



Geoarchaeology

Geoarchaeology is the study of the physical geographies of past landscapes, and is often embraced with environmental archaeology. Recently, however, it has developed and become a strong discipline in its own right, with professors of geoarchaeology at, for instance, the University of Cambridge. Landscapes have changed; and via the study of soils and sediments, weathering and erosion, and the processes of colluviation (hillwash) and alluviation (flooding), the changing and developing landscape is recorded.

This not only provides the archaeologists with information about the landscape, its rivers and soils, inhabited and exploited by past communities, but also aims to show how the actions of those communities has consciously, or commonly inadvertently, changed that landscape. Woodland clearance, preparation of ground for occupation, and practices such as tillage accelerate soil erosion depleting and changing the soils and the vegetation that it can support. The consequent erosion by wind and of soil wash (colluviation) leads to accumulations of sediment at the base of slopes and in valleys, and to erosion into rivers which flood across floodplains accumulating sometimes tens of metres of alluvium. Thicker soils at the base of slopes, in dry valleys and river floodplains may encourage farming and settlement, and in other locations may have buried evidence of past activity and sites beneath metres of deposit.

It is important for the archaeological team to understand these process to comprehend how past communities have lived in former landscapes, and how their activities have transformed those landscapes. During the processes some sites may have been lost by erosion, whilst others buried by sedimentation and hidden from view. By these processes the pattern of archaeological finds and sites can be heavily biased; a fact that needs to be recognised before reconstructing activity across and within a whole study area or landscape.

The analytical tools of geoarchaeology are the application of soil science and geography within an archaeological framework. It includes the field recording and mapping of soils and sediments, and analyses of soil thin sections, particle size and soil chemistry, often in combination with palaeo-environmental indicators such as pollen or land snails. These enable us to examine long histories of change.

In the field a geoarchaeologist will often dig test pits, or auger, across landscapes to define the nature and presence soils, to identify accumulations of hillwash or alluvial sediments, and to discover ancient soil sealed beneath or contained within those sediments. On an archaeological excavations soils that are buried by prehistoric barrows, banks and in ditches offer the same opportunities.

Further Reading

Allen, M.J. 2005. Beaker settlement and environment on the chalk downs of southern England. *Proceedings of the Prehistoric Society* 71, 219-45

French, C. 2015. *A Handbook of Geoarchaeological Approaches for Investigating Landscape and Settlements Sites*. Oxford: Oxbow Books

French, C. 2002. *Geoarchaeology in Action: Studies in soil micromorphology and landscape evolution*. London: Routledge

Goldbery, P. & Macphail, R. I. 2005. *Practical and Theoretical Geoarchaeology*. London: Blackwell Publishing

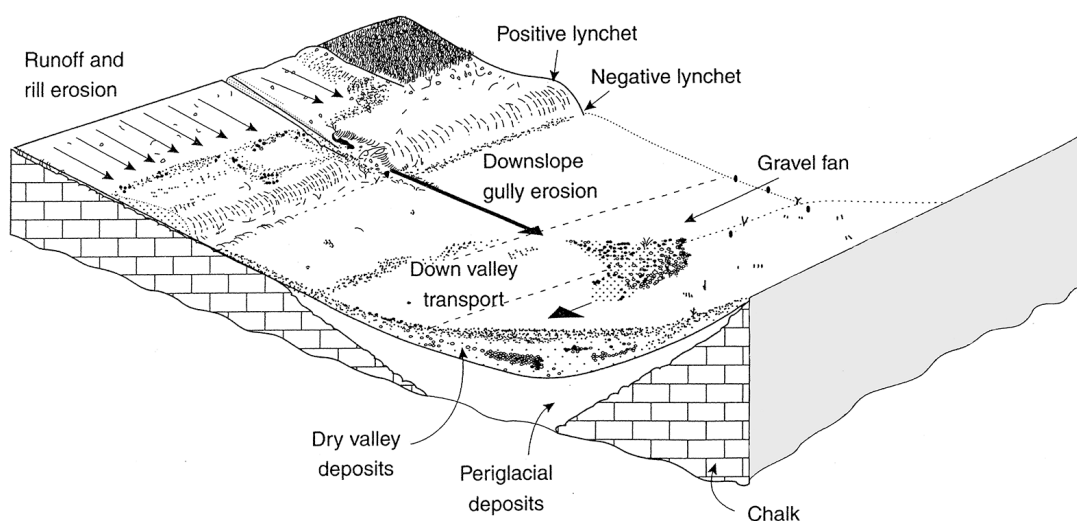
Examples of geoarchaeological projects:

French, C., Lewis, H., Allen, M.J., Scaife, R.G., Green, M., Gardiner, J & Gdaniec, K. 2003. Archaeological and palaeo-environmental investigations of the Upper Allen Valley, Cranborne Chase, Dorset (1998–2000): A new model of earlier Holocene landscape development. *Proceedings of the Prehistoric Society* 69, 201–34

French, C., Lewis, H., Allen, M.J., Green, M. Scaife, R.G. & Gardiner, J. 2007. *Prehistoric*



One of the ways geoarchaeologists examine the soil and sediments beneath our feet is by using auger; this is minimally intrusive, and here you can see a geoarchaeologist working on a research project in Stonehenge.



The landscape has changed, evolved and been sculpted by human action over the past 10,000 years – and this diagram shows some of the process that occur with many landscapes. They include erosion of soils the formation of field lynchets, and of thick deposits in dry valleys (which can bury a whole phase of archaeological activity – see Allen 2005).

This factsheet was prepared for the Prehistoric Society by Mike Allen (AEA Allen Environmental Archaeology