Quaternary climate change in Britain

During the Quaternary (the last 2.6 million years of Earth's history) global climate fluctuated between cold glacial periods and warmer interglacials, when the climate was similar to the present day. The landscape that we see around us in Britain today has been moulded by these cycles of cold and warm environmental change.

Glacial environments in Britain

During the cold, glacial phases of the Quaternary, a large ice sheet (the British-Irish Ice Sheet) extended across much of the British Isles (Fig. 1). The landforms left behind by the ice sheet allow us to reconstruct the former ice location and flow direction. Such landforms include depositional features such as moraines, and erosional forms such as roches moutonnées.

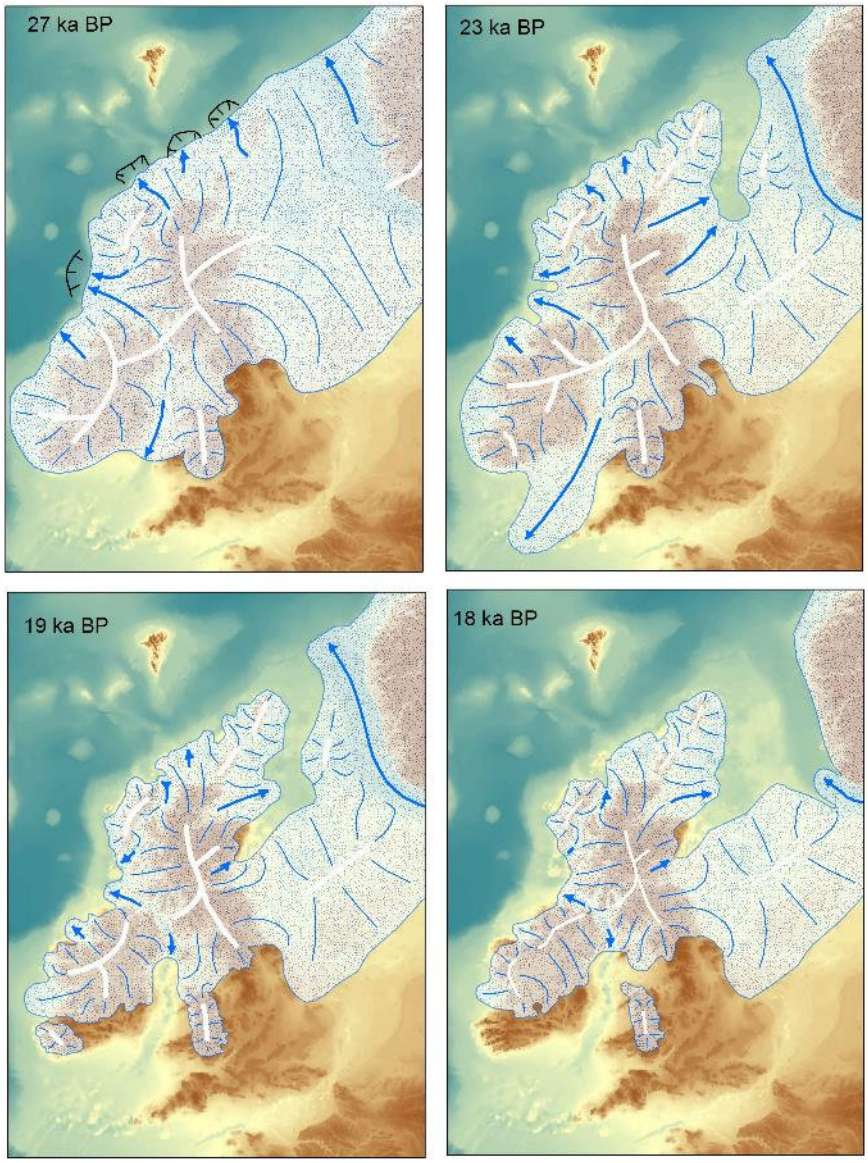

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Figure 1 – A reconstruction of the former position and ice flow direction of the British-Irish Ice Sheet at 27,000, 23,000, 19,000, and 18,000 years ago (1ka is 1000 years). Source: BRITICE project, available at: https://www.sheffield.ac.uk/geography/staff/clark_chris/icesheet

Interglacial environments in Britain

In the periods between glacial events, the interglacials, when ice had melted, temperatures in Britain were similar to the present day interglacial, termed the Holocene. In fact, during the last interglacial, around 135,000-70,000 years ago, air temperatures were up to 2°C higher than the present day (Fig. 2). In Britain, there is fossil evidence for elephant, lion, and hippopotamus frequenting the British landscape at that time. These species are now native only to Asia (elephant) and Africa (elephant, lion, hippopotamus), which indicates the kind of temperatures experienced in the past!

Analysing the environmental conditions of previous glacials and interglacials provides us with important insights into how the British climate might change, under continued anthropogenic global warming.

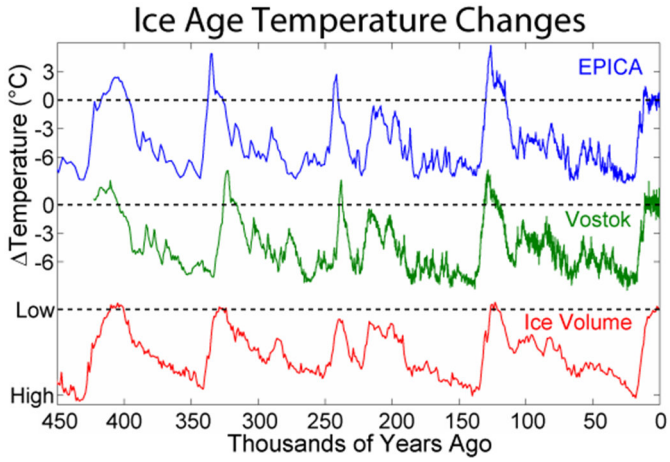

Figure 2 – Air temperature and global ice volume reconstructions for the last 450,000 years from the EPICA and Vostok ice cores, in Antarctica. Source: Wikipedia