



A spatially-restricted Younger Dryas plateau icefield in the Gaick, Scotland

Benjamin Chandler (1), Sven Lukas (2), and Clare Boston (3)

(1) Department of Geography, University of Portsmouth, Portsmouth, United Kingdom (benjamin.chandler@port.ac.uk), (2) Department of Geology, Lund University, Lund, Sweden (sven.lukas@geol.lu.se), (3) Department of Geography, University of Portsmouth, Portsmouth, United Kingdom (clare.boston@port.ac.uk)

Producing three-dimensional palaeoglaciological reconstructions of discrete ice masses has been the focus of many glacial geomorphological studies in the Scottish Highlands over the past 15 years or so. Despite this, understanding of the extent, style and timing of Quaternary glacier fluctuations in Scotland remains incomplete. This is exemplified by the enigmatic and contentious Gaick (or Gaick Plateau), a dissected upland plateau in the Central Grampians. Previous studies of the glacial sediment-landform assemblages in this area have resulted in widely-differing and conflicting interpretations, although the ‘generally-accepted’ model is one of extensive plateau icefield glaciation during the Younger Dryas (~12.9–11.7 ka). We present the results of renewed, systematic geomorphological and sedimentological investigations in the Gaick. Using a glacial landystems approach, morphostratigraphic principles and ‘glacierisation threshold’ analysis, we establish that the area experienced only spatially-restricted plateau icefield glaciation during the Younger Dryas. This contrasts starkly with the widely-held view that the Gaick was covered by an extensive plateau icefield during the Younger Dryas. We use the geomorphological evidence, together with surface profile modelling, to produce a three-dimensional reconstruction of a ~42 km² Younger Dryas plateau icefield. This newly-reconstructed icefield is then used to derive palaeoclimatic variables for the Younger Dryas and assess regional climate trends across Scotland during that period.