

Paleostress analysis by using faults in the core samples from Kumano Ichiura and Kihoku Miyama sites, Kii Peninsula

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Stress history in the forearc region of the Nankai trough subduction zone was determined by drilling of boreholes at the Miyama and Ichiura observation wells which are located at the north and south margins of the northern unit of the Kumano Acidic Rocks, respectively, in the eastern Kii Peninsula, SW Japan. The multiple inverse method was applied to fault planes within the core samples to estimate paleostresses, and the borehole breakout was used to estimate the present stress. The results of the multiple inverse method indicate that both the Miyama and Ichiura observation wells have similar stress histories, where they experienced E-W compressive stress first, NE-SW extensional stress second, and then N-S compressive stress. The present maximum horizontal compressive stress (sh_{max}) at the Miyama observation well trends E-W, which is consistent with the present regional stress in southwestern Japan and different from the final stage of stresses determined by the multiple inverse method. On the other hand, the present sh_{max} at the Ichiura observation well trends NNE-SSW, which is almost consistent with the final stage determined by the multiple inverse method. These indicate that the boundary between the E-W compressive stress representative in southwestern Japan and N-S compressive stress which is affected by the subduction of the Philippine Sea plate has gradually migrated southward.

Keywords: Kumano, stress, core, Nankai Trough, earthquake, Multiple inverse method