INFLUENCE AND UTILIZATION OF ELECTRODE COMBINATION IN DISTRIBUTED FULL-WAVEFORM INDUCED POLARIZATION DETECTION

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Potential electrode space is an important factor in induced polarization exploration to balance the signal strength and resolution. How to choose an appropriate space is a difficult task because both the level of noise interference and the size of subsurface structure are unknown. By testing numerical model and acquired data, we found that, IP data of a small potential electrode space can achieve a high resolution, meanwhile, data of large spaces can suppress the influences of noise interference and shallow inhomogeneity. Aiming to take both resolution and anti-interference into account, we proposed an electrode combination method. Through multi-channel synchronous observation, potential data of various electrode spaces can be obtained by summing the original data of adjacent survey points. Then data of all the spaces were used to invert the underground electrical information. This method is applied to a distributed full-waveform induced polarization detection. By comparing the inversion results using IP data of one single space and that of multi-spaces, we found that, the deep anomaly can be highlighted, and the fitting error can be reduced.