

Regional radiocarbon marine reservoir ages in Hokkaido, Japan reconstructed from pre-bomb kelp specimens

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Radiocarbon measurements have been widely utilized for archaeological dating as well as paleoenvironmental reconstruction. Accelerator mass spectrometry (AMS) enables us to use milligram to sub-milligram samples thus higher spatial density reconstruction of radiocarbon marine reservoir ages can be obtained. This is particularly important where several ocean masses converge/diverge depending on the position of oceanic front and Hokkaido is located in such regions. However because of atmospheric nuclear bomb tests conducted until mid 20th century raised natural background level higher thus masks natural pre-bomb period's marine reservoir ages. Yoneda et al. (2007) reported marine reservoir ages in Hokkaido region using five shell samples ranged from $\Delta R = 34$ to 420 years shows this effect. In this study, we increase the density of sampling sites that 20 kelp samples collected predate 20th century bomb tests era to obtain much higher spatial coverage of ΔR in Hokkaido region.

The kelp materials used for our study were collected by the Faculty of Fisheries Sciences Hokkaido University and have been kept at the University Museum of Hokkaido University. Those samples were collected between 1880s and 1940s. Our data suggested that the ΔR values of this region are varied depending on the magnitude of influence from different currents in the region. The present results clearly demonstrated that marine specimens, such as kelp preserved at museums can be used for reconstructing paleo- ΔR . They also suggest the importance of high spatial resolution of reconstructing the ΔR to obtain much accurate ages using radiocarbon dating method.