Six year-long time-series carbon and oxygen isotope records in the Bering Sea and the central subarctic Pacific during 1993-1999

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Carbon and Oxygen isotopes recorded within planktonic foraminifer shells have been used as one of the most powerful tools for paleoceanography. These isotope records are well known to reflect oceanographic conditions (e.g. temperature, salinity, nutrient supply, and CO_3^{2-} ion), where arbitrary planktonic foraminifer habits. Many cultural works have been demonstrated that there are taxon-specific disequilibrium relations along the environmental parameters with sea-waters. Studies using plankton-net also supports these ideas and they also pointed out that the habitat depth of subject taxon might vary regionally. Due to those regional variations, one must concern their exact habitat depth and influence of environmental parameters when paleoceanographic reconstruction is applied using by those isotopes at certain region.

Here we present six year-long temporal variations of carbon and oxygen isotope records of *Neoglobuoquadrina pachyderma* and *Globigerina umbilicata* in the Bering Sea (Station AB: 53.5 degree N, 177 degree W, trap depth 3198m) and the central subarctic Pacific (Station SA: 49.5 degree N, 174 degree W, trap depth 4812m) collected by sediment traps during Aug. 1993 through Jly. 1999. Comparison of those records with oceanographic environmental parameters revealed their partial influence of their disequilibriums as well as their habitat depth.

Since oxygen isotope records of these taxa showed significant identical seasonal variations at both stations (r = 0.92 at Station AB and r = 0.91 at Station SA), influences upon these isotopes with environmental parameters are considered to be at consistent for both taxa. Comparison of those records with expected oxygen isotope ratio using observed oceanographic parameters at certain depth indicated that oxygen isotope records of both taxa represent oceanographic changes at 20-40 m depth (for *N. pachyderma* r = 0.83 and 0.80; for *G. umbilicata* r = 0.81 and 0.78 at Station AB and SA respectively).

Contrary, carbon isotope records both taxa showed independent pattern (r = 0.26 at Station AB and r = 0.46 at Station SA). Furthermore, carbon isotope ratio of *G. umbilicata* showed notable lower value than those of *N. pachyderma* (0.85 permil VPDB at Station AB and 0.69 permil VPDB at Station SA as average). Since any oceanographic data with published equations did not fully explain those differences, there must be different disequilibrium or source (feeding habitat) of carbon to control their carbon isotope records.

Our results indicated that *N. pahcyderma* and *G. umbilicata* shells holds the oceanographic information at same depth around 20-40m in the Bering Sea and the central subarctic Pacific. Combined with this fact with their seasonal flux pattern reported previously, their oxygen isotope records found in the marine sediments for both taxa in the Bering Sea has great potential to reconstruct seasonal variation of oxygen isotope at 20-40m depth. On the other hand, their carbon isotope records in the marine sediments must be great attention, because there are not fully sufficient controlling factor controlling them at this point.