The collapse of the once-powerful and prosperous Kingdom of Meroe (*c.* 300 BC – AD 350) in ancient Nubia, what is now the northern territory of the present-day Sudan, remains unclear and open to speculations. The available historical and archaeological evidence points to several likely causes for the decline and eventual fall of the kingdom in the 4th century AD; the most frequently cited factors being political and economic instability, and social unrest. The kingdom's northern border became unstable due to the crisis of the Roman Empire in the 3rd to 5th centuries and decline of Roman Egypt, combined with nomadic invasions from the surrounding deserts throughout the 2nd and 3rd centuries AD. At the same time, the central area of the state became a focal point for the migration of the Noba, the Nubian-speaking tribes from the western peripheries, whereas the southern fringes of the kingdom were under a constant threat from the growing-in-power Kingdom of Axum. Meroe's economy was also in decline due to the state's inability to sustain a profitable trade with African states when demand for luxury goods and materials from the troubled Roman Empire fell, and trade routes along the Nile were no longer safe.

There is, however, another likely, but less explored, cause for the collapse of the Kingdom of Meroe, namely environmental changes, which this projects is set to investigate. Apart from holding a strong position in global trade, the kingdom's key-player role in the region was further strengthened by iron production that centred in the region around the capital city of Meroe. Furthermore, the cultivation of fields located away from the Nile was made possible through the adoption of *saqia* (cattle-powered waterwheel) and development of a system of water dams and reservoirs constructed across the course of seasonal streams flowing from the Ethiopian highlands towards the Nile, which also facilitated large-scale livestock rearing.

It would seem, however, that the strain on the environment was too much; what once made the state great, was now the very reason for its collapse. The overexploitation of the land for agricultural purposes to sustain a growing population and to produce a surplus for non-productive social groups (élites), and deforestation to meet the demand of iron industry caused irreversible changes in the natural environment, which made human habitation in the area surrounding the ancient city of Meroe unsustainable. We predict that this will have resulted in changes in diet and health of the indigenous population as well as increased movements of peoples within and between the Meroitic kingdom and adjacent regions during the Meroitic (*c.* 300 BC – AD 350) and post-Meroitic (AD 350 – c. 700) periods.

In order to investigate the environmental changes as a causative factor for the collapse of the Meroitic kingdom, the project will apply bioarchaeological analysis. The investigation will focus on examination of human remains from mortuary deposits from the central and southern regions (Bayuda and Butana) of the Kingdom of Meroe, a still largely neglected archaeological material and source of information in research concerning past civilizations of Sudan. By applying stable isotope analysis, it would be possible to obtain information on dietary regimes and movement of people during the periods of time and in the area under investigation. For example, carbon can be used to determine the kind of environment an individual came from and their likely diet, and oxygen can be used to determine if an individual moved to different geographic areas during their lifetime, or if two or more people are from the same area. Changes in health will be ascertained through detailed examination of human remains and recording of selected stress indicators that reflect exposure to stressors such as disease, injury, nutritional deficits and other factors that impact on general health.

The project presents a unique opportunity to investigate a large collection of human remains from various cemetery sites in Sudanese Nubia in an attempt to add depth to our understanding of causative factors behind the collapse of the Meroitic kingdom. To date, these factors have largely been investigated using archaeological (cultural) and textual evidence. With this project we would also aim to promote and enhance appreciation of the importance of curating human remains as a research resource for studies of the human-environment relationship and human health.

The project highlights the problem of overexploitation of the natural environment and the profound effects its changes could have on human populations, past and present.