

MEASUREMENTS OF SOIL RESISTIVITY AS APPLIED TO SOIL SURVEY

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— The soil electrical resistivity is not a parameter very much in use for the characterization of soils.

— The authors recall the principles of these measurements (fig. 1 and fig. 2) and the bases of the interpretation of these data in terms of soil mapping (fig. 3). The features of the application of these techniques to the studies of soils and superficial deposits are also described.

— Some examples of soil mapping in various situations are presented in order to point out the interest of these techniques in soil survey (fig. 4, fig. 5, fig. 6, fig. 7). They provide informations on particular vertical and horizontal structures in some sites and natural environments where classical techniques of investigation apply with difficulties.

— These methods are very interesting because they enable us to follow the evolution of these structures with time.

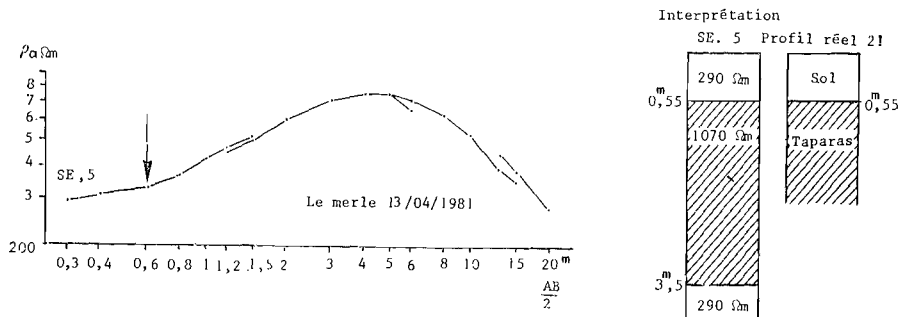


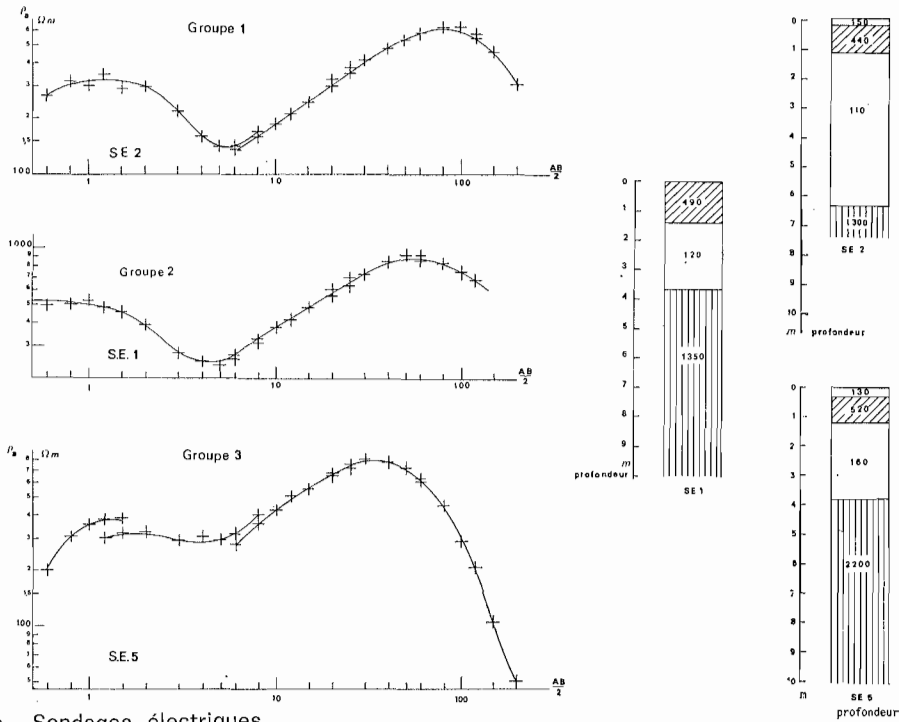
Figure 4 : Exemple of electrical sounding and interpretation.



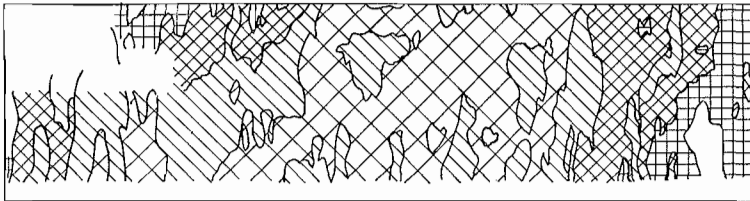
(Les résistances peuvent être transformées en résistivité en les multipliant par un facteur K correspondant à la géométrie du dispositif utilisé). K = 10,73.

Figure 5 : Map obtained from the electrical profiles using a square device (a = 1 m).

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a. Sondages électriques



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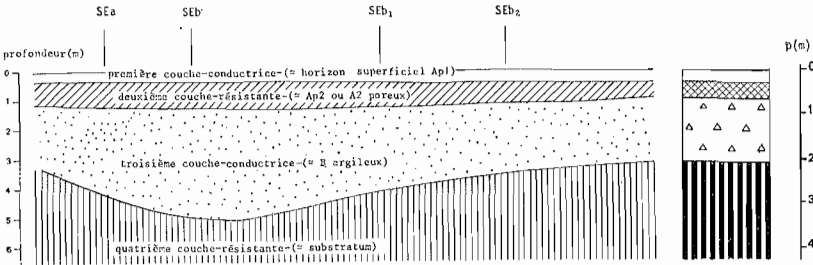
$$P = 500 \sqrt{\frac{\rho_a}{f}}$$

ρ_a ($\Omega \cdot m$)	P (m)	$\frac{P}{2}$ (m)
90	10,1	5
135	12,4	6,2
202,5	15,4	7,7
304	18,7	9,35
455	22,8	11,4

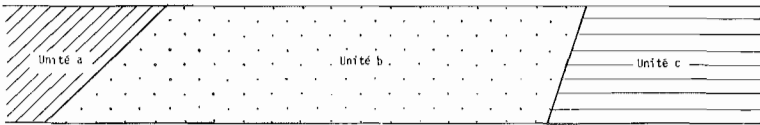
inférieure à 90 $\Omega \cdot m$
 de 90 à 135 $\Omega \cdot m$
 de 135 à 202,5 $\Omega \cdot m$
 202,5 à 304 $\Omega \cdot m$
 supérieure à 304 $\Omega \cdot m$

$\frac{P}{2}$: profondeur d'investigation

b. Carte isorésistive



c. Coupe interprétative



d. Carte pédologique schématique

Figure 7 : Study of bois de La Vialle