

EFFECTIVE WAVELET ESTIMATION BY MULTIPLE ELIMINATION (B-41)

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A prestack multiple elimination procedure has been developed to eliminate all surface related multiples without any knowledge of the subsurface structure. For this multiple elimination procedure the reflection characteristics of the free surface, the scale factor in the data and the wavelet in the data should be known. As these quantities are not known in advance, they are estimated by redefining the multiple elimination procedure in an adaptive scheme. As long as the right wavelet is not used as input for this scheme, residual multiple energy will be left in the data. By minimizing the total energy in the data, the effective wavelet combined with the data scale factor and the reflection coefficient of the free surface can be estimated and the multiples are eliminated simultaneously. The proposed method is especially suited for estimating any phase spectrum of the effective wavelet. Hence, the method has the unique characteristics that it can determine the wavelet from the data without using the minimum-phase assumption. The method will be illustrated by some examples.

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