Potential link of the Bering straight closure, increasing of deep water CO2 storage, and Mid Pleistocene Transition, noted from stacked Benthic foraminiferal Carbon and Oxygen Isotope evidence of IODP Exp. 323

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CO_2 storage history within the deep ocean at any climatic transitions provides intriguing insights toward understanding the Earth’ s Climate system. Several pieces of paleoceanograpic evidence, especially from high latitude, suggest changes in deep water CO_2 storage may play marked roles (or responses) along with the glacial-interglacial pictures. Importantly, deep water CO_2 increases witnessed at Mid Pleistocene Transition (MPT: 0.8-1.2 Ma) elsewhere imply that potential linkage of ocean carbon system toward the global Glacial Interglacial cyclicity. Unlike other high latitudes (e.g., N. Atlantic and the Southern Ocean), evidence from the northern Pacific (and the Bering Sea) has been exclusively limited in associations with poor preservation of calcareous fossils. Here we present species offset corrected for benthic foraminiferal $d^{13}C$ and $d^{18}O$ at a total of seven sites drilled during IODP Exp. 323 in the Bering Sea. Drilled sites are in the Bering Sea (2 sites, 850–2200 m), including those proximal to modern ocean winter ice margin (Bering Slope; 4 sites, 1000–3000m), partially represent regional deep ocean CO_2 storage back to 1.0 Ma. While $d^{18}O$ at each site present orbital scale age model, $d^{13}C$ represents regional (depth-transect) trends. Prior to 1.0 Ma, $d^{13}C$ of all sites showed similar values (-1.0 permil). After 1.0 Ma, marked $d^{13}C$ drops to -2.0 permil were only witnessed at 3 sites of the Bering Slope. Regarding regional $d^{18}O$ together, such regional $d^{13}C$ can be further interpreted as enhanced deep-water CO_2 rise associated with sea-ice extent over the Bering Slope and Beringia exposure during the glacial period after 1.0 Ma. Together with the coincident of $d^{13}C$ drops reported from elsewhere as in the Bering Sea, we hypothesize that ocean stratification due to sea-ice evolution (i.e., reducing ocean CO_2 leakage) after 1.0 Ma has brought strong influence global glacial-interglacial signals.

Keywords: Bering Sea, Mid Pleistocene Transition, stratification

