



600,000 years of water table fluctuations recorded in Devils Hole 2 cave from southwestern Nevada, USA

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Evidence for large reoccurring Pleistocene lakes in the North American Great Basin suggests that this modern day arid landscape underwent drastic climate fluctuations in the past. We aim to reconstruct past changes in moisture availability in the southwest Great Basin region over the last 600 thousand years before present (ka). To do so, we have analyzed a series of carbonate cores drilled at varying elevations above the modern day water table from the walls of Devils Hole 2 cave in southwest Nevada, USA. Petrographic and morphologic differences between calcite precipitated below (mammillary) or at (folia) the water table in this cave record past variations in local water table elevations and thereby provide insight into past regional moisture availability. A total of thirteen cores were drilled between -0.16 and +15.3 m above the modern day water table. Alternations between mammillary and folia calcite identified in each core are interpreted as past water table fluctuations at the respective core elevation and can be dated using ^{230}Th techniques. The first portion of the Devils Hole 2 water table record from 350 ka to present day was recently published by Wendt et al., (2018) *Science Advances*¹. We since have extended this record to 600 ka using a suite of 35 additional ^{230}Th ages on collected cores. In addition, six surface calcite veins were collected within a 5 km radius of Devils Hole 2 cave and ^{230}Th dated. Preliminary results show multi-meter water table fluctuations which appear to follow interglacial-glacial cycles from 600 ka to present day, such that water table high-stands coincide with glacial periods. Observed maxima in water table levels are likely correlated to periods of increased moisture availability within the catchment area during glacial (pluvial) periods, which is consistent with paleoclimate records in this region. Preliminary results suggest that between 600 and 350 ka water table levels peaked (reaching +5.5 m or higher than present day water table) at approximately 600 ka, 550 ka, 450 ka, and 360 ka, largely coinciding with glacial periods. Periods in which water table levels reached relative low-stands (+4.4 m or lower) center at approximately 503 ka and 425 ka, which largely coincide with interglacial periods.

¹Wendt, K.A., Dublyansky, Y., Moseley, G.E., Cheng, H., Edwards, R.L., Spötl, C. (2018) Moisture availability in the SW United States over the last three glacial-interglacial cycles. *Science Advances*, 4 (10) eaau1375