

Interpretation of the A" and B" Reflectors in the Eastern Part of the Colombian Caribbean Offshore. An Approach to the Seismic Stratigraphy of the Southern Caribbean.

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ABSTRACT

Geologic interpretation of Caribbean Offshore seismic data can be achieved using seismic analysis techniques as spectral decomposition that is for detecting low and high frequency shadows associated with different types of bedrock in frequency domain. Spectral decomposition provides a novel means of using seismic data and the Discrete Fourier Transform (DFT). By transforming the seismic data into the frequency domain via the DFT, the amplitude spectra delineate temporal bed thickness variability while the phase spectra indicate lateral and vertical geologic discontinuities. Studied area is Caribbean offshore of Colombia and the dataset used includes well information of DSP Site153 and 2D seismic sections. In Time Domain B" reflector was identified as inter basement layer. This reflector is continuous, tectonically affected with reverse faulting associated to a regional strike-slip tectonics (the Aruba Gap). Sediments near A" reflector, wedge over it, with onlap truncations. Sediments under A" wedge over the basement highs. Interpretations were aided with the seismic response of the amplitudes and frequencies where these properties suffer attenuation, reduction the signal level, because near to the crystalline basement, a energy level reduction occurs. Interpreted seismic reflectors are: Oceanic Floor; Top of the Pliocene-Pleistocene Sequence; Top of Late Miocene Carbonate sequence, this sediments are thin beds of sands and clays rich in carbonate, that conform the Early Eocene – Middle Miocene sequence; top of the Cretaceous sediments, principally limestones and carbonate rich cherts. Proposed reflectors were correlated with the seismic units of Bowland (1993), of the Western part of the South Caribbean.

KEYWORDS: A" Reflector, B" Reflector, Colombia, Caribbean Offshore.