

Japan Geoscience Union Meeting 2011

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

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SCG064-03

Room:202

Time:May 24 14:45-15:00

Dynamic aspect on unconformity in the trench landward areas

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Trench landward slope area has been repeatedly changing from stable to unstable. Development of accretionary prisms has been explained by many researchers, but the theory is simply based on earth pressure theory. Among the bulldozer models, the critical stage is between the passive and active earth pressure conditions when the unstable zone remains to sink for a depositional basin above unconformity. Eroded materials from the slope fill the depressed area, showing the change of stable to unstable of the slope. Thus to interpret this change by means of the study of unconformity makes the discussion very dynamic. Most of the examples from the submarine Nankai trough to onland Miocene-Pliocene Miura-Boso area are the best for such explanation, which include systematic and repeated change of development of trench slope. Jump of trench to oceanward is one of the causes but seamount (or ridge) subduction is an occasional principle as shown in the Tenryu Canyon by Kawamura (GSAB 2009; Springer in press). Another important example comes from the Cretaceous to Miocene forearc areas from Hokkaido to off Kashima of the Japan trench realm. Many unconformable stages in Paleogene to Miocene off Fukushima Prefecture and surrounding area are explained by much larger tectonic change, probably related to the Japan Sea side tectonism including opening and spreading of the Japan Sea during these stages.

Keywords: trench landward area, forearc basin, accretionary prism, unconformity, tectonics