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# Investigation of Middle Stone Age occupation deposits in Blombos Cave, South Africa: evidence for changes in site use and settlement dynamics in the Southern Cape during the MIS 5b-4 (94 – 72 ka)

Magnus M. Haaland\*<sup>†1,2</sup>, Christopher E. Miller<sup>2,3,4</sup>, Ole F. Unhammer<sup>1,2</sup>, Karen L. Van Niekerk<sup>1,2</sup>, Bertrand Ligouis<sup>5</sup>, Susan M. Mentzer<sup>3,4</sup>, and Christopher S. Henshilwood<sup>1,2,6</sup>

<sup>1</sup>Institute for Archaeology, History, Culture and Religious Studies, University of Bergen (UIB) – Postboks 7800, NO-5020 Bergen, Norway

<sup>2</sup>Centre for Early Sapiens Behaviour (SapienCE), University of Bergen (SapienCE) – Sydensplassen 12/13, N-5007 Bergen, Norway

<sup>3</sup>Institute for Archaeological Sciences, Eberhard Karls Universität Tübingen (INA) – Rümelinstr. 23, 72070 Tübingen, Germany

<sup>4</sup>Senckenberg Center for Human Evolution and Paleoenvironment, Eberhard Karls Universität Tübingen – Rümelinstr. 23, 72070 Tübingen, Germany

<sup>5</sup>Laboratory for Applied Organic Petrology, Institute for Archaeological Sciences, Eberhard Karls Universität Tübingen (LAOP) – Rümelinstr. 23, 72070 Tübingen, Germany

<sup>6</sup>Evolutionary Studies Institute, University of the Witwatersrand, (ESI) – P.O. WITS, 2050 Johannesburg, South Africa

## Abstract

The archaeological assemblage recovered from the Middle Stone Age levels (c. 101–70 ka BP) in Blombos Cave (BBC), South Africa, is central to our current understanding of the technological and cultural development of early modern humans in southern Africa during the Late Pleistocene. However, the micro-stratigraphy in which this assemblage has been recovered has not yet been studied in detail. Over the course of multiple excavation seasons, more than 40 micromorphological block samples have been collected from the BBC deposits. A sediment-based investigation of the archaeological deposits in BBC thus offers an excellent opportunity to advance our knowledge of this significant archaeological sequence. In this paper, we focus on the formation of MSA occupation deposits in BBC dated to MIS 5b-4 (94 – 72 ka). By combining micromorphology and microspectroscopy with three-dimensional, high-resolution field documentation we have been able to identify patterns of human site-use and occupational intensity in three discrete MSA occupation phases: the M1 phase (71 ka), the Upper M2 phase (77 ka) and the M3 CI phase (94 Ka). Through a digital framework we have also examined the spatial distribution of prehistoric depositional events, allowing us to characterize lateral and diachronic variation in the use of cave space, the placement of site structures and the occurrence of site maintenance. Our results show that the MSA

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\*Speaker

†Corresponding author: magnus.haaland@uib.no

phase in BBC which experiences the most rapid cultural and technological development (i.e. the Still Bay, 77-71 ka) is characterized by periods of more frequent, short-term human occupation. By contrast, the occupation phase in the lower parts of the MSA sequence (e.g. M3 CI, 94 ka), which show considerable less varied material culture, is characterized by considerably fewer but longer or more continuous cave visits. We suggest that the variation in MSA occupation intensity in BBC, which coincides with shifts in local climate, vegetation and sea-levels, can best be explained by changes in local site function and hunter-gatherer mobility and subsistence strategies. If the MSA occupation pattern in BBC is indicative of larger and more regional settlement dynamics, we hypothesize that an increase in residential mobility towards the end of MIS 5 may also have affected the nature and frequency of social interaction within and between prehistoric populations living in the Southern Cape during this time period.

**Keywords:** Geoarchaeology, Micromorphology, Middle Stone Age, Site Formation processes, Occupation intensity, Site use, Site Structure