

Seismic attribute and log data correlation at IODP Site C0002

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Core-Log-Seismic integration study is regarded as one of important studies in the scientific drilling researches. Seismic attributes are calculated from seismic traces and often expose new information relative to the conventional seismic section. We calculate several seismic attributes from the high quality 3D seismic volume and correlate them with the logging data at IODP C0002 site in the Kumano forearc basin in the Nankai subduction margin. In this study we computed following seismic attributes; instantaneous envelope, instantaneous frequency, dominant frequency, average frequency, instantaneous Q, P wave impedance. We obtained the mean value of each attribute in each Log Unit, and Zone A and B determined at site C0002 from LWD data. Mean values of average frequency and dominant frequency show difference in each Log Unit and Zone. Frequency in Zone A, where concentration of hydrate is strongly suggested, is higher in 5 Hz than that of Log Unit II. On the other hand, frequency in Zone B, where the existence of free gas is suggested from log data, is ~5 Hz lower than surrounding Unit II. Attribute values are perturbed in each Log Unit which may suggest that seismic attributes have a potential to provide detailed information with high vertical resolution.

We also produced various kind of crossplots with seismic attributes and log data. We used gamma ray and ring resistivity log data which were converted to time domain with T-D curve and resampled into 4ms after applying anti-aliasing filter. We will report results from this analysis.