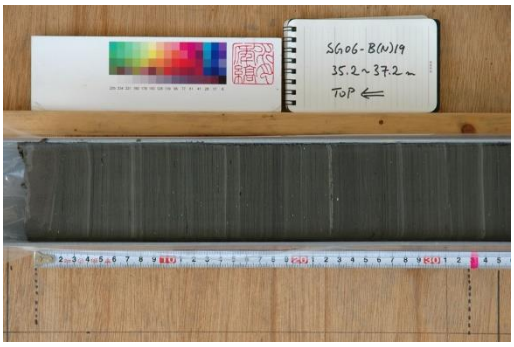
Deciphering timings and rates of abrupt climate changes over the Lateglacial-Holocene period: The Lake Suigetsu biomarker record

This project examines the Late Glacial-Holocene biomarker record of Lake Suigetsu, Japan, with a focus on deciphering timings and rates of climate change across the Younger Dryas and Holocene boundaries. The Lake Suigetsu sediments are also being examined for evidence of the "8.2ka event". Dr Emma Pearson's role in Geography at Newcastle is to examine biomarkers from the Lake Suigetsu sediment to provide information about changes in source inputs (including algae, bacteria, and higher plant inputs) and processes occurring within the lake and its catchment (e.g. changes in productivity, algal/bacterial populations, and soil in-wash). Compound-specific isotope analysis (δD) is being carried out on n-alkanoic acid compounds to provide more detailed information on past changes in hydrological conditions within the lake and catchment (e.g. precipitation, evaporation, and humidity). Fourier Transform Near Infra Red Spectroscopy (FT-NIRS) is used to reconstruct high resolution changes in sediment total organic content (TOC).



This project forms part of the multinational collaborative "Lake Suigetsu 2006 Varved Sediment Core" Project (www.suigetsu.org) led by Professor Takeshi Nakagawa (Ritsumeikan University, Japan) which aims to (i) provide high and ultra-high resolution, quantitatively reconstructed palaeoenvironmental data for the East Asian monsoon region, coupled with an excellent chronology, across the last 150,000 years; and has (ii) established a purely terrestrial radiocarbon (^{14}C) calibration model across the Late Pleistocene based on ^{14}C dating of terrestrial material, free of marine reservoir effects, coupled with the independent chronology provided by varve counting of the annually laminated lacustrine sediment.

In addition to the UK support from NERC the research is also supported by grants from the German Research Foundation (DFG) and the Japan Society for the Promotion of Science.