

Stress-drop estimation from geophysical logs in Shikoku basin of Exp. 322-C0011, NanTro-SEIZ

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Nankai Trough region in southeast Japan is invested the comprehensive studies of the subduction zones. For understanding the stress state and geological properties in the shallower Shikoku basin, two sites were drilled in open-ocean sediments. The resistivity Logging while Drilling was run in C0011A and full cored was applied in C0011B which preparing for the measurements of physical prosperities (MultiSensory Core Log, MSCL.). In the LWD logging, the notability breakout anomaly was observed in the depth 615 mbsf. NanTroSEIZE scientists developed many researches about the stress orientation and magnitude estimation by logging data in Nankai Trough. In this study, we constrained the possible horizontal principal stress azimuth and magnitude in entire C0011A borehole. The dislocation of breakout orientation indicated this drilling drilled through the fault and stress drop can be determined by the fault geometry. The close 90 degree rotation implied the 100% stress drop which the magnitude equal to 2.5 MPa. Our simulation displays the magnitude of horizontal principal stresses before and after the fault slip. The low rock strength (0~20MPa) and weak fault would be the necessary conditions to satisfy the dislocation model and the observations.

Keywords: stress drop, breakout, logging, Logging while drilling, stress polygon