

**Graduate Research Projects in Igneous Petrology and Isotope  
Geochemistry**

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**A geochemical study of Mio-Pliocene volcanism in the northern Sierra Nevada, California, and western Nevada.** These rocks are part of the Ancestral Cascades volcanic arc that once extended most of the length of western North America. Major volcanic centres have been mapped, and the goal of the project is to determine the geochemical evolution of individual or groups of nearby volcanic centres. Possible projects include determining the eruptive history of a tuff ring exposed at Lake Tahoe (left photo), the evolution of the Squaw Peak volcanic centre (right photo), stratovolcano evolution in the Virginia City area, and the geochemistry of the Buffalo Valley volcanic and geothermal region (lower right photo). We wish to evaluate mantle source compositions, using mafic lavas, and upper level petrogenetic processes (crystallization, assimilation) using more evolved lava types. There are many epigenetic gold-silver deposits associated with volcanic centres in Nevada (e.g., the Comstock Lode), and there will be opportunities to geochemically link the mineralization to the volcanic activity. Support is also provided the Nevada Bureau of Mines.



Left: A tuff ring exposed on the shore of Lake Tahoe. Right: Squaw Peak complex.



Left: Cinder cone and overlying lava flow, New Empire quad, Carson City. Right: Buffalo Valley cinder cones, northern Nevada.

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