OSL Dating of Landscape Change and Human Evolution in Northern Malawi

Wright, David (Seoul National University), Jeong-heon Choi (Korea Basic Science Institute), Jessica Thompson (University of Queensland) and Elizabeth Gomani-Chindebvu (Malawi Ministry of Tourism, Wildlife, and Culture)

Open-air Middle Stone Age (MSA) sites in southern Africa have proved to be exceptionally difficult to date. The preservation of carbon necessary for 14C ages is poor and artifacts normally exceed the upper temporal limit of the method to provide a reliable age estimate. The lack of caves north of South Africa and volcanics south of Tanzania further restricts archaeologists' abilities to attain age control on site occupations. Increasing acceptance of Optically Stimulated Luminescence (OSL) as a primary dating method has opened up new possibilities for obtaining age control on MSA sites in Africa. However, OSL has been challenging to use in Rift Valley settings due to complex mineralogical attributes that have led to recurring age-underestimates relative to other geochronometers and pedogenic surfaces that affect modeling paleodose rates. This paper discusses new techniques to use OSL dating to develop an age model for archaeological settlement of Mwanganda's Village and other MSA sites in northern Malawi. Recent advances in the methodology allow a tighter age control than would have been possible a decade ago. The new data improve understandings of human cultural evolution and landscape changes during profound Middle and Late Pleistocene climatic changes.