tivity of slope erosion in arid regions and provide insight into the development of arid region landscapes with and without the presence of caprocks.

What are Hoodoos and how do they form? Cosmogenic nuclide insights into Holocene landscape evolution in the Colorado Plateau

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Recent dendrological, stratigraphic, ecological and soil-geomorphic studies of catchment-scale landscapes associated with weakly cemented soil-mantled weathering-limited slopes of Jurassic sandstones in northeastern Arizona have indicated that minor climate changes can strongly influence landscape evolution by controlling the rates of erosion. To test this hypothesis, direct measurement of slope erosion is needed. Terrestrial in situ cosmogenic nuclides (TCN) provide a means to directly establish slope retreat history in the Blue Gap region of Arizona. There, hoodoos (or tent rocks) capped with resistant concretions which protect the underlying sandstone from erosion, form along actively retreating slopes. Exposure of the hoodoo begins as the concretion is exhumed and separated from the retreating slope. The hoodoos occur predominantly in basins where the slopes are steep (> 25°), soil is thin, and rapid surface runoff retards weathering rates. Here, successions of hoodoos extend as far as 200 m from cliff faces and are ideal erosion markers to track slope retreat in multiple basins where dendro-stratigraphic weathering and soils work has been completed.

Surface samples from the tops of eleven concretions on hoodoos up to 8 m high were analysed for cosmogenic ^{10}Be in quartz. The durations of concretion exposure range from 400 to 5800 years, and in all basins the ages increase with distance from the slope. This is the first time hoodoo development has been dated. The corresponding slope retreat rates range from 3 to 10 mm/a support the hypothesis of a strong climate sensi-

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