Centre for Archaeological Science

Key Research Project

Monsoons and migrations: Quaternary climates, landscapes and human prehistory of the Arabian peninsula and the Indian subcontinent

This 5-year Discovery Project (2008–2012) to Bert Roberts and Allan Chivas is funded by the Australian Research Council to investigate the climate, landscape and archaeological history of Arabia and India between 200,000 and 50,000 years ago: the period when Homo sapiens first ventured out of Africa. These two large landmasses are largely blank areas on the archaeological map, despite their strategic geographic positions along the exit route for humans leaving Africa and travelling along the southern coastal fringe of Asia.

Genetic studies of modern human populations indicate that the first migrants may have passed through the Arabian peninsula and the Indian subcontinent more than 50,000 years ago, perhaps as early as 130,000 years ago. This period of time includes wetter climates associated with the last interglacial and drier climates that accompanied the beginnings of the last ice age. But there is no consensus on the timing or pattern of human migration through these regions, or on how early dispersals were influenced by these climate changes.

To answer some of these questions, Bert and Allan have formed a close collaboration with archaeologists and other geoscientists working India and Arabia. Single-grain optically stimulated luminescence (OSL) dating and a variety of geochemical techniques are being used to investigate when our species first colonised these regions and what environmental conditions these pioneers faced. Past temperatures will be reconstructed using stable isotopes, including the measurement of ‘clumped’ isotopes in a new, dedicated laboratory at UOW.

Bert and Allan's initial efforts have focussed on archaeological sites in southern India, because of the discovery of stone tools below and above a volcanic ash ejected 74,000 years ago by the Toba eruption in northern Sumatra (http://toba.arch.ox.ac.uk/index.htm). The species of human responsible for making these tools is presently unknown but may have been Homo sapiens, which would be the oldest archaeological evidence of our species in South Asia.

Bert and Allan are currently busy searching for traces of early human activity in northeast and northwest India, Oman and Saudi Arabia, and the role of environmental changes and demographic factors in the spread of people around the rim of the Indian Ocean.
Clockwise from top left: Excavations at Jwalapuram, Andhra Pradesh; microlithic artefact from the Middle Son Valley, Madhya Pradesh; Lower Palaeolithic artefact from the Middle Son Valley; site JK1 in the Nefud Desert, Saudi Arabia.

Main collaborators

- Hema Achyuthan: Dept of Geology, Anna University, India
- Abdullah Alsharekh: Dept of Archaeology, King Saud University, Saudi Arabia
- Ravi Korisettar: Dept of History & Archaeology, Karnatak University, India
- Jagannath Pal, Dept of Ancient History, Culture & Archaeology, University of Allahabad, India
- Adrian Parker: Dept of Anthropology & Geography, Oxford Brookes University, UK
- Michael Petraglia: School of Archaeology, University of Oxford, UK
- Jeffrey Rose: Institute of Archaeology & Antiquity, University of Birmingham, UK

Key publications