



New age estimations for the western outer city wall of ancient Tayma (NW Saudi Arabia) based on OSL and radiocarbon data and geomorphologic evidence

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Since 2004 tremendous progress has been achieved in deciphering the cultural genesis of the Tayma oasis (NW Saudi Arabia), due to the joint investigations of the German Archaeological Institute Berlin (DAI), the General Commission for Tourism and Antiquities, Kingdom of Saudi Arabia, and the Department of Archaeology and Epigraphy, King Saud University Riyadh. Nevertheless, archaeological research is still suffering from a lacking locally-based absolute chronology of buildings.

The pattern of ancient constructions at Tayma is dominated by a prominent city wall system surrounding the ancient town center (Qraya) and stretching 15 km around the oasis. Its internal structure indicates several building periods, i.e. phases of wall modification or extension of the entire system. So far, according to silex and carnelian fragments included in the mud bricks and a previous ^{14}C age of charcoal remains from the central excavation district (wall section at Area A), an initial construction date of the wall between the late 3rd and the early 2nd millennium BC seemed likely.

At the excavated western outer city wall a new systematic dating approach – combining the optically stimulated luminescence (OSL) and ^{14}C methods – has been applied to generate a reliable age for the oldest branch of the wall system which nowadays is covered by aeolian sand. The dune deposit is genetically related to the existence of the wall and, therefore, dating its accumulation provides *termini ante quem* for the construction of the wall.

Five OSL dates were generated from the dune deposit providing ages between 4,900 and 3,500 yrs. Two radiocarbon ages support the dating sequence and also contribute to its consistency. By combining the results with geomorphologic evidence we draw the following conclusions: Initial settlement activities at Qraya were accompanied by a regulation of wadi dynamics and the construction of the outer city wall, indicated by the abrupt boundary between the pre-settlement alluvial silt and the overlying wall-related dune deposit. According to the OSL and ^{14}C dating results from this deposit, the wall section at C1 (western part of the ancient settlement, north of Area A) dates back to the middle of the 3rd millennium BC or even earlier. Furthermore, the burying of the still existing remains of the city wall at C1 by sand was already completed at the beginning of the 2nd millennium BC.