



[AGU Fall Meeting](#), San Francisco, USA
(14th-18th December 2009)
Poster presentation:

Organic Geochemical Evidence for Climate Changes over the Lateglacial-Holocene in Lake Suigetsu, Japan

EJ Pearson^{a*}, T Nakagawa^a, J Tyler^{b,c}, S Juggins^a, C Bronk Ramsey^d, C Bryant^e,
RA Staff^d, F Brock^d, H Lamb^f, A Brauer^g, M Marshall^f, G Schlolaut^g, Y Yokoyama^{b,h},
P Tarasovⁱ, RL Payne^a, T Haraguchi^j, H Yonenobu^k, R Tada^b, K Gotanda^l, A Kosslerⁱ,
D Demskeⁱ, K Takemura^m, and Suigetsu 2006 Project Membersⁿ

^a Department of Geography, University of Newcastle-upon-Tyne, UK.

^b Department of Earth and Planetary Sciences, University of Tokyo, Japan.

^c Department of Earth Sciences, University of Oxford, UK.

^d Research Laboratory for Archaeology and the History of Art, University of Oxford, UK.

^e NERC Radiocarbon Facility (Environment), East Kilbride, UK.

^f Institute of Geography and Earth Sciences, University of Wales Aberystwyth, UK.

^g GeoForschungsZentrum, Potsdam, Germany.

^h Ocean Research Institute, University of Tokyo, Japan.

ⁱ Institute of Geological Sciences, Freie Universität, Berlin, Germany.

^j Department of Biology and Geosciences, Osaka City University, Japan.

^k College of Education, Naruto University of Education, Japan.

^l Faculty of Policy Informatics, Chiba University of Commerce, Japan.

^m Institute for Geothermal Sciences, Kyoto University, Japan.

ⁿ For full details see: www.suigetsu.org

* Corresponding author: e.j.pearson@newcastle.ac.uk

Lake Suigetsu is a small lake in central Japan, under strong influence from both summer and winter monsoonal systems. In 2006 a ≈ 73 m continuous sediment record was collected from the lake, spanning the last ≈ 150 ka, and with annually laminated (varved) sediments back to ≈ 70 ka. The site was recently named a parastratotype of the Holocene onset ([Walker et al. 2009](#)) following pollen-derived evidence of abrupt warming at the start of the Holocene ([Nakagawa et al. 2003](#)). Here we examine organic geochemical evidence for climate change at the Holocene onset and 8.2 ka. Changes in the total organic content (TOC) of the sediment is determined at $\approx$ decadal resolution via a site specific TOC calibration using near-infrared spectroscopy (NIR). Lipid biomarker analysis enables the examination of both autochthonous (within-lake) and catchment responses to climate change and compound specific isotope ratios (D/H) are used as a proxy for precipitation/evaporation variations independent of the evidence derived from pollen. We investigate potential leads/lags between proxies, which will be of importance when trying to understand the nature of the responses of

different proxies to climate change, as well as the nature and timing of abrupt climate changes.

References:

[Nakagawa T et al. \(2003\)](#) *Science* **299**, 688-691.

[Walker M et al. \(2009\)](#) *Journal of Quaternary Science* **24** (1), 3-17.