Climatic implications of pre-aged carbon incorporation to the Lake Biwa sediments during the past 50,000 years

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The ^{14}C age of bulk sediment can be influenced by several factors: for example, 1) hard water reservoir effect of aquatic organic matters by dissolved carbon originating from ^{14}C-dead calcareous rocks or decomposed organic matters in sediment, and 2) incorporation of pre-aged terrestrial organic matter from the lake watershed. We have developed a method for quantification of pre-aged carbon incoporation of lake sediment using Fourier transform infrared spectroscopy (FTIR). FTIR spectra of bulk sediments were calibrated to infer measure of pre-aged carbon incorporation (PACI=^{14}C(bulk sediment)/^{14}C(plant remain). Using the PLSR calibration model, we estimate a high-resolution PACI profile of a 18.5 m-long sediment core from Lake Biwa (BIW07-6) covering the radiocarbon timescale. Here, we discuss the PACI profile in relation to the century to millinim-scale climatic changes in East Asia.

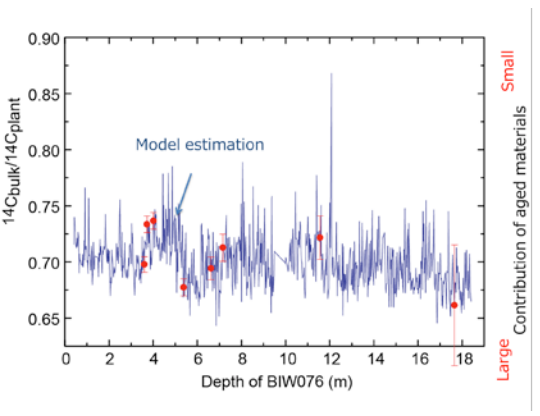

Figure 1. Estimation of pre-aged carbon incorporation to the sediment form Lake Biwa (BIW07-6)