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A Lateglacial plateau icefield in the Monadhliath Mountains, Scotland: reconstruction and palaeoclimatic implications

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The complex record of glaciogenic landforms and sediments in Britain relating to the last British-Irish Ice Sheet provides the opportunity to reconstruct former ice extents, ice dynamics, retreat patterns and examine their links to climate change. Yet in Scotland, as in the rest of Britain, a previously fragmentary approach to palaeo-glaciological research has limited our understanding of glacier dynamics and their relationship with climate, particularly during the Last Glacial-Interglacial Transition.

The Monadhliath Mountains in central Scotland have received little research attention during the last century. The few examples of research include work by British Geological Survey officers in the early 1900s and J.R. Young in the 1970s. These studies focussed primarily on the geomorphology and sedimentology of isolated valleys and therefore this PhD research provides the first systematic mapping of the region as a whole.

Results of remote and field mapping demonstrate that two coalescent plateau icefields occurred over the south-west and central sector of the Monadhliath Mountains during the Younger Dryas. Together these icefields cover an area of around 270 km2. Equilibrium Line Altitudes (ELAs) calculated for the icefield are of comparable magnitude to those reconstructed for nearby Younger Dryas ice masses, such as in Drumochter and Creag Meagaidh, but indicate slightly lower precipitation in the Monadhlaith Mountains. ELAs of individual outlet glaciers rise steeply from west to east, indicating a strong precipitation gradient across the plateau.