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# The open-air Mesolithic site of Arenal de la Virgen (Villena, SE Iberia). Occupation features and Bayesian chronological modelling

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## Abstract

The interdisciplinary fieldwork on open-air sites still remains an elusive issue in the Mesolithic research of Iberian Mediterranean region where most of the current record comes from rescue operations. In this paper we present a synthesis of the new research conducted at the Mesolithic open-air site of Arenal de la Virgen in the context of the research project PALEODEM (ERC-CoG-2015 Ref.683018). This site lies on a sand sheet in the southwestern margin of the Villena paleolake, in the Upper Vinalopó Valley (SE Iberian Peninsula). New fieldwork was undertaken in 2017 following an intensive spatial and stratigraphic recording strategy expanding the excavation area up to 84 m<sup>2</sup>. The new excavations allowed to document a wide range of archaeological features in the unit IV associated to lithic scatters forming a single archaeo-stratigraphic horizon. A bespoke protocol involving micromorphology and palaeobotanical analyses was conducted to produce stratigraphically reliable and featured-constrained radiocarbon chronologies to disentangle different occupation phases. In parallel, a multi-proxy research program focused on the investigation of combustion structures and other domestic features is in progress using geoarchaeology and experimentation to study the impact of fire on archaeological materials.

The radiocarbon results have been constrained using a Bayesian phase model that shows two different Mesolithic occupation phases at c.9.3-9.0 kya cal BP, and 8.6-8.4 kya cal BP taxonomically associated to Notches and Denticulate industries. These results together with the ongoing research on lithic refits and intra-site spatial analysis have allowed to distinguish different domestic activity areas within each phase.

**Keywords:** Mesolithic, open, air, excavation, features, Bayesian chronological modeling

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