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熊野沖前弧海盆北縁断層の高解像浅部地質構造
High resolution shallow structures of the northern marginal fault of the forearc basin off Kumano

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Investigation of shallow deformation structures is significant for understanding of recent tectonic activity. We carried out deep towed subbottom profiling survey by ROV NSS (Navigable Sampling System) during Hakuho-maru KH-11-9 cruise. High resolution mapping of shallow structures was successfully conducted by a chirp subbottom profiling system. ROV NSS also has a capability to take a piston core with a pinpoint accuracy. The studied area is the northern margin of the Kumao Trough. The Kumano Trough is a well developed forearc basin associated with the growth of the accretionary prism that has been examined by IODP drillings. The basin is characterized by pervasive large-scale folds trending ENE-WSW. The northern basin margin is divided into two domains, with water depth differences of 14 m: northern margin at a water depth of 2028 m and southern main basin floor at a water depth of 2042 m, by ENE-WSW trending step. An asymmetric anticlinal fold suggesting activity of a blind fault is recognized beneath this step on multichannel seismic reflection profiles. Subbottom profiles show that reflectors of both fold limbs bend up and thin out toward the fold axis. The northern limb is completely filled by sediments and the southern limb corresponds to the gentle slope between the northern margin and the main basin floor. Acoustically transparent layers are dominant at upper 5 m sequences of the both limbs. These layers seem to correspond to Holocene sediments after approximately 10,000 years ago by adjacent core sample ages. Because bend structures of shallow strata near the fold axis attribute to relative uplift of the fold axis region, vertical displacement for the past 10,000 years is estimated to be 2.5 m. Further deep structures revealed by SBPs show accumulation of displacement with depth. Moreover, MCS profiles suggest strike slip deformation around this anticline based on existence of flower structures. Therefore, it is inferred that the northern marginal fault located below this fold is active for more than 10,000 years at least.

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