Geophysical Research Abstracts
Vol. 19, EGU2017-689, 2017
EGU General Assembly 2017

Improved chronological control for environmental sequences from the last glacial period

Becky Briant, Fiona Brock, Danielle Schreve, Jean-Luc Schwenninger, Harold Langford, Beatrice DeMarchi, Kirsty Penkman, and Sheila Taylor
(b.briant@bbk.ac.uk)

Since the discovery of glacial-interglacial climatic instability in the Greenland ice cores, researchers have sought corresponding evidence of terrestrial instability during the last glacial stage. Such evidence is critical for establishing the degree to which environmental stress precipitated Neanderthal and Late Pleistocene megafaunal extinctions, although a need for improved chronology has been consistently highlighted. Climatic instability has been reported from continuous lake sequences, but in formerly glaciated and periglaciated areas, environmental sequences are preserved in discontinuous settings. These often yield proxy-based quantitative temperature estimates, but are harder to date, due to difficulties in removing contamination from biological samples at the limits of the radiocarbon technique (c.30-50,000 years ago). Here we demonstrate, for the first time using samples with independent age control, that different chemical treatments generate different radiocarbon age data. This has the consequence that some studies may not be generating robust age constraints, since it is the gentler, less effective, treatments that are often used routinely. The more robust methods presented here will generate more accurate ages, significantly enhancing our ability to detect and understand the impacts of terrestrial instability in the last glacial period.