

# Palaeolithic Archaeology Teaching Resource Box

## Pleistocene Landscapes: Advanced

### Sea-Level Fluctuations and Animal/Plant Migrations:

The sea-level fluctuations of the Pleistocene play a key role in both the hominin occupation of Britain and the floral and faunal (plant and animal) fluctuations evident in the fossil record: put simply, the re-colonisation of Britain after an extremely cold glacial period by interglacial animals (including hominins) and plants requires a sufficient improvement of climate to permit their survival (and encourage them to migrate), but the re-colonisation must also occur before the rising sea-levels make Britain an isolated island. The English Channel and the southern North Sea landscapes, when dry due to very low sea-levels, would also be inhabitable regions in their own right, and not simply landbridges by which animals could move between Britain and the continent.

### River Valleys and Archaeology:

During the Pleistocene the river valley landscapes of much of southern Britain altered in response to climatic fluctuations and sea-level changes: over time the majority of rivers cut deeper valleys, with the previous floodplains and their deposits being isolated (and partly-preserved) above the new floodplain. The remnant floodplains and their deposits are formally known as terraces, and many Pleistocene rivers have long sequences of such terraces, with the highest terraces being the oldest and the youngest terraces lying immediately above the modern (current) river floodplain. These terrace deposits contain a large percentage of Britain's Palaeolithic archaeology, usually a mixture of stone tools and animal bone assemblages. These archaeological materials became incorporated into the terrace sediments through a combination of hominin behaviour and river activity: hominins were attracted to the river floodplains for water and hunting opportunities (other animals were also attracted to the river edges) and left their stone tools behind; subsequent river flooding washed the stone tools downstream, where they were later re-deposited into the sands and gravels that make up the river floodplain deposits (which were subsequently transformed into terraces: see above).

### Raised Beaches and Archaeology:

During the Pleistocene raised beach landforms and deposits were, like the river terrace sequences (see above), formed in response to sea-level changes: high interglacial sea-levels created new wave cut platforms along the coastline, which were subsequently covered by the deposition of marine sands. Gradual falls in sea-level towards the end of the interglacial then saw the marine deposits buried with terrestrial (land) deposits. Over the course of the Pleistocene gradual uplift of the land meant that the raised beach *landform* and deposits associated with the next high sea-level interglacial were located at a relatively lower altitude: thus producing a sequence of raised beaches, with the oldest at the top and the youngest nearest the modern sea level. The association of Palaeolithic archaeology with raised beach deposits, as most famously demonstrated in Britain at Boxgrove, can reveal the *in situ* activity of hominins on the raised beach surface(s), especially if the valuable archaeology-bearing deposits are protected from subsequent erosion and/or disturbance: at Boxgrove the marine sands and the soil horizon were buried by other fine-grained *sediments* and coarser-grained gravels.

### Caves and Archaeology:

Pleistocene caves and rock-shelters are of course natural landforms, often eroded into limestone and other rock formations through the action of underground streams. The archaeological material found in caves is of variable quality: in some cases, where artefacts have been rapidly sealed and preserved by cave sediments (often rock fragments from the cave walls), the material can be *in situ* and provide a high quality record of hominin

behaviour. However, artefacts are often disturbed by post-Palaeolithic activity, natural events such as flooding (this appears to be the case at Gough's New Cave, Cheddar Gorge), or the denning activities of bears and hyenas (as at Tornewton Cave in Devon). In other cases, the material may have slumped into the cave from outside, being caught up in the movements of soil and sediment (known as debris flow): in such instances the material has clearly been re-worked, although the *re-working* may only cover a few metres in some cases.

**Terminology:**

*Sediments*: materials, including sand, silt, clay and cobbles, which have been moved by wind, water and/or ice, and accumulated to create *deposits*.

*Landform*: any feature, such as a river or cave, which is part of the earth's surface.

*Re-working*: the removal and/or displacement of sediments from one deposit and their incorporation into other deposits.

**Quiz Questions:**

1. Why do archaeologists assume that Palaeolithic hominins could not have reached Britain during high sea level phases when Britain was an island?
2. What are some of the benefits of *in situ* archaeology?
3. How might archaeologists be able to tell whether the stone tools found within river sediments had been washed long distances downstream?

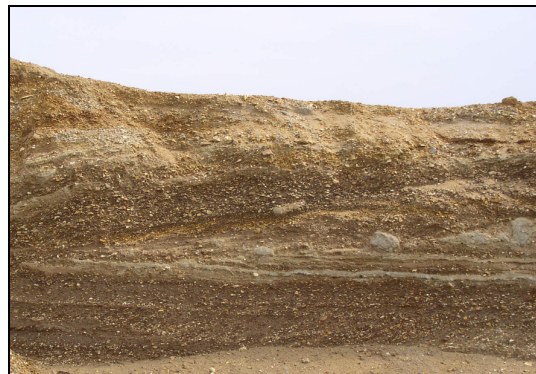
**Further Resources:**

<http://www.snh.org.uk/publications/on-line/geology/scotland/ice.asp> [A discussion of Scottish landscape change during the Pleistocene]

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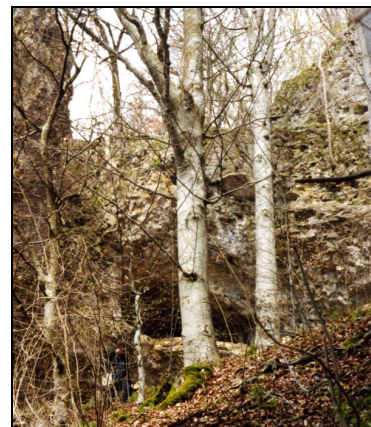
A modern meandering (warm climate) river



River gravel sediments of Pleistocene age



Fine-grained raised beach sediments at Boxgrove, including the soil horizon



Approach to a Palaeolithic cave entrance