

A beryllium-10 production rate calibration from Rannoch Moor, Scotland, and implications for the British deglacial record

GORDON R.M.BROMLEY¹

AARON E. PUTNAM²

KURT M. RADEMAKER³

JOERG M. SCHAEFER⁴

¹Geography, NUI Galway, Galway H91 TK33, Ireland:
gordon.bromley@nuigalway.ie

²School of Earth and Climate Sciences, University of Maine,
Orono 04469, USA: aaron.putnam@maine.edu

³Department of Anthropology, Michigan State University,
East Lansing, MI 48824: radem103@msu.edu

⁴Geochemistry, Lamont-Doherty Earth Observatory,
Palisades, NY 10964: schaefer@ldeo.columbia.edu

The refinement of cosmogenic nuclide surface-exposure dating has revolutionised glacial chronologies and, in turn, our understanding of abrupt climate change and the last glacial termination. In the British Isles, however, previous estimates of the beryllium-10 production rate appear anomalously high relative to other regions globally, raising the questions: what causes this discrepancy and how does it impact exposure-age assessments? Here, we present a recently published determination of the ¹⁰Be production rate from Rannoch Moor, central Scottish Highlands, calibrated against a ¹⁴C-dated moraine complex. Our results are similar to those from other calibrations made around the world based on ¹⁴C-dated landforms. Applying this production rate, we then present a new chronology from the northern British Isles that begins to capture the intricate pattern of deglaciation following the Last Glacial Maximum. Using glaciers as a direct indicator of atmospheric temperature, this and other emerging records are painting a fascinating picture of 'stadial' climate in the northern North Atlantic that differs from the traditional view of these severe climatic perturbations.