Centre for Archaeological Science

Key Research Project

Palaeoclimatic and palaeoenvironmental context of the origins of modern humans in South Africa: constructing a detailed record from 400,000 to 30,000 years ago

This 6-year project (2006-2011) to Curtis Marean (Arizona State University) and a large number of international investigators, including Zenobia Jacobs, has been funded by the National Science Foundation (NSF) through their HOMINID grant scheme.

Modern humans likely evolved in Africa between 300,000 and 100,000 years ago. It is well documented that the bio-behavioural adaptations of fully modern hunter-gatherers are intimately tied to climate and environment. Importantly, as human bio-behavioural complexity increased, Pleistocene climates became harsher during glacial stages and more variable, a pattern that terminates 10,000 years ago. There is an outstanding record of palaeoclimates and palaeoenvironments for this time slice in western Eurasia, but little is known in Africa where modern humans evolved. This project aims to jump-start the development in Africa of a detailed palaeoclimatic and palaeoenvironmental record with a multidisciplinary and international consortium of researchers grounded by the same problem orientation focused on the south coast of South Africa.

The end result of this project will be an understanding of the relation between global climate change and its regional expression in South Africa. This will broaden our understanding of the origins of modern humans by furthering our ability to examine the ecological context for evolution. A novel aspect of the research is the integration of the continental, marine, and atmospheric records with the archaeological and geological records in a tightly restricted geographic region. This has been achieved through studies of speleothems, archaeological materials and geological features that reflect both continental and marine conditions.

Main collaborators

- Curtis Marean, Institute of Human Origins, Arizona State University, USA
- Mira Bar-Matthews, Geological Survey of Israel, Jerusalem, Israel
- Kyle Brown, University of Cape Town, South Africa
- Erich Fisher, Arizona State University, USA
- Andy Herries, School of Medical Sciences, University of New South Wales, Australia
- Panagiotis Karkanas, Ephoreia of Palaeoanthropology-Speleology, Ministry of Culture, Greece
- Thalassa Matthews, Iziko South African Museum, Cape Town, South Africa
- Dave Roberts, Council for Geoscience, Bellville, South Africa
Key publications


Clockwise from top left: Entrance to Cave 13B at Pinnacle Point, South Africa, showing the excavations in action; the coastline around Pinnacle Point provides useful terrestrial records for reconstruction of the palaeolandscape; a 165,000 year-old piece of used ochre from Cave 13B; an in situ glimpse of a preserved shell midden that is 165,000 years old; 165,000 year old stone artefact, possible used as part of a composite tool.