The Last Glacial Maximum (LGM)

What is the LGM?
The last glacial maximum (LGM) is the term used for the most recent period in which the major ice sheets reached their maximum volume. Evidence from palaeo (past) climate records, such as deep ocean sediments, fossils, and glacial landforms, shows that this occurred at around 21,000 years ago (21 ka). Due to spatial variations in air temperature change, and because large ice sheets sometimes take a long time to respond to such changes, the LGM actually spans a time period from around 26-19 ka.

What were conditions like in the LGM?
During the LGM, average air temperatures across the globe were 2-6°C cooler than the present day. The Greenland and Antarctic ice sheets were much larger, and extended onto the continental shelf. In addition, ice sheets developed across vast areas of Eurasia and North America. In Britain, a large ice sheet, the British-Irish Ice Sheet, extended from the mountains of Scotland, and across Cheshire (Fig. 1).

Ice caps and mountain glaciers, which are much smaller than the ice sheets, also developed on many high mountains; some of these have survived to the present day, such as in the Alps and the Himalaya. These ice masses carved the landscapes that we see around us today.

Because large volumes of water became locked up in the major ice sheets and glaciers, global sea level fell by around 135 m (Fig. 2). At the end of the LGM, glaciers retreated - many of them disappeared entirely - and sea level began to rise towards its present day, Holocene, position.
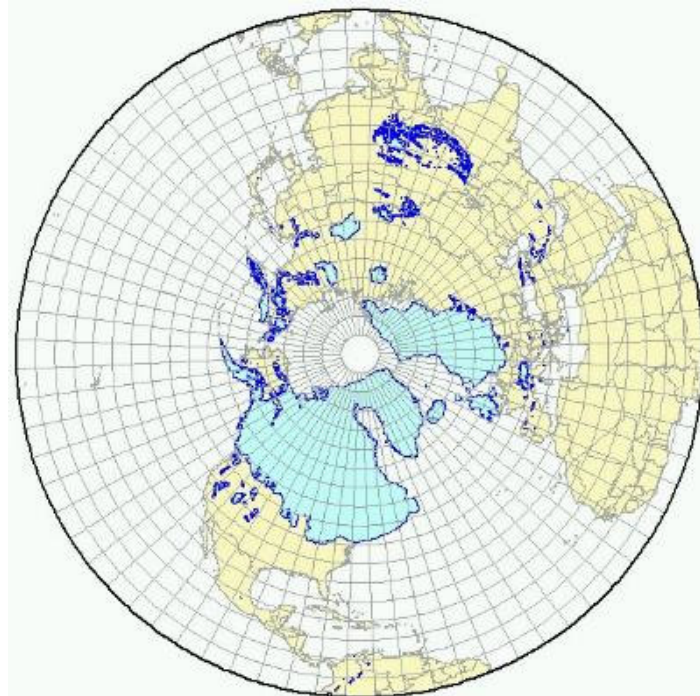

Figure 1 – The extent of ice masses (shown in blue) in the northern hemisphere during the Last Glacial Maximum (LGM). Source: http://www.qpg.geog.cam.ac.uk/lgmextent.html
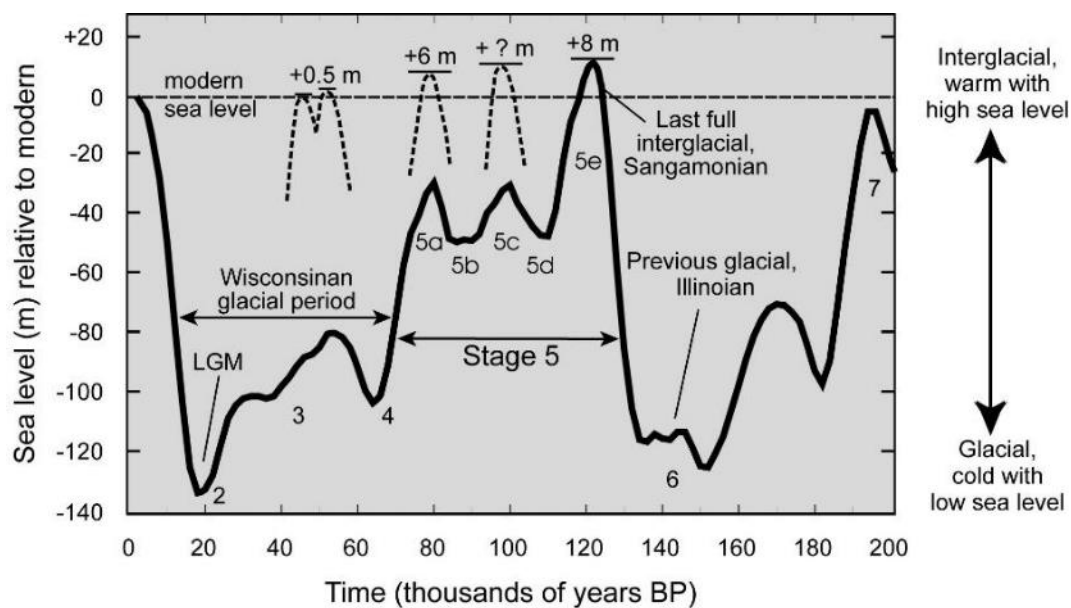
Figure 2 – Schematic diagram of sea level change over the last 200,000 years, showing the Last Glacial Maximum (LGM) in comparison to the Holocene and previous glacial and interglacial periods. (Source: http://www.eeescience.utoledo.edu/Faculty/Krantz/Va_Coast_figures/Virginia_Coast_figures.htm)