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Present day comparison to the past convergent margin tectonics in Western Pacific by submersible dives

OGAWA, Yujiro[1*] ; KAWAMURA, Kiichiro[2]

[1]No affiliation, [2]Yamaguchi University

Although some people believe that catastrophism overcomes uniformitarianism in the geological history, yet the concept of The present is a key to the past is adoptable and adaptable to the general understanding in a generic space and time dimension. As for the convergent margin geology and tectonics, the present is observable mostly under the sea by coring and submersible research, while the past is on land. Through various expeditions to the Japanese trenches, including Japan trench, Boso triple junction area, Sagami trough and Nankai trough in addition to some Izu-Bonin-Mariana trenches (Ogawa et al. (eds.) 2011 Springer Solid Earth Series 8), we conclude the best way of classifying these types of margins is into three categories: 1) erosion and collapsing, 2) partial accretion, and 3) full accretion. The Japan trench is known as a typical erosional type although a small scale accretionary prism has developed in its toe, partly during the 2011 Tohoku earthquake (Kodaira et al., 2012). However, this prism may be a temporary feature that will be recycled by large scale erosion and collapse associated with huge scale landsliding (Kawamura et al., 2012; Strasser et al., 2013). The landward side of the Sanriku Escarpment is largely underlain by Miocene diatomaceous, calcite-cemented breccias that show tectonic erosion and collapse has occurred during the past 10 Myrs (Ogawa, 2011). The Boso TTT triple junction is another example of a large collapsed margin, in which under the thin cover of Pleistocene are recycled Miocene diatomaceous sediments of 15 Ma that can be mapped from the Bonin (Ogasawara) trench to the south, north to Boso on land (Ogawa and Yanagisawa, 2011). Most of the on land Miocene to Pleistocene accretionary prisms in Miura-Boso peninsular areas (Emi, Miura and Chikura prisms) are the result of accretion from the Izu forearc side to Honshu, and the trench sedimentation and accretion style is well correlatable to the present Nankai trough section (Kobayashi, 2002). Thick trench fills form fold-and-thrust belts in which methane-supported chemosynthetic bio-communities with calcareous concretions are developed on the splay faults between the forearc basin with many debris flows and mud diapirs. The structural styles in the present Nankai prism documented by the *Shinkai 6500* JAMSTEC expeditions (Kawamura et al., 2009, 2011; Anma et al., 2011 and others) are almost equivalent to the on land observations in the Miura-Boso areas as many duplexes, thrust faults, and isoclinal folds, commonly with layer parallel faults (Hanamura and Ogawa, 1993; Yamamoto et al., 2005; Michiguchi and Ogawa, 2009, 2011; Muraoka and Ogawa, 2011). Only the Pliocene to Pleistocene Chikura prism was developed from fully ponded trench fill sediments, which are equivalent to the present Sagami Bay of the northern Sagami trough (Ogawa et al., 1989). The type of margin, the erosional to collapsed type margin (Japan trench, Boso triple junction), a stepwise sector development of prism (Nankai prism), or a ponded trench fill prism (Sagami Bay) might be due to the type of trench-fill sediments; without, or partly filled, or fully sedimented.

(References) Anma et al. 2011 Springer Solid Earth 8, 169-196; Kawamura et al. 2009 GSAB 121, 1629-1646 doi: 10.1130/B26219.1; Kawamura et al., 2012 GRL 39, L05308, doi:10.1029/2011GL050661, 2014, Marine Geology 356, 44?49; Kobayashi, 2002 Marine Geology 187, 3-30; Kodaira et al., 2011 Nature Geosci. doi: 10.1038; Hanamura & Ogawa 1993 Island Arc 3, 126-141; Michiguchi & Ogawa 2009; GSASP480 249?262, oi:10.1130/2011.2480(12); 2011 Springer Solid Earth 8, 229-246; Muraoka & Ogawa, 2011GSASP 480, 233?247, doi:10.1130/2011.2480(11); Ogawa, 1989 Tectonophysics 160, 135-150; Ogawa, 2011 Springer Solid Earth 8, 39-52,; Ogawa & Yanagisawa 2011 Springer Solid Earth 8, 53-73; Strasser et al. 2013 Geology 41, 935?938 doi:10.1130/G34477.1; Yamamoto et al. 2005 Tectonics, 24, TC5008, doi:10.1029/2005TC001823.

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