GEOPHYSICS POSTER 10

APPLICATION OF SEISMIC ATTRIBUTE FOR CHANNEL IMAGING IN THE MALAY BASIN

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A seismic attributes is any measure of seismic data that help us visually enhance or quantify features of interpretation interest (Chopra and Marfurt, 2007). Amplitude, Frequency and Phase represents different aspect of a seismic reflection that brings outs different aspects of geologic features.

The purpose of this paper is to document the application of seismic attributes for channel imaging in the Malay basin at basin wide scale. Presently, channel characteristic in the I-Group has not been fully understood. Therefore, the utilization of mega merged data for this project is to help us better understand of channel morphology/characteristics in the Malay basin through the application of seismic attributes.

The area coverage of this study is approximately 40,000km2 which includes the 3D mega merged volume in the southern half of the Malay basin and fifteen (15) individual 3D seismic volumes. Two (2) major horizons, I-TOP and J-TOP were interpreted for basin-wide interpretation of I-Group interval as shown in Figure 1. From this, twenty (20) strata/proportional slices were generated using stratal slicing techniques that were associated to I010 to I140 sands of the I-Group.

Seismic attributes analysis on a small volume was carried out to identify the best attribute for channel imaging. The result shows that Root Mean Square (RMS) attributes reveals the anomalous amplitudes which represent channels outline (Figure 2) while frequency volume created from Spectral Decomposition has further enhanced the channel images (Figure 3). Future similar works could be expedited using this methodology and better define the channel outline.

Results from this regional study shows that a combination of RMS amplitude and Spectral decomposition is the effective seismic attributes that reveals channel feature which were calibrated with core and well logs data for validation. As a conclusion, combination of multi-attributes and geological concept is a powerful aid to seismic interpretation and geomorphology interpretation that could lead us to better prospect identification and contributed to exploration success

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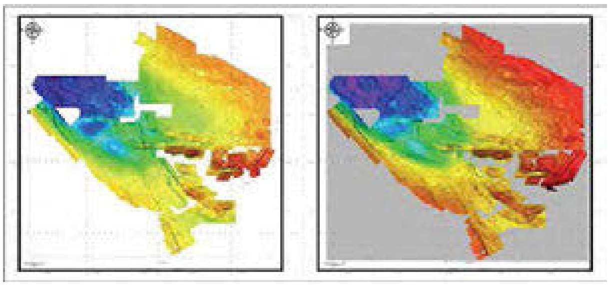

Figure 1: Interpreted time structure map of H and J TOP across the study area.

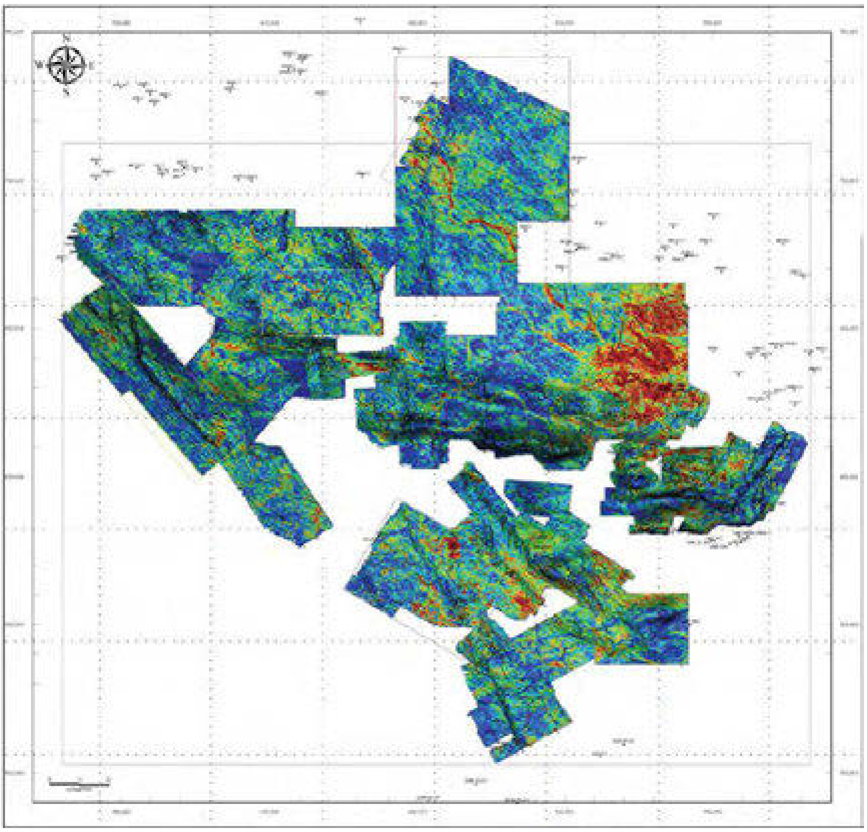

Figure 2: RMS amplitude map revealing channel features of Group I Interval.

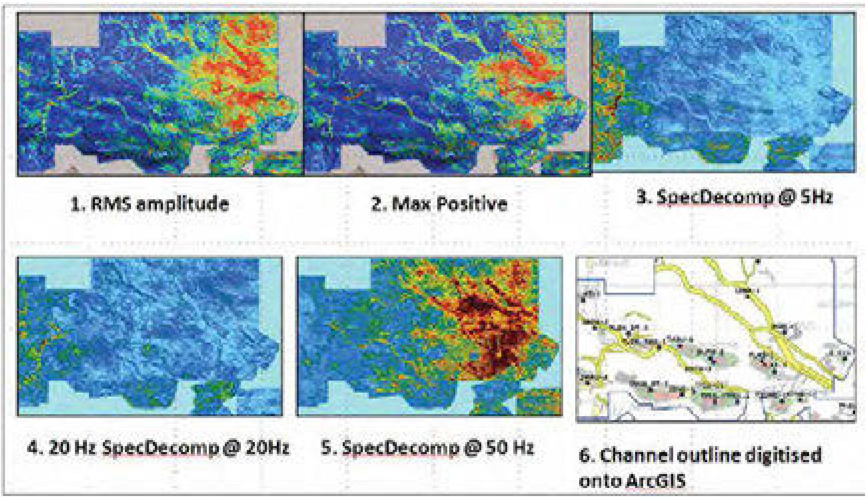

Figure 3: Spectral Decomposition technology for Imaging channel below coal layer.