

## **Retrieve True Seismic Amplitude for Direct Hydrocarbon Indicator using Q-Guided Wavelet Transform (Arthit Field)**

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### **Abstract**

Channels and anomalous low velocity overburden are typical of viscoacoustic media in fluvial deposition environment and useable for stratigraphic hydrocarbon indicators. Unfortunately, seismic wave propagation through this media is attenuated, causing severe signal dissipation. This creates many issues in seismic processing and interpretation, especially AVO and inversion analysis. Conventional amplitude corrections are more suitable for compensating surface related amplitude distortion, but ineffective for overburden effect. Thus, developing overburden related amplitude compensation technology is critical. A new method called Offset-dependent Q-Guided Wavelet Domain Amplitude Correction is designed to overcome overburden related amplitude distortion such as beneath channels or shallow gas. With frequency dependent Q-model assumption, this method estimates residual attenuation from the difference between local and background attenuation variations. After wavelet transforming the input to frequency domain, then the amplitude variations are measured as the gradient differences of the two lines from logarithmic amplitude of background and local Q for each frequency and then fitted to a frequency-constant Q-model. The residual Q-model is then applied to the data before transforming back to T-X domain.