



Porosity in Nankai accretionary wedge, Kumano Transect, estimated from LWD resistivity data

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A precise knowledge of the porosity distribution is fundamental to understand the present structure and evolution of accretionary wedges and their fluid content and circulation. Reciprocally, fluid pressure and circulation in accretionary wedges could play a major role in determining deformations in the wedge, both in term of localization and behavior. They could also play a major role in determining seismic versus aseismic behaviour of the plate boundary.

The IODP Nankai Trough Seismogenic Zone Experiment is a great opportunity to access to physical properties data in the context of an accretionary wedge in a subduction zone where great earthquakes have repeatedly occurred in the past. The first stage of this integrated project for drilling, sampling and instrumenting the seismogenic portion of the plate boundary took place between September 2007 and February 2008. During the first Chikyu expedition 314 (September-November 2007), five sites were drilled using Logging While Drilling techniques. The drilled sites include the décollement at the front of the wedge, as well as the major splay fault, and the forearc basin and older wedge below it at the most landward site.

Neuron porosity and density data could not be fully retrieved at all sites. Moreover these data can be much affected by poor hole conditions. Resistivity data could be retrieved at all sites. Porosity can be estimated from resistivity data using Archie's law.

A calibration of Archie's law parameters is necessary as well as a good knowledge of the hole temperature. The resistivity data thus allow to provide a porosity estimate at all sites. These estimates are compared to core data acquired during expedition 315 and 316. Deviations of the estimated porosity from normal compaction curves occur at different places. These anomalies are discussed in term of fracturation, fluid presence, lithological variations and sedimentation rate.