Climate Change and Archaeology

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CONCEPT NOTE

Climate change is affecting our environment. Climate projections show that in Europe we can expect:

- changes in rainfall with increased drought, and desertification as well as increases in intensity and frequency of rainfall (sometimes in the same locations);
- increases in temperature (in winter and summer), increase in temperature and frequency of heatwaves;
- rising sea levels, groundwater fluctuations and accelerated soil subsidence;
- warmer seas, ocean acidification and changes in oceanic currents;
- melting of glaciers and thawing of permafrost.

These climate drivers will result in changes in flora and fauna, and changes in soil conditions, which will affect archaeological deposits. Moreover, human responses to the climate crisis can also impact archaeological sites.

However, while our archaeological deposits and historic places are vulnerable to the impacts of climate change, our knowledge and skills as archaeologists are also relevant to supporting society in adapting to a changing climate and a low carbon future.

Papers are invited that explore the following areas:

1. **The impact of the climate crisis on the conservation of archaeological sites.**
   How are archaeological deposits affected by our changing climate and the measurements taken for mitigation? What can we do about it? How can we address loss of archaeological sites?

2. **How understanding the adaptation strategies of the past might help address the challenges of the future.**
   In the past, people adapted to changes and challenges in their environments. As archaeologists we can investigate these adaptations and their consequences on past environments. What can we learn that may be of relevance to today's challenges?

3. **Using archaeological skills in spatial and environmental plans for climate adaptation and mitigation*.**
   Archaeologists have a perspective and skills that can be extremely relevant to climate planning. The ability to take a long view of both environmental change and human behaviour - and their interaction, is an important one. So are the archaeological skills - familiarity with data about historic landscapes, water systems, the soil and the surface; methods like geo-archaeology, spatial survey, analyses of old maps and combining them with archaeological data. These can all potentially help to inform sustainable decision making about future land use and adaptation.

4. **The role archaeologist can play in communicating and engaging with climate change**. The climate crisis will affect all of us; while many people are aware of climate change, fewer are aware of the effect it will have on them and their environment, let alone how they can adapt to those changes. Archaeology can help frame these often difficult conversations by looking at the changes in these places through time and the adaptation strategies of the past.

Possible themes for papers:

1) **The impact of the climate crisis on the conservation of archaeological sites:**
   -What is the effect of lower groundwater level and extreme dry periods on the quality and conservation of archaeological sites?
   -Which kind of sites are vulnerable to climate change (to flooding, to drought, to the rise of sea levels, to the thawing of permafrost regions, etc)?
   - Nature and ecology are the first in line in the discussion of climate change and biodiversity. In current European projects for nature purposes (fish migration), such as 'Dam-removal' and 'Free flooding rivers', historical systems and watermill-systems are broken down, while it can be useful to understand the system, re-use it to hold more water upstream and to achieve better biodiversity and fish-migration at the same time. How can we help them to make the right decisions?
   - Is it possible to organise good conservation of existing natural and archaeological structures, keep and strengthen the existing qualities of the local/regional landscape, and promote a sustainable new development and an environmentally aware society?
   -What is the effect of soil subsidence on archaeological and historic monuments?

2) **How understanding the adaptation strategies of the past might help address the challenges of the future:**

- What can we learn about buildings and land use adaptation strategies from the past: (e.g. flood-barns, upstairs rooms, piano Nobile, hedgerows, town walls, etc…?

- How can we use the knowledge acquired by archaeological research for the problem of peat degradation? Are there any examples of peat recovery to hold the water and let the peat grow again, instead of peat reduction through underwater drainage?

- Can cultural heritage and historical analyses be helpful for current and future problems with water and drought?
- What can wetlands teach us in relation to the water management systems through the ages?
- What can the medieval sites, newly discovered by the melting of glaciers or ice masses (for instance in Iceland or Kazakhstan), tell us about adaptation strategies in the past?

3) **Using archaeological skills (data, methods) in spatial and environmental plans for climate adaptation and mitigation**

- How to engage archaeologists with spatial and environmental plans and climate change planning, so that their knowledge about the place (regional, local and national governments) could be best utilised?
- How to use the knowledge about historic water systems and their relation to urban development for climate adaptation strategies?

- How to successfully use predictive models of the past for the future, so we can get an idea of the locations vulnerable to flooding and dike breaches.

4) The role archaeologist can play in communicating and engaging with climate change

- What can archaeology bring to adapting urban spaces? E.g. The heat in cities and build areas can be reduced if watercourses are restored from being vaulted and by bringing the water back in town. Good examples?
- What potential is there for the re-use of historic places for climate adaptation purposes, such as water storage. (e.g. historical gardens/estates, castles with moats, country estates with water features and ponds, demarcation lines and defence channels, ramparts and fortifications with moats against the drought and the heat, old watercourses and systems, like lost river arms or closed water courses).
- Are there any good examples of archaeologist helping local governments to understand the environment / space and it's development and to ensure more support for both heritage and development?

Key words:

adaptation strategies; effects of sea level rising, floods, heavy rainfall, extreme drought, melting glaciers or ice masses; re-using or recognising historic water management systems like watermills-landscapes, sluices and barriers, cisterns, cellars and water pits, dike systems; effects of soil subsidence; artificial water systems and biodiversity; historical maps; Gis-science;

Glossary:

**Adaptation* - is the ability of humans to adept temporarily or permanently to changes in the climate;

Resilience or F*lexibility* is the ability of a system or people to recover from a catastrophe;

by *Mitigation* we mean measures taken by humans to limit or prevent global warming, like using sun and wind energy instead of fossil fuel, reforestation, etc.