

## **Lithological Control on Gas Migration and Systematic Distribution of Gas Hydrates at IODP Site C0002, Kumano Forearc Basin**

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During Integrated Ocean Drilling Program (IODP) Expedition 314 at Nankai Trough, located on the subduction margin off-shore Kii Peninsula, five sites were drilled and logged with logging-while-drilling (LWD). A 935-m-thick basin fill was penetrated and logged in Kumano Forearc Basin at Site C0002. The basin fill consists of repeated turbidite sequences with 100 m cycle intercalated with background hemipelagic mud. A gas hydrate-bearing zone was identified in the interval of 218-401 mbsf above a bottom-simulating reflector (BSR) by indirect evidences of electrical resistivities and P-wave velocities. More than sixty sharp resistivity spikes were identified and most of them are developed in the lower portion of sand layers. Concentration of hydrates estimated from thickness and frequency of resistive layers occurs localized near the base of the BSR with concentrations gradually decreasing upward. Hydrate occupation ratio within sand layers also decrease upward from 90% to 20%. Below the BSR, a number of turbidite sequences were identified and the thickest turbidite zone occurs at 482-547 mbsf as a possible gas/fluid conduit to produce hydrates. Distribution of turbidite sequence plays a essential role as potential conduits and containers for gas hydrate generation in Kumano Basin. Detailed observations of the LWD logs demonstrate a possible lithological control on gas migration and systematic distribution of gas hydrates in turbidite-dominant marginal basins.