

## 3.1 TIME DOMAIN ELECTROMAGNETICS



### Applications in Mineral Exploration

- Detection of conductive geological units from surface and from boreholes.

Configuration	Pros	Cons	Instruments
<b>Out- of- loop</b>	<ul style="list-style-type: none"> <li>▪ Economic borehole logging</li> </ul>	<ul style="list-style-type: none"> <li>▪ Very weak primary field at depth</li> <li>▪ Depth of investigation limited to 200 m</li> </ul>	Geonics <sup>(1)</sup>
<b>In - loop</b>	<ul style="list-style-type: none"> <li>▪ Perfect configuration for sub-horizontal conductors</li> </ul>	<ul style="list-style-type: none"> <li>▪ Very sensitive to conductive overburden</li> </ul>	Geonics <sup>(1)</sup>
<b>Moving - loop</b>	<ul style="list-style-type: none"> <li>▪ Reasonable coupling for all conductor orientations</li> </ul>	<ul style="list-style-type: none"> <li>▪ Difficult to operate in wooded or rugged terrain</li> </ul>	Geonics <sup>(1)</sup>
<b>InfiniTEM I</b>	<ul style="list-style-type: none"> <li>▪ Depth of investigation up to 500 m</li> <li>▪ Borehole configuration</li> <li>▪ Low sensitivity to conductive overburden</li> </ul>	<ul style="list-style-type: none"> <li>▪ Limited by the transmitter power</li> </ul>	Geonics <sup>(1)</sup>
<b>InfiniTEM II</b>	<ul style="list-style-type: none"> <li>▪ Depth of investigation reaching 1000 m</li> <li>▪ Sensitive to a wide range of conductors (<math>\partial B/\partial t</math> and B-field )</li> <li>▪ Low sensitivity to conductive overburden</li> </ul>	<ul style="list-style-type: none"> <li>▪ Low sensitivity to horizontally orientated conductors</li> </ul>	Terrascope/EMIT <sup>(2)</sup>

<sup>(1)</sup> TEM-57 transmitter coupled to two TEM-67 (240V/4800W) and PROTEM receiver

<sup>(2)</sup> Terrascope transmitter (600V/18000W\*) and SMARTem (EMIT) receiver

\* If RR > 20 Hz (minimum 12 kW to a lower RR)



### Examples

Case histories available on [www.ageophysics.com](http://www.ageophysics.com) look deeper!

- Geo-Echoes No. 7 InfiniTEM<sup>®</sup> – A new type of deep penetrating EM
- Geo-Echoes No. 8 Borehole InfiniTEM<sup>®</sup>
- Geo-Echoes No. 9 InfiniTEM<sup>®</sup> – Detection now proven up to 475 m
- Geo-Echoes No. 13 TDEM Numerical Modeling: a powerful tool
- Geo-Echoes No. 17 InfiniTEM<sup>®</sup> discovery on Coulon property
- Geo-Echoes No. 19 InfiniTEM<sup>®</sup> II
- Geo-Echoes No. 20 Scott Lake, yet another InfiniTEM<sup>®</sup> success