, porosity and water saturation.

The depth of investigation and the resolution are determined by the spacing between the electrodes and the number in the array.



APPLICATIONS

Electrical resistivity tomography has many different applications:

- stratigraphy
- map landfill geometry
- groundwater exploration
- cave and voids detection
- locate plumes of contamination

EQUIPMENT

MULTI-ELECTRODES SYSTEM

Electrodes: 64

Measurement range: 0.001 Ω - 360 k Ω

Current range: from 0.5 mA to 200 mA

Input voltage: from 0 to 180 V (automatic gain)

Input impedance: 22 M Ω



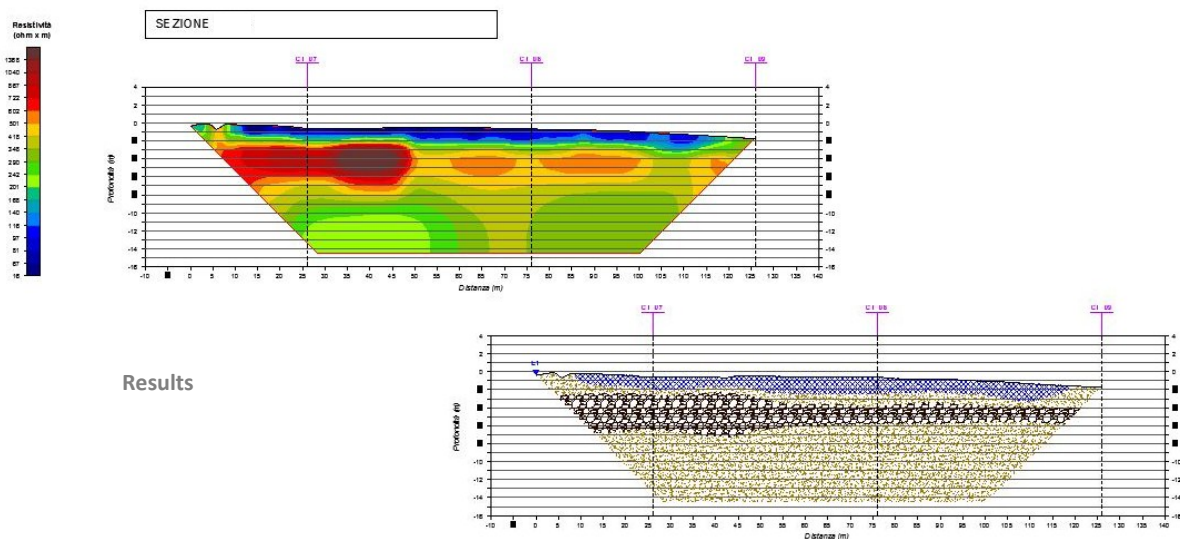
Electrode



Resistivimetre with notebook

DATA PROCESSING

Resistivity data are recorded to build up a pseudo section of apparent resistivity beneath the survey line. Interpretation consists of iteratively computing the response of a 2D model until a theoretical model is found which reasonably matches the observed one.



Results

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Sedi operative

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