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DISTRIBUTION OF DESERT VARNISH IN ARIZONA

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Desert varnish is the dark coat of clay and ferromanganese oxides developed on exposed rock surfaces in arid regions. It forms from the accretion of material from windblown dust. The distribution of desert varnish has been mapped in Arizona. It was discovered that desert varnish could be mapped on a regional scale. Well developed desert varnish is common on stable rock surfaces in areas having alkaline soils and less than about 25 centimeters of annual precipitation. Rock surfaces in areas having more than 40 cm of annual precipitation are generally devoid of desert varnish.

An experiment was conducted with varnished desert pavement stones. The stones were broken in half and one half was set on a roof in central Illinois from April until October. Removed from the alkaline desert environment, it only took seven months for the varnish to develop an eroded appearance. This experiment graphically illustrates the dependency of desert varnish on alkalinity. In this context, the zones of eroded desert varnish in Arizona indicate that the area of active desert varnish formation has fluctuated, expanding in drier times and contracting/eroding in wetter times.