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ABSTRACT BOOK

MOVING PLATES AND MELTING ICECAPS
Processes and Forcing Factors in Geology

Evaluating the impact of earthquakes on Late Minoan IIIB (c. 1300-1200 BC) archaeological sites (Crete, Greece)

Session 07

131

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Late Minoan IIIB (LM IIIB, c. 1300-1200 BC) represents a critical period in the history of Crete, witnessing the demise of Minoan society and heralding the transition to the so-called Dark Ages. Although the causes underlying societal transformations during LM IIIB remain unclear (internal conflicts, invasions of the Sea People, technological innovations, increased aridity), earthquakes have been suggested as possible mechanisms behind site destructions and abandonments throughout the Eastern Mediterranean c. 1225-1175 BC, including at Knossos and Khania on Crete (Nur & Cline, 2000). However, such conclusions rely on a generalising approach to the Cretan archaeological record and take little account of the seismotectonic setting of the island characterised by frequent earthquakes of magnitude up to 7.0. The objective of this contribution is to reassess the value of LM IIIB archaeological data as evidence for ancient earthquake effects. Such an evaluation represents a prerequisite for assessing the impact of earthquakes on LM IIIB Minoan society.

In the frame of this research, archaeoseismological appraisal of LM IIIB evidence is based on the recognition of potential seismic effects on archaeological remains (hereafter Potential Earthquake Archaeological Effects or PEAEs). PEAEs were mainly derived from available excavation reports. Comparison between the spatial distribution of PEAEs and theoretical damage zones associated with the reactivation of normal faults was used as a basis to assess the reliability of PEAEs as true indicators of ancient earthquakes. Indeed, active normal faults represent the most likely cause of earthquake-related archaeological damage during LM IIIB (Jusseret & Sintubin, forthcoming). Synchronisms between PEAEs observed at different sites were established by considering associated pottery material. This methodology allowed attributing PEAEs to two chronological sub-phases of LM IIIB: LM IIIB1/early (c. 1300-1250 BC) and LM IIIB2/late (c.1250-1200 BC).

The results of this research indicate that seismic shaking is likely to be the true cause of PEAEs observed in central-east Crete during LM IIIB1/early. Consideration of theoretical seismic damage zones point to the Kastelli Fault as the most likely cause of the observed archaeological damage. Although PEAEs described in central-north Crete are compatible with this interpretation, chronological and/or interpretive uncertainties do not rule out alternative causes of destruction. During LM IIIB2/late, earthquakes do not represent a satisfactory explanation for the observed PEAEs (contra Nur & Cline, 2000). These results do not support the idea that widespread, catastrophic earthquakes struck the island of Crete during LM IIIB. This conclusion invites reconsideration of the importance of seismic events in the collapse of Minoan society.

Jusseret, S. & Sintubin, M., forthcoming. All that rubble leads to trouble: reassessing the seismological value of archaeological destruction layers in Minoan Crete and beyond. Seismological Research Letters.

Nur, A. & Cline, E.H., 2000. Poseidon's horses: plate tectonics and earthquake storms in the Late Bronze Age Aegean and Eastern Mediterranean. Journal of Archaeological Science, 27(1), 43-63.