CASE STUDIES IN GEOARCHAEOLOGY [1]


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This dissertation consists of four standalone papers. Each paper addresses a distinct geoarchaeological challenge through the application of specialized technical methods and experimental data. New approaches to data gathering are developed, and familiar approaches are combined with new archaeological applications and software tools to yield new lines of evidence useful for the examination of significant archaeological questions. The first paper uses portable X-ray fluorescence (PXRF) to measure elemental concentrations in sediments and ceramics, but identifies several serious issues with common instrumentation and practice, then develops novel protocols and software tools to address these issues. The second paper describes a successful test application of PXRF to the relative dating of rock varnish accumulations atop petroglyphs at Hole-in-the-Ground in southeastern Oregon. The third paper details the use of luminescence dating and Bayesian depositional modeling to create a robust multi-proxy site formation history at Bear Creek in Redmond, Washington. The fourth paper uses luminescence dating of sediments and Bayesian modeling to document over 2000 years of changes in El Niño- and earthquake-driven depositional activity in the Santa and Chao Valleys of Perú, and discusses the implications of these patterns for archaeological research.

People Involved: Jack Johnson [3]
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