



The Strategy of Frequency Selection of FWI in A Constant-offset Survey

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Abstract: Full waveform inversion (FWI) in frequency domain is a widely used method. A few discrete frequencies can obtain high resolution inversion results by full waveform inversion in frequency, for which result of low frequency inversion can be used as the initial model of high frequency inversion in frequency domain. The selection of frequency group should take account of both computation and inversion effect. Research suggested that the larger the range of offsets, the fewer frequencies are required, but the observation system in field exploration is situation-limited. Therefore a effective strategy of frequency selection in a constant-offset of full waveform inversion in frequency domain is needed.

This study used the frequency spectrum analysis method based on seismic observation records to select ranges of frequencies, dominant frequency and multi-channel spectrum curves for selecting frequency group, inversion and comparison were carried out by different intervals of frequency groups in the same model and constant-offset. The optimal method for frequency group selection was obtained, which can satisfy the requirement of inversion effect and time-saving. Result of full waveform inversion using this method was compared with method of previous research, which proved this method was more practical.