FULLWAVER

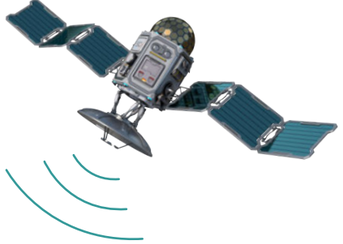
DISTRIBUTED SYSTEM

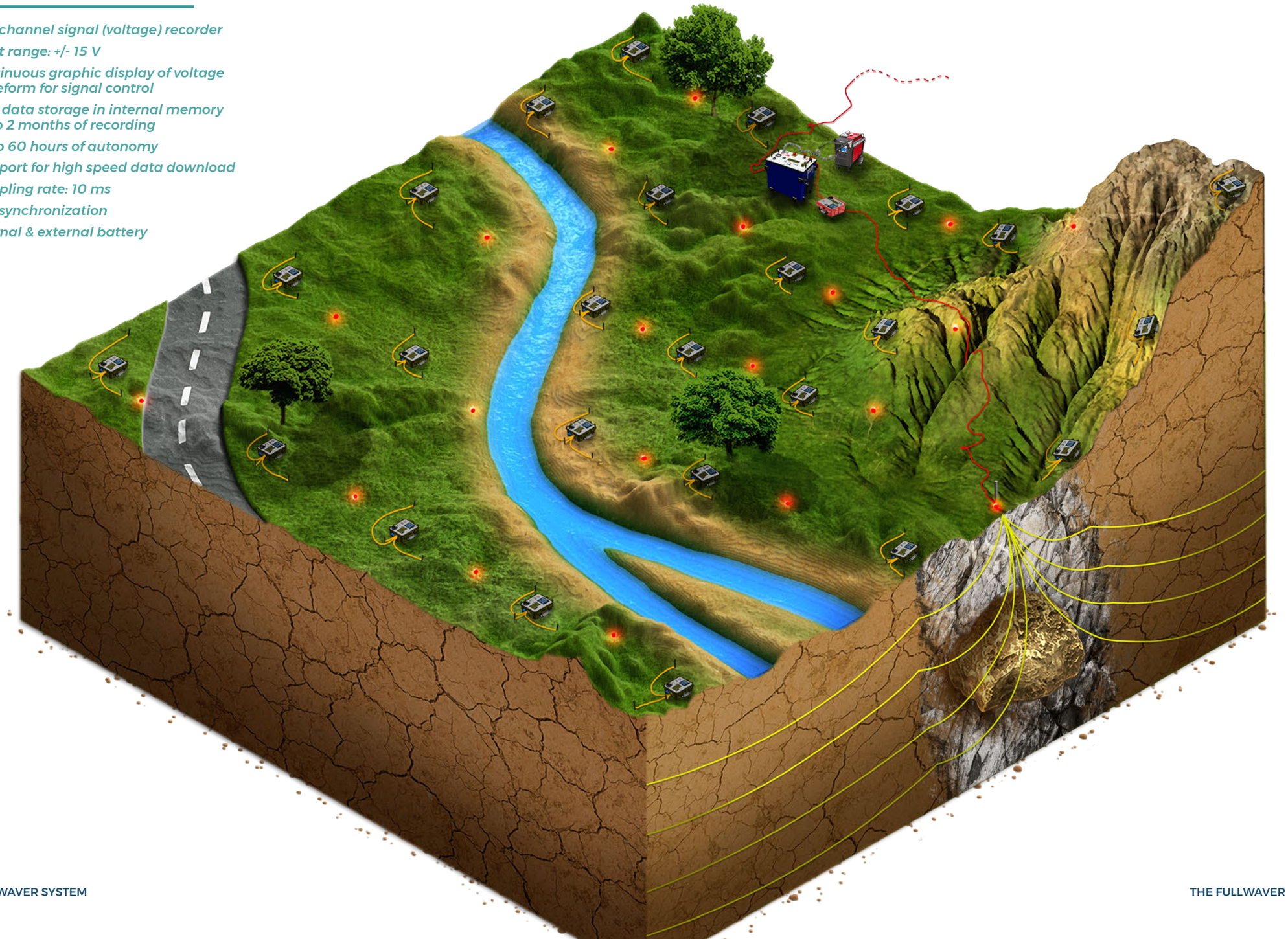
FOR DEEP RESISTIVITY AND INDUCED POLARIZATION SURVEY

IRIS INSTRUMENTS

V-FULLWAVER SPECIFICATIONS

- *Two channel signal (voltage) recorder*
- *Input range: +/- 15 V*
- *Continuous graphic display of voltage waveform for signal control*
- *Raw data storage in internal memory up to 2 months of recording*
- *Up to 60 hours of autonomy*
- *USB port for high speed data download*
- *Sampling rate: 10 ms*
- *GPS synchronization*
- *Internal & external battery*





THE FULLWAVER SYSTEM | IRIS INSTRUMENTS

SCALABLE - VERSATILE - EXPANDABLE SYSTEM

- **Versatile** - The FullWaver system is designed to be used for 2D, pseudo 3D or full 3D surveys. It allows to measure resistivity, induced polarization and self-potential for large and small-scale surveys.
- **Light weight** - The absence of physical link between boxes makes surveys easier in highly vegetated, urbanized and/or rough topography areas. This wireless system avoids to setup km of cables for traditional large-scale surveys. With the FullWaver system, users can explore previously inaccessible places at reasonable cost.
- **Flexible** - It can be used with any standard IP transmitter.
- **Expandable** - Start with a few boxes and extend your system little by little. Share boxes with your partners for large surveys.
- **Easy to Use** - Setup and start V-FullWaver boxes at the beginning of the survey. Then, the survey only consists in injecting at different positions with a standard IP transmitter.

A COMPLETE SOFTWARE SUITE

In addition to the FullWaver system, IRIS instruments proposes a complete software suite

1. FullWave Designer to plan your survey according to the target, the topography and the accessibility thanks to satellite maps.
2. FullWave Viewer to compute resistivity and chargeability from the FullWave data
3. Prosys II for QC, filtering and export to inversion software

OPTIONAL RADIO COMMUNICATION SYSTEM

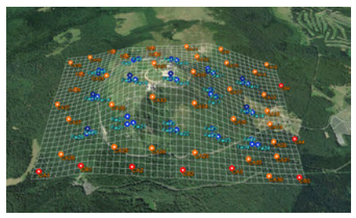
An optional radio communication system is available with the FullWaver system. This system is designed to increase the FullWaver survey's efficiency and to improve the real-time quality control.

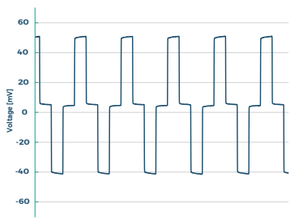
FULL WAVEFORM RECORDING

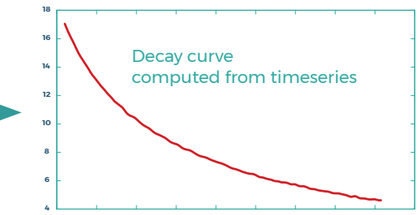
The FullWaver system is a simple data logger recording full-waveform potential timeseries on two channels. The computation of the stacked period used to measure apparent resistivity and chargeability is therefore performed on a computer in post-processing. This principle allows to use advanced processing function that can't be used on standard resistivity and IP systems. This post-processing can be done thanks to FullWave Viewer program. IRIS Instruments also provides Matlab® scripts for the reading of files for a customized data processing.

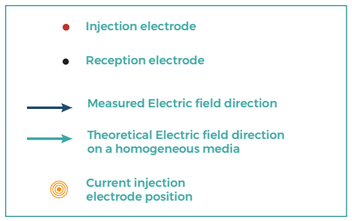
FULL 3D MEASUREMENTS WITH GEOMETRY FREE ARRAYS

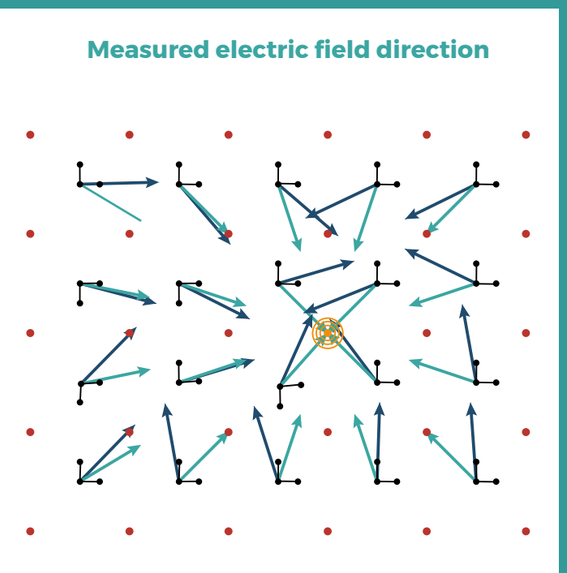
The Fullwaver system is very versatile. It can be used for 2D / pseudo 3D or 3D surveys, like other resistivity system. However, the FullWaver system is the only one allowing Full 3D survey type. In this survey type, the injection points are located inside and outside the survey area, illuminating the target from every direction. The V-FullWaver receiver units can be connected on two perpendicular reception dipoles allowing to record amplitude and direction of the electric field.





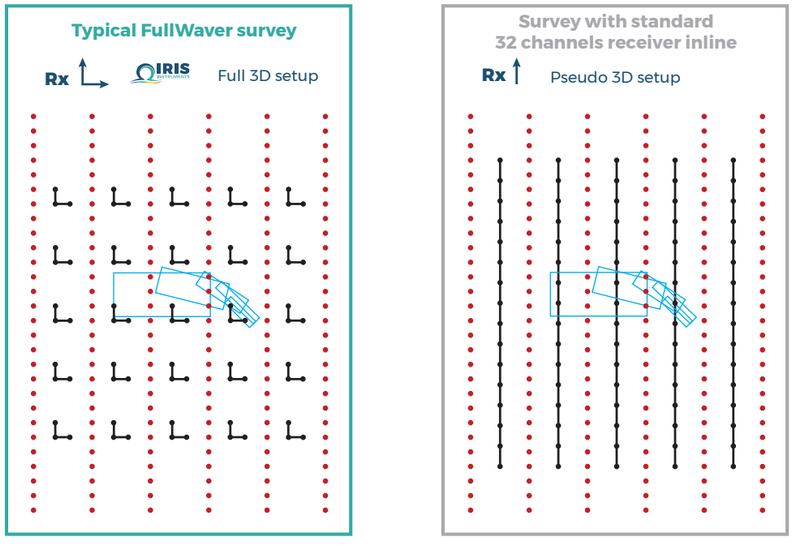




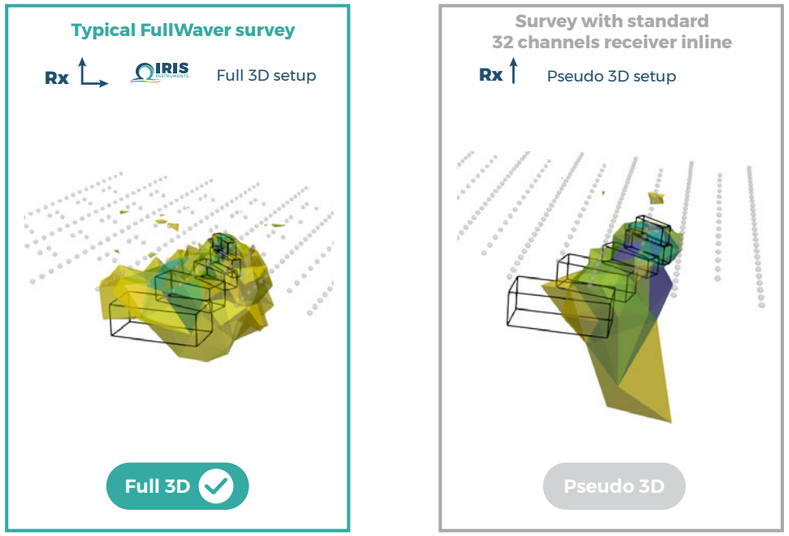


THE FULLWAVER SYSTEM | IRIS INSTRUMENTS

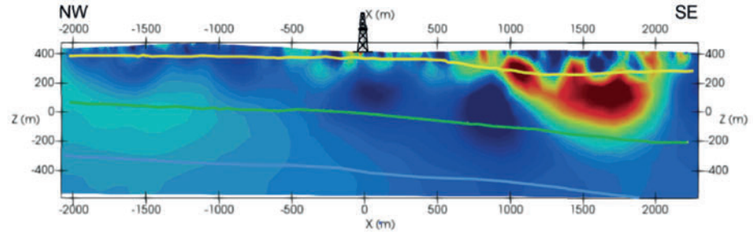
This type of survey really makes the difference compared to the acquisition of 2D parallel lines as it is capable to measure the electric field deviation induced by anomalies perpendicular to the line's direction.



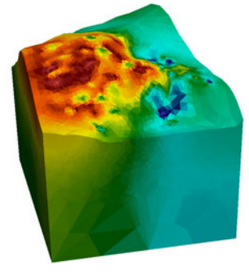
For the two surveys: 128 identical injection points and one fixed remote electrode located at 5km.
A complex 3D 10 Ω.m anomaly in a 1000 Ω.m homogeneous background



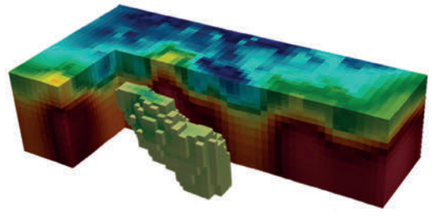
A LARGE NUMBER OF SYSTEMS SOLD TO MINERAL EXPLORATION COMPANIES, GEOLOGICAL SURVEYS AND UNIVERSITIES



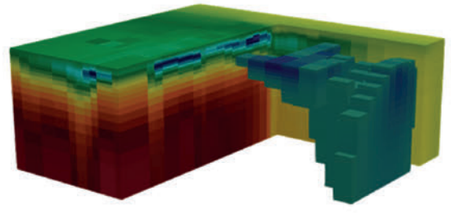
Geothermal source exploration (Carrier et al., 2019)



Natural hazard assessment on large landslide (Lajaunie et al., 2019)



Disseminated gold exploration



RECENTLY PUBLISHED CASES STUDY

Lajaunie, M., Gance, J., Nevers, P., Malet, J. P., Bertrand, C., Garin, T., & Ferhat, G. (2019). Structure of the Séchilienne unstable slope from large-scale three-dimensional electrical tomography using a Resistivity Distributed Automated System (R-DAS). Geophysical Journal International, 219(1), 129-147.

Carrier, A., Fischanger, F., Gance, J., Cocchiararo, G., Morelli, G., & Lupi, M. (2019). Deep electrical resistivity tomography for the prospection of low-to medium-enthalpy geothermal resources. Geophysical Journal International, 219(3), 2056-2072.

Troiano, A., Isaia, R., Di Giuseppe, M. G., Tramparulo, F. D. A., & Vitale, S. (2019). Deep Electrical Resistivity Tomography for a 3D picture of the most active sector of Campi Flegrei caldera. Scientific reports, 9(1), 1-10.

RECENTLY PUBLISHED WORK ON NEW INVERSION SCHEMES LINKED TO THE FULLWAVER SYSTEM

Soueid Ahmed, A., & Revil, A. (2018). 3-D time-domain induced polarization tomography: a new approach based on a source current density formulation. Geophysical Journal International, 213(1), 244-260.

Ahmed, A. S., Revil, A., & Gross, L. (2019). Multiscale induced polarization tomography in hydrogeophysics : A new approach. Advances in Water Resources, 134, 103451.

Ahmed, A. S., Revil, A., Byrdina, S., Coperey, A., Gailler, L., Grobbe, N., ... & Hogg, C. (2018). 3D electrical conductivity tomography of volcanoes. Journal of Volcanology and Geothermal Research, 356, 243-263.

Loke, M. H., Gance, J., Truffert, C., & Leite, O. (2019, September). The Inversion of Vector Array Data Sets for 3-D Resistivity and IP Surveys. In 25th European Meeting of Environmental and Engineering Geophysics (Vol. 2019, No. 1, pp. 1-5). European Association of Geoscientists & Engineers.

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