

Glacial to Holocene changes in watermass structure in the western North Pacific

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In the modern North Pacific, no deep water is formed due to well-established halocline. Instead, well-ventilated watermass called North Pacific Intermediate Water (NPIW) at depths of about 300 to 800 m is distributed. The glacial Pacific Ocean had two water masses: well-ventilated and nutrient-depleted glacial North Pacific Intermediate Water (GNPIW) above ~2000 m and less-ventilated and nutrient-enriched deep water below ~2000 m (Keigwin, 1998; Matsumoto et al., 2002). Compared to today, the NPIW volume under glacial conditions was significantly higher extending down to about 2000 m, exhibiting pronounced hydrographic boundary at ~2000 m. The glacial Pacific watermass structure was reconstructed based on stable carbon isotopes of epibenthic foraminifera. However, there are several problems in the North Pacific: (1) poor calcium carbonate preservation particularly during the late Holocene hampers core-top calibration; (2) rare occurrence of epibenthic foraminiferal species (e.g., *Cibicidoides wuellerstorfi*) in the subarctic Pacific; (3) taxonomy of *Cibicidoides* sp. in the subarctic Pacific is ambiguous. Core MD01-2420 obtained from the western North Pacific off Japan was with high sedimentation rates (>20 cm/kyr) and no radiocarbon age reversal. Nearly continuous occurrence of *Cibicidoides wuellerstorfi* was confirmed. In this presentation, we will discuss on the significance and potential of glacial watermass structure reconstruction in the NW Pacific using depth-transect cores near Core MD01-2420.

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