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GSA Annual Meeting in Seattle, Washington, USA - 2017

Paper No. 64-14

Presentation Time: 9:00 AM-5:30 PM

CORRELATING CAVE SEDIMENT PROPERTIES AND LATE PLEISTOCENE PALEOCLIMATE AT LAPA DO PICAREIRO, PORTUGAL

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Lapa do Picareiro is a large mountaintop cave in Serra de Aire Natural Park in central Portugal. Archaeological excavations at the site have revealed more than 10 m of stratified ebboulis dated by radiocarbon to roughly 9-70 ka BP. The site contains rich faunal and lithic assemblages that date from the Middle Paleolithic through the Bronze Age. Previous geoarchaeological investigations have shown that the sedimentation rate during this period averaged 10-20 cm per 1000 years, with most sediment derived from roof collapse, spalling of small clasts, and mud inflow through bedrock fractures. The presence of Middle and Upper Paleolithic components, abundant fauna, and a continuous sedimentary sequence make this one of the most complete terrestrial paleoenvironmental sites for the late Pleistocene in Iberia.

Rhythmic bedding in the central part of the cave, where coarse clast-supported beds alternate with muddy beds of smaller clasts, suggests a possible connection with late Pleistocene climate fluctuations. At present the most promising paleoclimate proxies are median clast size and magnetic susceptibility, which match Greenland ice core and deep sea sediment records closely back to about 40,000 BP. Warm/humid interstadial phases are characterized by small ebboulis clast and peaks in magnetic susceptibility, while cold/arid stadials are characterized by larger clasts and magnetic susceptibility minima. Coarse clast beds are associated with Heinrich events 1-4, which are overlain by very muddy beds and increased deposition of secondary carbonates. Overall the sequence reflects a karst system subject to intense frost weathering and enlargement of conduits during cold stadials, followed by enhanced mud transport and speleothem growth during the subsequent warm interstadials. This interpretation of the sequence at Picareiro is supported by correlation with other regional proxies derived from speleothems, pollen studies, and Middle/Upper Paleolithic archaeological sites.

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Sunday, 22 October 2017: 9:00 AM-5:30 PM

Halls 4EF (Washington State Convention Center)

Geological Society of America *Abstracts with Programs*. Vol. 49, No. 6
doi: 10.1130/abs/2017AM-303394

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