



University of Utah

UNDERGRADUATE RESEARCH JOURNAL

**EXAMING VOLCANIC LITHIC FRAGMENTS ALONG A TRIBUTARY OF THE
BEAVER RIVER, UTAH**

**Mallory Scofield, Dr Cari Johnson, Matt Affolter (SLCC)
Department of Geology and Geophysics**

Lithic fragments are pieces of a rock that have been eroded down to a small sand-sized grain and are one of the major components of sandstones (Dickinson, 1970). The importance of volcanic lithic fragments is to help understand provenance of ancient landscapes. Correlations between volcanic lithic fragments and volcanic source rocks have been successful in many studies. While these have been proven effective qualitatively, the methods have not been broadly tested quantitatively. To achieve this, thin sections from a source volcanic rock (zero order) and eroded sand grains (first and second order) will be compared as the grains away from the source. Thin sections are in the process of being evaluated with the Gazzi-Dickinson point counting method to determine their volcanic lithic fragment content. This method is used to quantify the sandstones and modern sands. Specific types of lithic fragments have been correlated to specific source volcanic rock compositions (Affolter and Ingersoll, 2019). Vitric lithic fragments (L_{vv}) are made of mostly volcanic glass and are strongly correlated to felsic volcanic rocks. Granular lithic fragments (L_{vg}) are made of mostly aphanitic microlites and are mostly associated with felsic volcanic rocks. Seriate lithic fragments (L_{vs}) have a wide range of components and are mostly associated with felsic volcanic rocks. Microlitic lithic fragments (L_{vm}) have plagioclase microlites in a volcanic glass matrix and are mostly associated with intermediate volcanic rocks. Lathwork lithic fragments (L_{vl}) are defined like microlitic, except they contain phenocrysts in the sand size fraction or larger and are mostly associated with mafic volcanic rocks. This study will look to examine a change in lithic fragment types as sediment is eroded away from an andesitic volcanic source in the Beaver River area. We hypothesize that the first order samples will show more fragments of the source rock while second and third order will show more mixing respectively.