

## ABSTRACT

### THE CENTRAL SIERRA NEVADA VOLCANIC FIELD OF CALIFORNIA: A GEOCHEMICAL STUDY OF A TRANSITIONAL ARC

Central Sierra Nevada (CSN) lavas record an arc/post-arc transition that took place around 10 Ma. Analysis shows changes in the style of volcanism, post 6 Ma. I also show that Sierra Nevada Batholith, slab fluids, and sediments from the subducting slab did not contribute greatly to CSN trace element compositions.

Major oxide and trace element analyses of 42 volcanic rock samples were collected to assess the characteristics of ancestral Cascade volcanism. CSN samples display high total alkalis ( $\text{Na}_2\text{O} + \text{K}_2\text{O}$ ), medium to high  $\text{K}_2\text{O}$ , and range from 50 – 75 wt%  $\text{SiO}_2$ ; all key signatures of Cascade volcanism. We looked for distinct geochemical signatures to test for an arc influence. The CSN volcanic field contains Ba/Nb ratio between 52 and 151, high La/Nb ratios, and high Sr/ $\text{P}_2\text{O}_5$  ratios, which generally agree with the criteria that characterize subduction-related lavas.

Two models were tested to explain the evolution of the CSN suite: fractional crystallization (FC) and assimilation-fractional crystallization (AFC). FC better explains both major oxide and trace element variations, when compared to AFC.

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