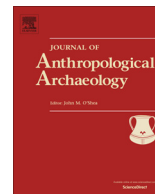




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Reconceptualising Last Glacial Maximum discontinuities: A case study from the maritime deserts of north-western Australia

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ABSTRACT

Understanding discontinuities in the Australian archaeological record currently represents a major challenge for researchers especially where different interpretive frameworks are used to explain the same phenomena. The widespread Last Glacial Maximum (LGM) absence of dated archaeological evidence in desert lowlands is often interpreted as a lack of human occupation. While this scenario may be true in many cases, we believe this inference requires critical re-appraisal. Using case studies from the coastal Carnarvon bioregion, located in a maritime desert of NW Australia, we argue that discontinuities and occupational lacunae may be the result of a variety of different geomorphic and human behavioural processes where the absence of people may be only part of the equation. We argue that, by reconceptualising discontinuities with an explicit multi-scalar focus on depositional regimes and landscape patterns, richer explanations about human occupational patterning at both the local and regional levels can be generated.

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1. Introduction

Questions about discontinuity and change in time and space represent one of the major themes in Australian and world archaeology (Bailey, 2007; de Castro et al., 2013; Farrand, 1993; Frankel, 1995; Holdaway and Fanning, 2014; Langley et al., 2011; Mallol et al., 2012; Williams et al., 2015). In this paper we focus on a commonly observed archaeological discontinuity; that associated with the Last Glacial Maximum (LGM) bracketed between 24 ka and 18 ka (Barrows et al., 2002; Ishiwa et al., 2016; Yokoyama et al., 2001). In Australian archaeology an absence of archaeological evidence correlating with the LGM is generally taken as evidence for the absence of humans (e.g. Veth, 1995). However, archaeological discontinuities can be the result of numerous and complex interacting processes.

Archaeological discontinuities, such as those described for the Australian LGM, can be interpreted using (a) stratigraphic, (b) chronological, and (c) cultural frameworks. Despite a preference by researchers to evoke either a natural (e.g. Smith and Sharp, 1993; Ward and Larcombe, 2003) versus a cultural explanation (e.g. O'Connor et al., 1999), we believe they are not mutually exclusive and indeed are most likely coupled. The methods used

in constructing chronologies can also create an artificial discontinuity, where there may be none. We argue that, in considering any discontinuity, each of the three frameworks (stratigraphic, chronological or cultural) should be considered and we will use these categories to structure our following discussion.

In this paper we explore these frameworks using a set of stratified archaeological sequences from the coastal Carnarvon bioregion (Fig. 1) that display a regional LGM discontinuity. While there are other well described examples for discontinuities in the Western Desert (Serpent's Glen) and in the southern Kimberley (Riwi), they are located over 1000 km distance from the Carnarvon bioregion and have very different climatic and geological settings (see Veth et al., 2005). The coastal Carnarvon bioregion is one of the largest desert-coastal intersections known from the Southern Hemisphere and was considerably larger during Marine Isotope Stage 2 (29–14 ka) due to increased continentality; comprising an indisputable maritime desert (Veth et al., 2014). Here arid rangelands with both steep and shallow-gradient profiles abut sub-tropical waters, within which Australia's second largest continental island, Barrow Island, lies. A regional coastal and off-shore archaeological record has been recorded, stretching from the south-west coast of Cape Range to the Montebello Islands in the north-east, a distance of approximately 270 km. By using case studies from this bioregion, we review the possible processes which may have created this regionally discontinuous record.

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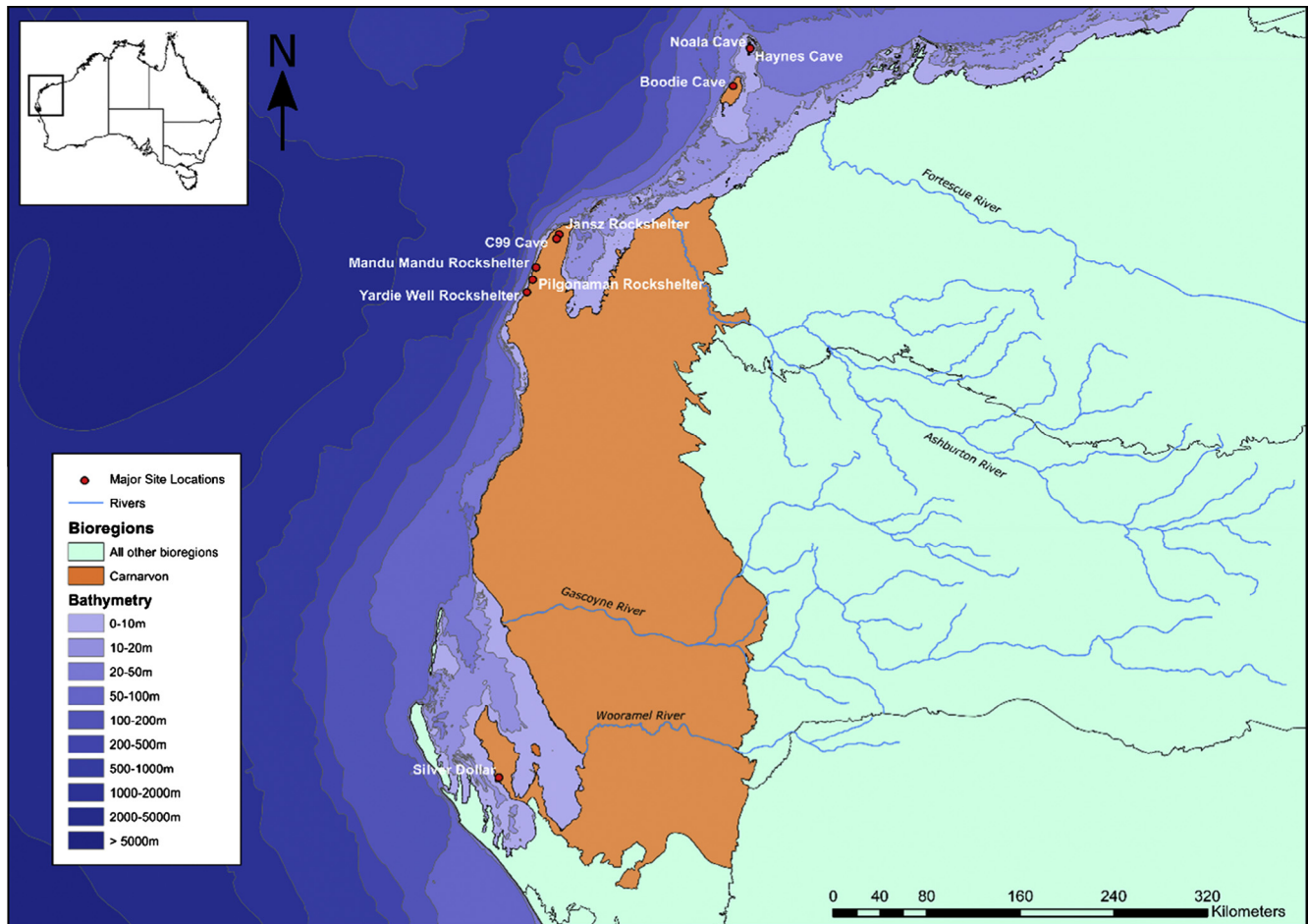


Fig. 1. North-western Australia showing the Carnarvon bioregion (orange) and the major Pleistocene archaeological sites which have evidence for discontinuity during the Last Glacial Maximum, MIS2. (For interpretation of the references to colour in this figure legend, the reader is referred to the web version of this article.)

2. Different frameworks used to explain discontinuities

2.1. Stratigraphic discontinuity

Stratigraphy is an analytical construct used to describe visible sedimentary layers and stratigraphic contacts and is often used to subdivide archaeological assemblages. A stratigraphic discontinuity occurs when chronological resolution is low and the rate of sedimentation is negligible (Hunt et al., 2015; Fig. 2). In this case a discontinuity may have more to do with the lack of sediment than the absence of people. Occupation of the site by humans might be inferred if a cultural lag or palimpsest assemblage is identified (Bailey, 2007; Farrand, 2001), but at low sedimentation rates, the increased exposure, mixing and disturbance of such assemblages can suggest an apparent occupational discontinuity. At higher sedimentation rates there is generally less assemblage disturbance while chronological resolution and artefact preservation will usually increase. Where net sedimentation occurs in the absence of archaeological material, there is a strong case for an occupational hiatus.

However, while net sedimentation and archaeological preservation is necessarily interrelated (Smith, 2013; Ward and Larcombe, 2003), the discard of archaeological assemblages and sedimentary strata are not necessarily connected. For example, where archaeological assemblages straddle stratigraphic boundaries, this can provide strong support for behaviourally-linked processes occurring independently of stratigraphic or sedimentological changes. Indeed, in many cases visible strata may be partly or predomi-

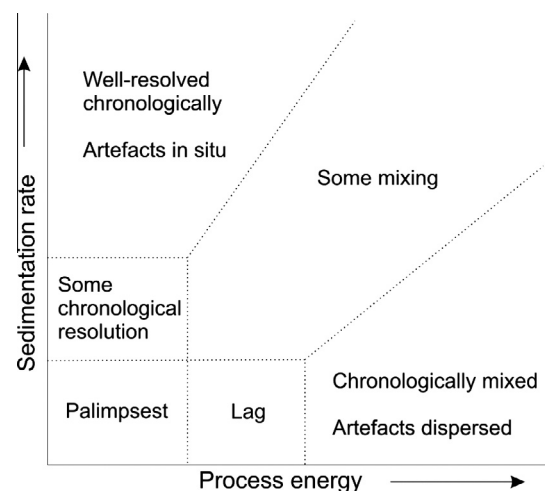


Fig. 2. The relationship between sediment rate, process energy and degree of chronological resolution (after Hunt et al., 2015).

nantly the result of time-dependent geomorphic processes disconnected from human activity patterns (Davies et al., 2016:460, 2005).

In the complete absence of well-defined strata in an archaeological sequence, interruptions in discard or episodic occupations can be more easily overlooked. In these situations reference should be

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