The ‘Suigetsu Varves 2006’
Terrestrial Radiocarbon Calibration Dataset


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Calibration is a fundamental stage of the radiocarbon (¹⁴C) dating process. However, the present limit of direct, non-reservoir-corrected, atmospheric ¹⁴C calibration is 12,550 cal. BP (Reimer et al. 2009), with approximately three quarters of the ¹⁴C timescale necessarily calibrated via less secure, marine records.

The varved sediment profile of Lake Suigetsu, central Japan, offers an ideal opportunity from which to derive an extended terrestrial record of atmospheric ¹⁴C across the entire range of the method. This site was first exploited for radiocarbon calibration purposes by Kitagawa and van der Plicht (1998), however, issues pertaining to the reliability of the calendar age scale of this work precluded the widespread use of the dataset.

Lake Suigetsu was re-cored in summer 2006, this time providing a “perfectly continuous” sediment sequence that could be utilised to fully exploit the site’s potential for both ¹⁴C calibration, and multi-proxy palaeoenvironmental study (Nakagawa et al. 2011).
For the first time, this paper presents the completed ‘Suigetsu Varves 2006’ (SG06) \(^{14}\)C calibration dataset, consisting of >600 radiocarbon determinations across the last \(\approx 50,000\) years.

It has additionally been possible to incorporate the \(\approx 300\) radiocarbon determinations from the original Lake Suigetsu project into the SG06 chronology. This was achieved via physical matching of the original, 1993 sediment core to the continuous 2006 sediment profile. In this way, a high resolution (\(\approx 900\) \(^{14}\)C measurements) combined radiocarbon calibration dataset has been produced, offering a unique reconstruction of atmospheric radiocarbon across the entire \(^{14}\)C dating range. An accompanying paper (Bronk Ramsey et al., this conference) will discuss the broader implications of this revised Lake Suigetsu calibration dataset.

References:

Nakagawa T et al. (2011) *Quaternary Science Reviews*, in press.