

INVESTIGATION OF MOBILE ELECTRICAL CHARGES IN SOILS FORMED ABOVE SULFUR-HYDROCARBON DEPOSITS

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Distribution of mobile electrical charges in soils is directed by numerous physical and chemical processes. Numerous researches on soil anisotropy, the charge of soil matrix, and soil cation exchange capacity (CEC) with electrical geophysical methods confirm that soil processes govern the electrical distribution of charges.

However, in most cases soil scientists study only top five meters of the soil, while geologists employ conventional geophysical methods, such as seismic and electrical tomography to investigate much deeper layers (up to 1000 m) and usually disregard the topsoil signal, attributing it to noise in geophysical signal.

Here we show a combined approach to study the vertical up-movement of the hydrocarbons, as CH₄ and H₂S gases in the topsoil. The practical approach is two-fold: to find recoverable deposits of hydrocarbons through only near-surface electromagnetic methods and also to design a system of bio- and phyto-reclamation of such badlands before and after hydrocarbon recovery.