

Japan Geoscience Union Meeting 2011

(May 22-27 2011 at Makuhari, Chiba, Japan)

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SSS035-P20

Room:Convention Hall

Time:May 25 14:00-16:30

Stress state analyses at the subduction input site, Site C0012, Nankai Subduction Zone, using anelastic strain recovery

Yuzuru Yamamoto^{1*}, Weiren Lin², Hirokuni Oda³, Timothy B. Byrne⁴, Yuhji Yamamoto⁵

¹IFREE, JAMSTEC, ²Kochi Institute for Core Sample Research, ³GSJ, AIST, ⁴University of Connecticut, ⁵Kochi University

Three-dimensional stress orientation and their stress magnitudes in the basement basalt and overlying sediments at subduction input site, IODP Site C0012 was examined using anelastic strain recovery (ASR) analyses. The ASR results in the sedimentary sequence indicate the maximum principal stress axes were nearly vertical. The stress magnitudes of Sigma 2 and 3 are very close indicating that stress states in the sedimentary sequence are state at rest. On the other hand, ASR results in the basement basalt show that the maximum principal stress axis was nearly horizontal and oriented NE-SW, almost parallel (or slightly oblique) to the trench axis. The minimum principal stress axis plunges steeply SE. The stress state of the basement basalts suggests strike-slip or thrust (reverse fault) regimes, which is very different from state at rest condition, theoretic stress condition on the ocean floor far from subduction zone. The basement basalt in the subduction input at Site C0012 has been experienced trench-parallel shortening. The stress orientation in the basements basalt is consistent with the focal mechanism of the earthquakes occurred the vicinity. The estimated stress magnitude shows small variation between each principal stress, implied that direction of principal stress could be rotated easily in association with tectonic-induced local stress variation. Such stress orientation in the basement basalt therefore apparently formed due to hinge extension on the bending Philippine Sea Plate associated with subduction.

Keywords: NanTroSEIZE, ASR, Stress, Input site