



## **The burnt subsurface of a mega archaeological site in the Jerusalem Highlands, Israel**

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The ongoing Motza excavation upon a 500 m transect along the lower and central parts of the western and concave slope of the currently ephemeral Soreq stream in the Jerusalem Hills has revealed extensive structural and artifactual remains within a widespread, burnt, clast-rich subsurface. To date, the "mega-site" well-exceeding 300 dunams is characterized by a 1-4 m thick subsurface section where moderately sorted and fist-size (3-8 cm c-axis) clasts of hard carbonate rock comprise 40-65% of the sediment within a wide range of clay/clay loam matrixes. Clasts often exhibit both a sub-round and angular geometry and their uniform abundance along the slope transect is unusual for natural clasts and slope deposits, respectively. Most of the clasts have scorched/blackened coatings and some possess dark red interiors. Nearly all of them emit a bituminous odor upon fracture.

The subsurface of a studied type section reveals a lower clast-abundant unit with a reddish clay matrix while an upper clast-abundant unit has a grey, ash-like matrix, indicative of extensive fire residue. These units laterally and gradually interchange between matrix- and clast-supported sedimentologies. Both clast-rich units are often dissected and/or covered by support walls, seed-filled silos, extensive plastered floors, kilns and pits. Artifacts are mainly associated with the Final PPNB period. Chalcolithic remains were also found.

The two clast-abundant units truncate a dark red Terra-Rossa soil-like clay and often lay directly upon the bedrock. The upper bedrock appears in a weathered and highly dissected mini-lapies-like karst morphology of horizontal yellow marly limestone that lays upon platy and limy yellow marl (Soreq Fm). The red clay and underlying mini-lapies probably formed a pre-Neolithic palaeosurface that underwent surficial karst weathering. The bedrock strata is horizontal and upon its exposure, reveal numerous edged faces that suggest ancient quarrying. Field observations suggest a textural similarity between the in-situ quarried strata and the burnt clasts. The well preserved and extensive burnt and clast-rich subsurface has not undergone significant pedogenesis and percolates rainwater down to the strata.

The clasts are pyrotechnological remains of a largescale plaster industry relying on adjacent perennial water in the Soreq, local in-situ source rock and probably ample (Mediterranean forest) wood for fire fuel. The thick, continuous and widespread distribution of the clast units suggest that the industrious lime production (and kilns) slowly progressed in a general up-slope manner. In this way, burnt clasts dumped downslope of the functioning kilns buried earlier quarried outcrops.