



Investigating the environmental response of the Preboreal Oscillation through integrating multi-proxy records across Europe

Rebecca Kearney (1), Christopher Bronk Ramsey (1), Paul Albert (1), Richard Staff (2), Daniel Veres (3), and Enikő Magyar (4)

(1) University of Oxford, United Kingdom (rebecca.kearney@st-annes.ox.ac.uk), (2) Scottish Universities Environmental Research Centre, University of Glasgow, East Kilbride, UK, (3) Romanian Academy, Institute of Speleology, Cluj-Napoca, Romania, (4) Eötvös Lóránd University, MTA-MTM-ELTE Research Group for Paleontology, Department of Environmental and Landscape Geography, Budapest, Hungary

Evidence from high-resolution, multi-proxy records over the Late Glacial to Early Holocene transition (~16-8 ka) shows abrupt climatic events punctuated this period, occurring on centennial to decadal timescales. One such event is the abrupt cooling event of the Preboreal Oscillation (PBO, ~11.3-11.15 ka). The PBO has been widely detected across the region especially through vegetation response to this cooling (Björck et al., 1997). However, there were environmental variations apparent in the timing, spatial and magnitude of response to this event in sites from across Europe.

To provide insight into these spatial and temporal environmental variations in response to the PBO the INTIMATE database will be used. This novel, developing chronological tool allows multi-proxy records from ice, marine and terrestrial archives to be integrated, allowing understanding into the temporal and spatial variation of past abrupt climatic events. By allowing records to be handled on their own individual timescales and linking them through known chronological relationships (e.g. tephra, ^{10}Be and ^{14}C), as well as quantifying chronological uncertainties, regional comparisons can be made to provide insight into this past abrupt climatic event. In addition, with the development of the database output data to be statistically analysed within the programme R, timing and environmental response to the PBO can be quantified

Through selected case studies of multi-proxy sites across western to eastern Europe, we will provide insight into understanding the possibility of spatial and temporal variations of the PBO. By using the INTIMATE database in conjunction with the position of the Askja-S tephra at the end of the PBO (Wohlfarth et al., 2006), questions such as time transgression and regional-specific expression of this abrupt climatic event can be investigated.

References

- Björck, S. et al. (1997) *Journal of Quaternary Science* 12(6) 455-465
Wohlfarth, B. et al. (2006) *Journal of Quaternary Science* 21(4) 321-334