

The Ice Age in Wales

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Wales, like the rest of the UK, was mostly covered by an ice sheet during previous phases of glaciation during the Quaternary Period. Peaking about 20,000 years ago, the best known glacial phase is known as the Devensian. Subsequent warming dissipated the ice sheet over the next few thousand years, but a short-lived cold event known as the Younger Dryas around 12,000 years ago led to the revival of small mountain glaciers in Snowdonia and the Brecon Beacons. The final withdrawal of ice in response to rapid global warming led to the development of a forested Wales, remnants of which we still see today. Understanding these events is vital for the Welsh economy through providing us with the magnificent ice-carved landscape so beloved of tourists and mountaineers, as well as the sediments that are exploited for sand and gravel resources (aggregates).



Welsh universities are fully engaged with resolving glacial and post-glacial history. Our scientists have recently made fundamental advances on several aspects of Wales' history:

- Reconstructing regional patterns of ice flow at the “Last Glacial Maximum” in North Wales and the Brecon Beacons (Professor Neil Glasser, Aberystwyth).
- Mapped the geomorphology of key upland areas where an ice cap radiated away from a centre over mid-Wales, e.g. Cadair Idris, the Rhinogydd (Rhinog Mountains), Aran Fawddwy (Professor Neil Glasser, Professor Michael Hambrey, Dr. Sarah Davies, Dr. Patrick Robson, Dr. Eva Sahlin, Aberystwyth) and over peripheral areas, such as the Brecon Beacons and Black Mountains (Professor Danny McCarroll, Professor John Matthews, Swansea).



- Examined the sediments left behind by the large Irish Sea Glacier, that flowed from S.W. Scotland, the Lake District and Northern Ireland, impinging on the Welsh coast, and extending as far as the Isles of Scilly (Professor James Scourse, Bangor; Professor Michael Hambrey, Professor Neil Glasser, Dr. James Etienne, Aberystwyth; Professor Danny McCarroll, Professor John Matthews, Dr John Hiemstra, Swansea; Professor Jerry Davies, Dr. Adrian Humpage (British Geological Survey (BGS), Cardiff).



- Investigated the glacial-postglacial transition, especially the evolution of vegetation and micro-organisms as the climate warmed (Dr. Sarah Davies, Dr. Patrick Robson, Aberystwyth).
- Undertaken numerical modelling of the last British-Irish Ice Sheet, of which the Welsh Ice Cap and Irish Sea Glacier were components, which demonstrated that the ice mass was very dynamic and subject to major fluctuations (Dr. Alun Hubbard, Aberystwyth with Scottish colleagues).



New research by Aberystwyth (John Balfour) in association with BGS in Cardiff is focussing on the little known glacial history of the Cambrian Mountains, which we anticipate will allow us to define ice-flow paths and ice cap thicknesses prior to collapse of the ice sheet.

Future plans are for a major UK-wide consortium funding application to define glacial events, ice extent and subsequent withdrawal for the period 22,000 to 10,000 years ago. Detailed mapping using remote-sensing techniques, combined with field work, new dating techniques and sophisticated computer modelling, will lead to a good understanding of the dynamics of the British-Irish Ice Sheet. Aberystwyth, Bangor and Swansea Universities are likely to play important roles in this programme. The work will be of relevance to understanding how the existing West Antarctic and Greenland ice sheets will behave as climate warms over the next few centuries, and the implications this will have for global sea-level rise.

Of more practical interest, sites with useful sand and gravel resources or aquifers (groundwater) will be identified, as well as address such issues as waste disposal and groundwater flow.

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