

Toward an establishment of "Standard Paleosite" in and around Japan

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Varved sediment obtained from the Lake Suigetsu, central Japan, provides a terrestrial radiocarbon calibration model and a chronology of paleoenvironmental change during the last 70,000 years (Nakagawa et al., in press). Likewise the Lake Suigetsu, varved sediments were found in the Lakes Ichinomegata and Ogawara, northern Japan. These varved sediments have a big potential to establish high-resolution chronology to reconstruct past climatic changes. The western North Pacific is known as a terminal region of the great ocean conveyor. In general, ¹⁴C ages of the surface water are older than the atmospheric values (marine reservoir effect). The North Pacific has very old ¹⁴C ages. Because of the large marine reservoir effect, it is hard to establish reliable age model of marine sediment cores in the North Pacific. Further, there are large uncertainties of past marine reservoir effect in the glacial to deglacial periods.

If we can tie chronologies between Lake Suigetsu sediments (and other varved cores) and marine sediment cores, we will be able to evaluate past marine reservoir effect around the Japanese Islands. Reconstruction of the past marine reservoir effect reduces age model uncertainties and helps understanding past ocean circulation. A key for the connection is tephra. Tephra deposited in the Lake Suigetsu provide precise chronology. We propose an application for the tephra chronology in the Lake Suigetsu to marine sediment cores around the Japanese Islands by collaborative work between lake and ocean paleo-communities.

Keywords: Age model, Carbon cycle, Glacial Interglacial cycle, Tephra, Varved sediment, Marine reservoir effect