

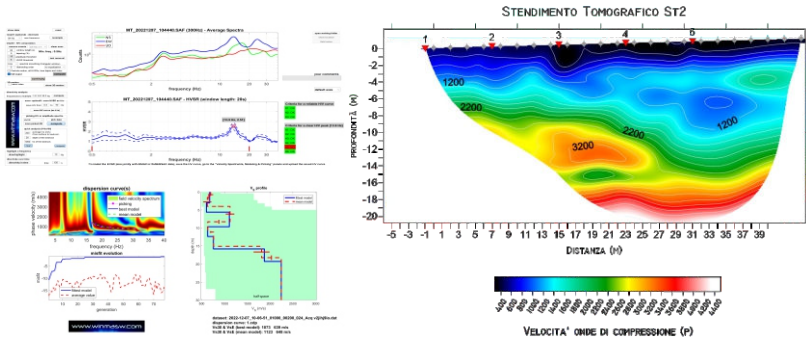
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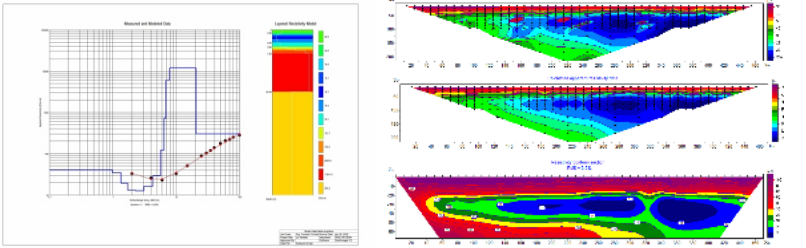
GEOPHYSICAL SURVEYS:

Seismic surveys are geophysical investigation methods based on the study of the propagation of both natural and artificially generated seismic waves. The main seismic survey methods use reflected waves (reflection method), refracted waves (refraction method) or environmental noise (passive techniques).



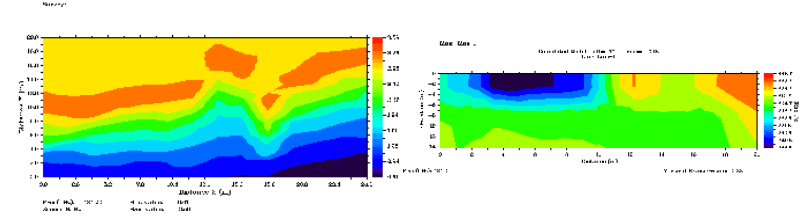
GEOELECTRIC SURVEYS:

Goelectric surveys are a non-invasive geophysical investigation methodology and are based on the detection of the electrical resistivity (electrical conductivity) of the various types of investigated terrain. Conductivity is mainly a function of the chemical nature (the various types of rocks and terrains present in nature, the various materials and compounds) and electrolytic nature (presence or absence of water, humidity and dissolved salts) of the rocks and terrains themselves. In the environmental field, these surveys allow the estimate of the thickness of the waste body in the landfill or the identification of pockets or routes of



ELECTROMAGNETIC SURVEYS VLF:

The VLF method is based on the principle of electromagnetic induction and is particularly suitable for the investigation of electrically conductive and elongated bodies that rapidly submerge (pseudo-vertical). The primary field, in this case, is induced by military emitting stations positioned at strategic points around the planet, which were used to transmit with submarines. These signals, being transmitted from very far away from the investigation points, can be considered to have a predominantly horizontal component and, permeating the subsoil, induce electric currents inside the buried conductive bodies which in turn generate secondary vertical electromagnetic fields.

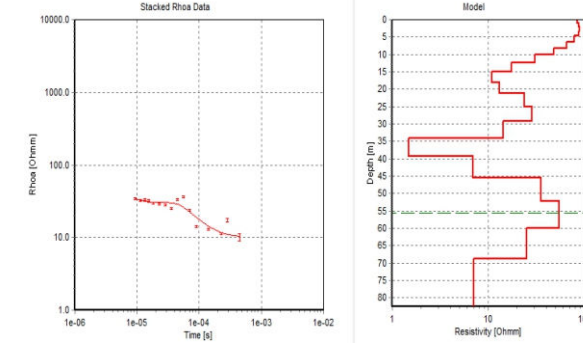
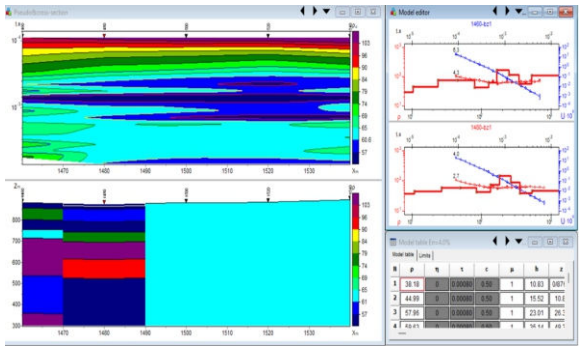


ELECTROMAGNETIC SURVEYS TDEM:

The TDEM (Time-Domain ElectroMagnetic) methodology is a technique widely used in hydrogeological investigations, for the identification of potential aquifers and for the study of saline water intrusions. Prospection allows to highlight areas of resistivity anomaly in the investigated area. The method is based on the generation of an electromagnetic field (primary) starting from an emitting coil, inducing a current circulation in the ground.

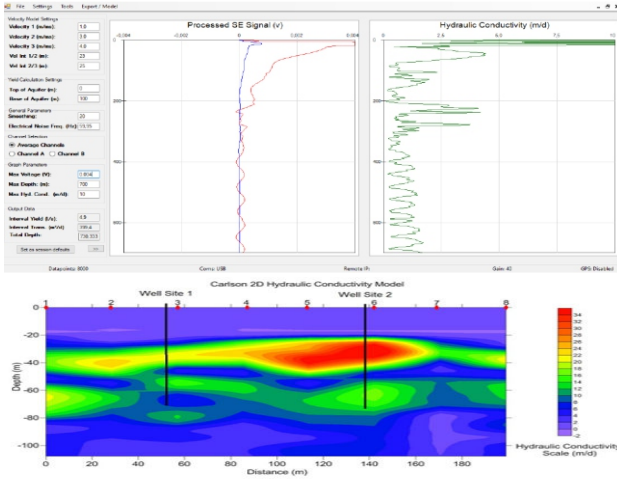
This current will in turn generate an electromagnetic field (secondary) whose intensity is proportional to the electrical conductivity of the material.

It is an inductive method, originally designed for mining investigations, but which is increasingly widespread in the geological and hydrogeological fields.



SEISMOELECTRIC SURVEYS:

Seismo electric surveys are based on the principle that underground water flow creates a weak electric field that can be measured at the surface with suitable equipment following a strong acoustic pulse created by a normal seismic source (a sledgehammer and a plate, or seismic gun). There are at least four causes of seismoelectric effects: piezoelectricity, resistivity modulation, pulsed radio effect (RPE) and electrokinetic effects.

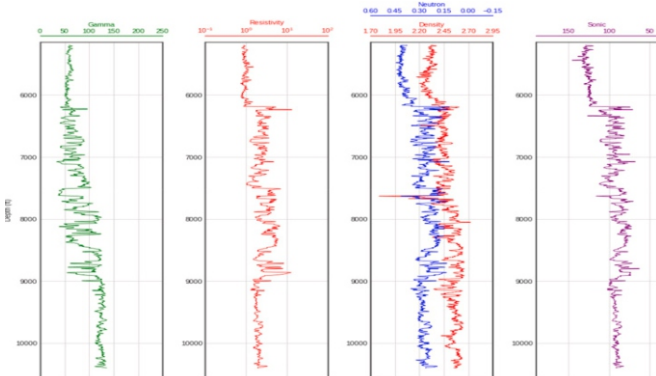


GEOPHYSICAL WELL LOGS

Geophysical logs (wireline logs) are used in surveys and wells to continuously determine the physical/chemical characteristics of geological formations, fluids present and completions. The investigations can therefore be performed on open holes and in cased holes.



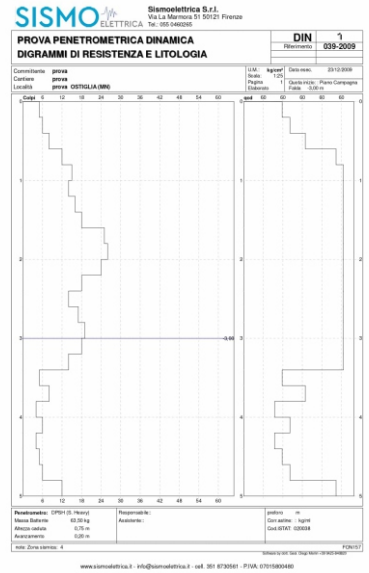
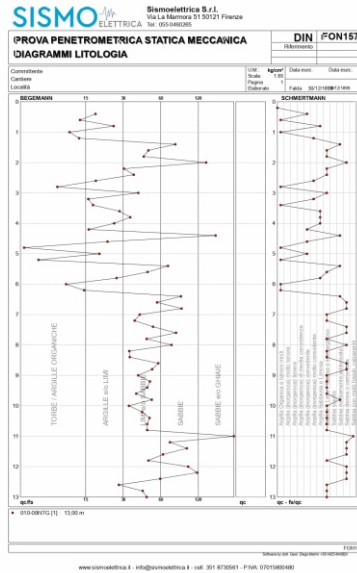
- Multi-parameter electrical log probe;
- Fluid chemical-physical parameters log probe (FTC);
- Sonic log probe (FWS) and cementation checks (CBL).



PENETRATION TESTS:

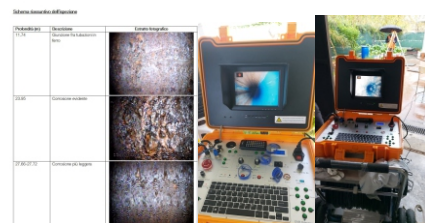
Penetrometric tests are part of in situ geotechnical investigations. They allow to indirectly characterize the subsoil by driving a tip into the ground. We can distinguish:

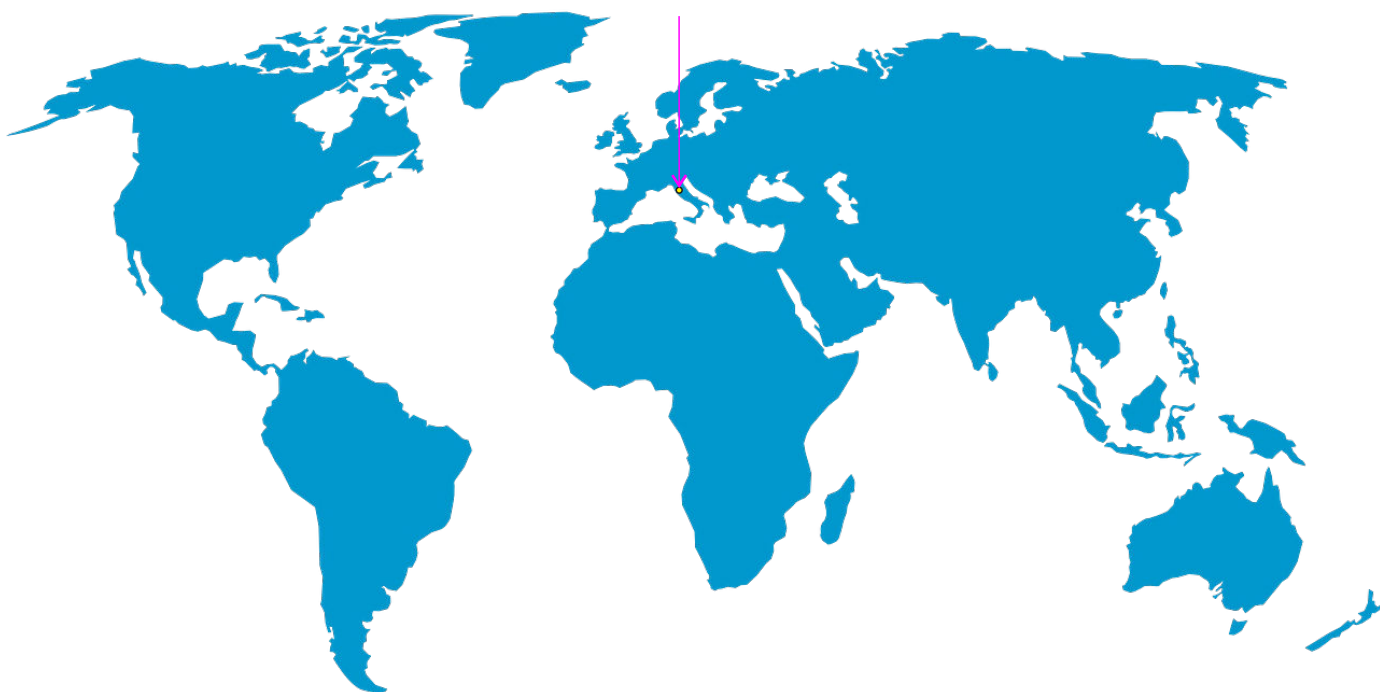
- Static penetrometric tests (CPT)
- Static penetrometric tests with piezocone (CPTe and CPTU)
- Dynamic penetrometric tests (DPSH)
- Standard penetration test (SPT)
- Seismic cone
- Dilatometric tests.



WELL VIDEO INSPECTION

Video inspection allows to verify, by means of suitable cameras, the state of conservation of the well, allowing to identify any anomalies due to blockages or presence of encrustations, breakages or deformations as well as type of filters and positioning. Understanding the problem with direct verification and video restitution will allow to define the best methods of intervention for the functional restoration of the well.





...the water you touch in the rivers is the last of what has gone and the first of what is to come. So the present time.

(Leonardo Da Vinci)

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