



Membrane Interface Probe Alternative technique of « conventional » drilling



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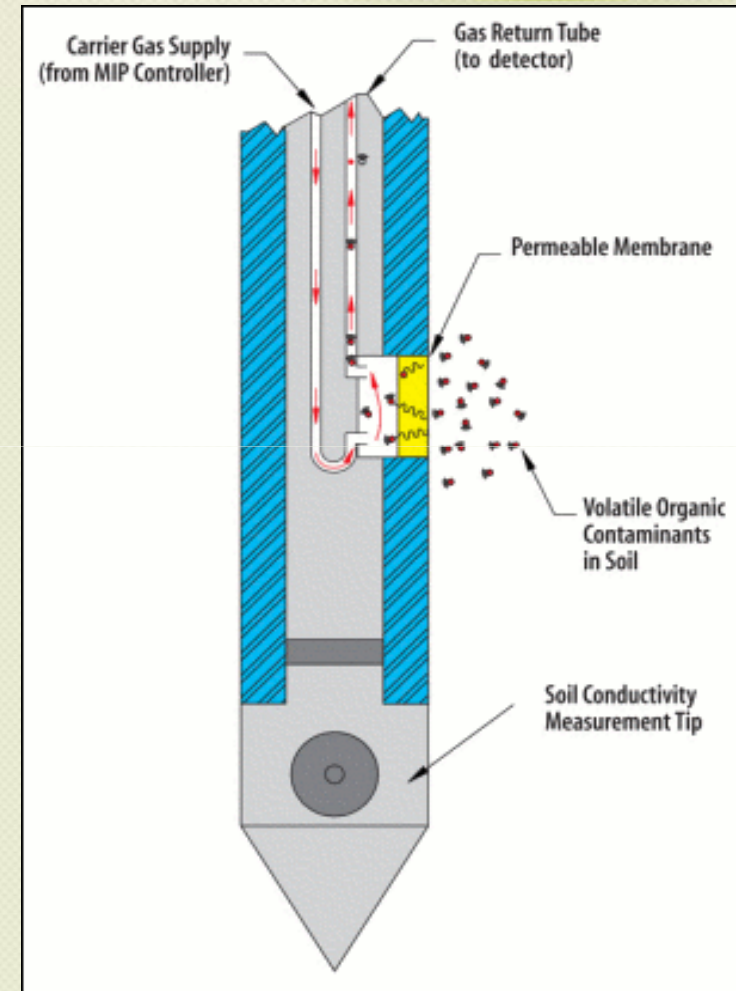


Introduction

- contamination measurements of volatile compounds in soil and groundwater is presently generally done by laboratory analysis of samples taken from boreholes and monitoring wells
- MIP allows in situ detection of volatile compounds with an interpretation that can be done immediately

Methodology

- developed by GEOPROBE[®]
- introduction of a probe into the soil
- membrane is placed in a heated block
- block is heated to 120°C





Methodology

3 gas phase detectors:

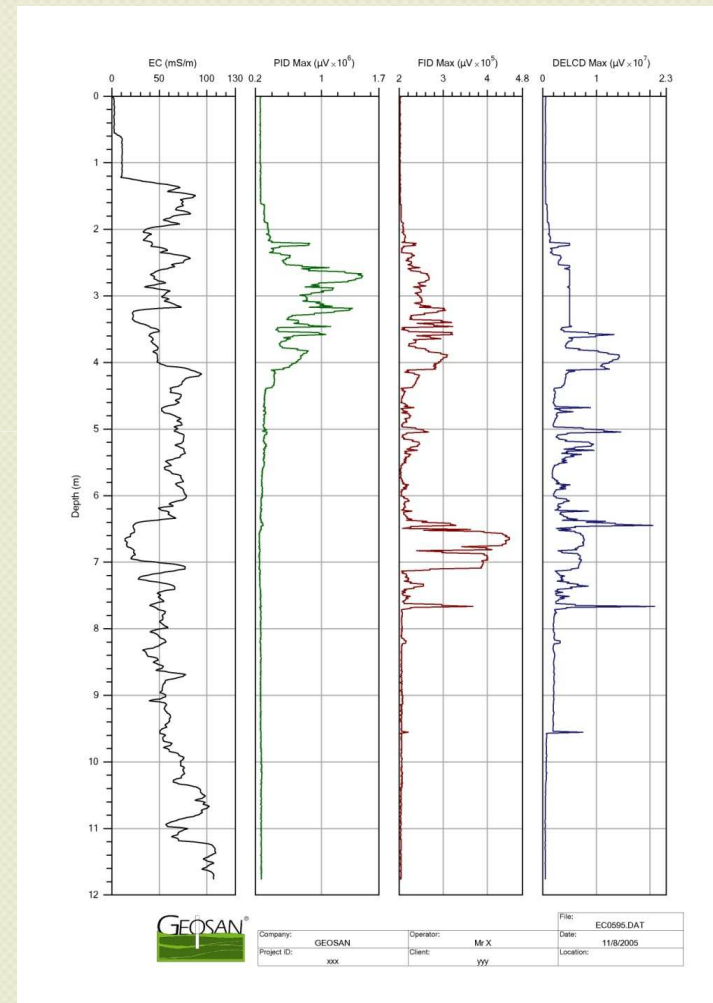
- - **PID detector** (aromatic compounds, volatiles hydrocarbons)
- - **FID detector** (volatile hydrocarbons, alkanes....)
- - **DELIC detector** (chlorinated compounds)





Methodology

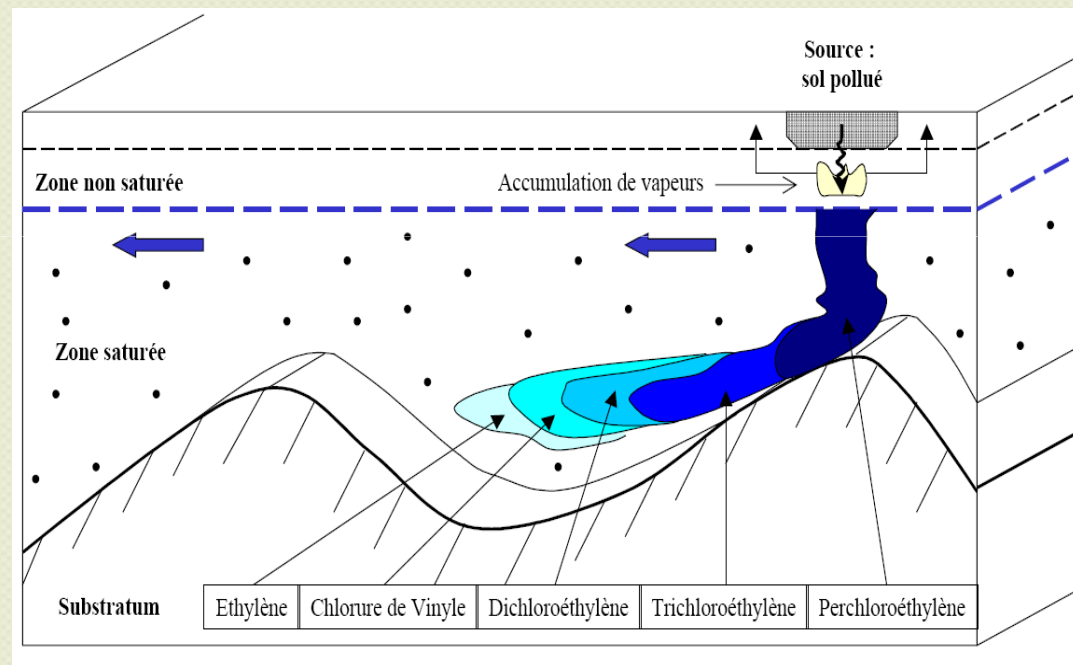
- Results are immediately shown on the surface laptop, which allows a progressive adaptation of the measurement strategy
- Soil conductivity and temperature are also measured to determine the nature of soil and the depth of the water





Advantages

- allows the measurement of compounds whose spread is difficult to characterize
- Pure phases of DNAPL and LNAPL are detectable.

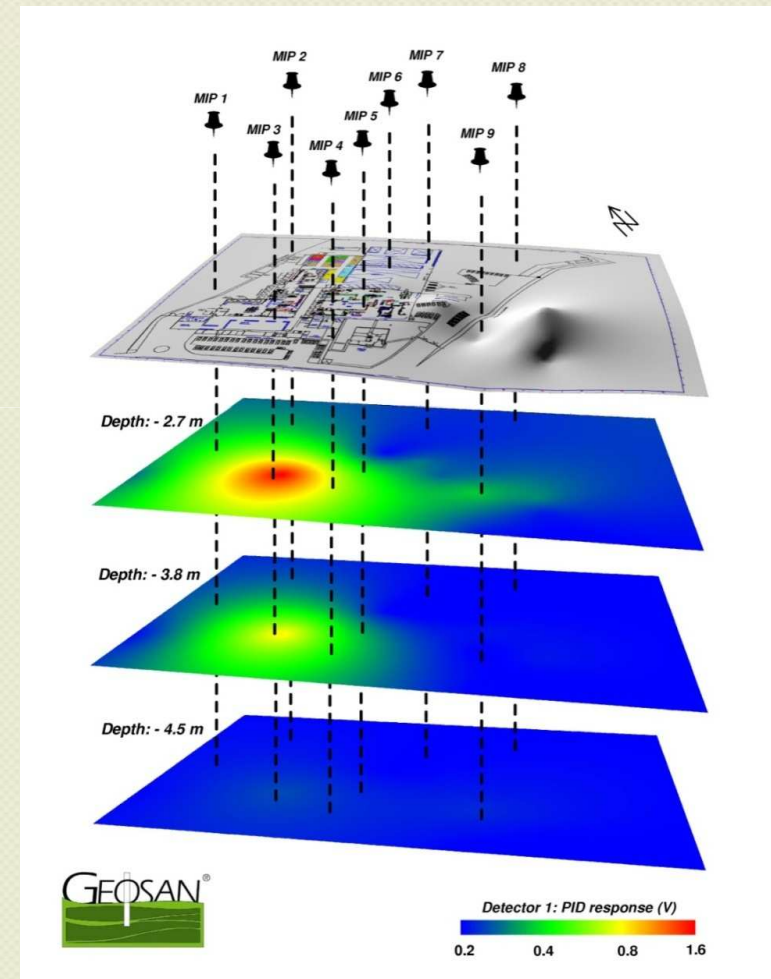


Source BRGM



Advantages

- semi-quantitative capabilities to delineate (vertically and horizontally) the area contaminated by volatile compounds to a depth of 25 m depending on geology
- makes it possible to obtain a three dimensional image of volatile compounds in function of depth in soil and groundwater





Advantages

- allows to reduce sampling costs and time
- can target the location and depth of sampling investigations by "conventional" drilling and monitoring wells to perform *a posteriori*





Advantages

- avoided proliferation of boreholes and monitoring wells
- limits the risk of transfer of pollution

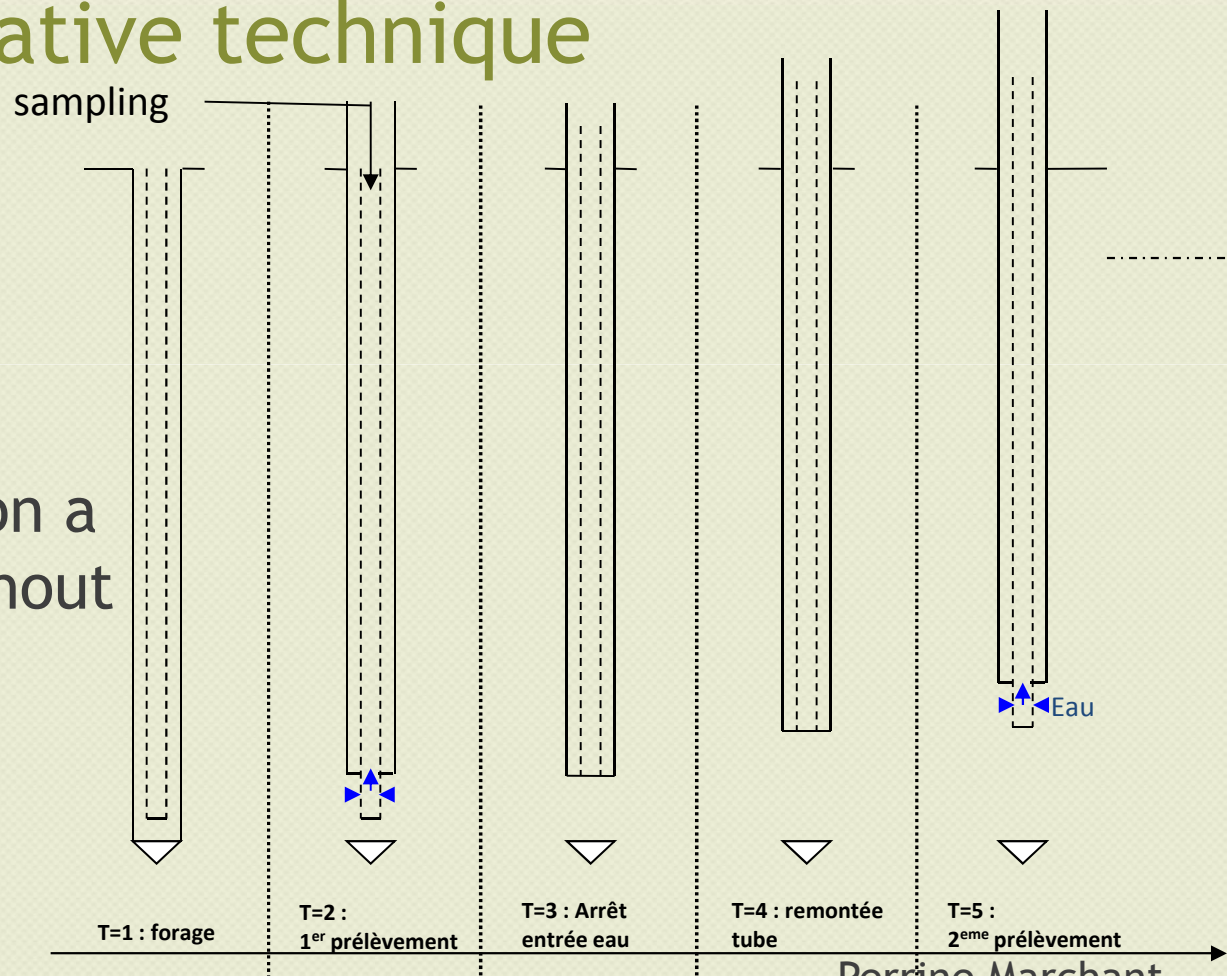




Other alternative technique

Direct Well

- Sampling of groundwater at different depths on a single drilling without placement of monitoring wells





Thank you for your attention

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- certified ISO 9001:2000 since 2006
- part of list “service specialists” developed by GEOPROBE® for MIP probe
- approved G1 in Belgium for drilling