Deformation textures and sedimentary structures, observed on the sidewall of the Kushiro Canyon, NW Pacific

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Dive surveys on the sidewall of approximately 400 m in height in the Kushiro Canyon, off Tokachi, NW Pacific Ocean were performed using the manned-submersible SHINKAI 6500 (hereafter 6K) during the cruise YK07-14 by R/V YOKOSUKA in the period 1 - 9 Oct. 2007. Dive 6K#1033 (dive scientist: Kiichiro Kawamura) and dive 6K#1035 (dive scientist: Tetsuya Miwa) were conducted in a normal fault zone, which is a boundary between landward slope and forearc basin, and is located approximately 50 km east to the epicenter of the 2003 Tokachi-oki Earthquake. We described in detail the deformation textures of the fault zone rocks as well as the sedimentary structures of constituent formations of the accretionary prism in question.

In both dives 6K#1033 and 6K#1035, the submersible SHINKAI landed on the bottom of the Canyon, and climbed up along the sidewall of the Canyon. At 3780 m and 3550 m depths, chemosynthetic biocommunities were observed. Most of the strata are deformed, and their strikes and dips are not constant. We collected rock samples from the five outcrops of the deformed strata. Large vein structures of approximately one cm width were observed by 6K#1033R-1 and 6K#1035R-1, and many microfaults were observed by 6K#1033R-2. Above 3480 m depth, continuous horizontal strata several tens of centimeters thick were observed. Some of the strata have boulder-sized clasts and can be called debrites. These observations are consistent to the previous seismic profiles. Based on the seismic profiles, the deformed strata correspond to the basal rocks and/or accretionary prism rocks, and horizontal strata are forearc basin sediments. Radiolarian fossils suggest that the accretionary prism rocks are the Lower to Middle Miocene and the forearc basin sediments are the Plio-Pleistocene.

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