Age of a prehistoric "Rodedian" cult site constrained by sediment and rock surface luminescence dating techniques

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The construction age of a pavement in a "Rodedian" prehistoric cult site in Negev desert, Israel, is established by determining the burial age of (i) a cobble used in the pavement, and (ii) the underlying sediment. The quartz OSL age and the K-feldspar corrected IR50 age from the sediment and the corrected IR50 and pIRIR225 ages from the cobble surface are all consistent, and give an average age of 4.22 ± 0.06 ka. Although the very similar ages indicate the reliability of the methods, these ages are ~3e4 ka younger than that expected for the Rodedian sites. The IR50 and pIRIR225 luminescence-depth profiles from the cobble indicate multiple exposure and burial events in the depositional history. The apparently young ages may thus represent a later intervention in the site during the late 3rd millennium B.C. More sites need to be dated by the use of both rocks and sediments to confirm this suggestion. Important information on the bleaching history of the rock surfaces directly obtained from these luminescence-depth profiles is not available in the underlying unconsolidated sediments. This is a significant advantage of rock surface dating over more conventional sediment dating. © 2015 Elsevier B.V. All rights reserved.

General information
Publication status: Published
Organisations: Center for Nuclear Technologies, Radiation Physics, Dead Sea-Arava Science Center, Aarhus University, Geological Survey of Israel
Contributors: Sohbatı, R., Murray, A., Porat, N., Jain, M., Avner, U.
Pages: 90-99
Publication date: 2015
Peer-reviewed: Yes

Publication information
Journal: Quaternary Geochronology
Volume: 30
ISSN (Print): 1871-1014
Ratings:
BFI (2015): BFI-level 1
Scopus rating (2015): CiteScore 3.22 SJR 2.158 SNIP 1.368
Web of Science (2015): Impact factor 3.142
Web of Science (2015): Indexed yes
Keywords: Quartz, Feldspar, OSL, IRSL, Rock surface dating, Luminescence-depth profile, Light attenuation
Electronic versions:
DOIs:
10.1016/j.quageo.2015.09.002
Research output: Contribution to journal › Journal article – Annual report year: 2015 › Research › peer-review