

Probability tomography and wavelet analysis of self-potential data

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Self-potential method is a kind of near-surface geophysical technique, which has been adopted in exploration of metal ore, monitoring of contaminants and natural hazards. This study focuses on the self-potential data processing. The source element occurrence probability tomography can give the probability of the source location and the charge property. In order to improve the limited resolution of the probability tomography for the multiple sources, we combine the charge occurrence probability tomography with the complex wavelet transform method in self-potential data processing. We apply the complex wavelet analysis the synthetic self-potential data obtained from the forward modeling of some given models. We also apply the combined probability tomography and the continuous complex wavelet analysis to the synthetic self-potential data. This study is aiming at providing an effective continuous monitoring method of ground water flow.

Keywords: Probability tomography, wavelet analysis, self-potential