

Problems of resistivity sounding application to groundwater investigations in desert areas.

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The resistivity sounding is by far the most suitable geophysical technique applied to groundwater exploration. However, some specific problems usually arise during investigations in arid regions.

Away from traditional and well known difficulties that may include high resistivity of surface layers, earthing of electrodes, contact resistance, and topography which can be, in most cases, overcome, still the main problem is due to the presence of near surface lateral inhomogeneities and their implications on the quality of the resulted curves.

In order to restore the meaningful signal from the pertaining noise, a simple rectangular low-cut frequency filter can represent a method of smoothing distorted curves as a necessity prior to mathematical inversion to subsurface electrostratigraphic distribution. The choice of cut-off frequency is based on frequency analysis of the field data.

Another approach is the transformation of the deformed field curves to the pole-pole domain and interpreting the obtained curve either in this domain or re-transforming it once more to the Schlumberger domain with its familiar procedures.

Some field examples of deformed resistivity curves are presented to illustrate this processing.