



AWSFL008-DS3

NSF Award Abstract
- #0203388

**Determination of Volcanic Flux Rates and
Application to Understanding Regional
Geochemical Trends and Element Mass Balances
in Central America**

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Abstract

EAR-0203388 Michael J. Carr Several important questions about the nature of the subduction process require a transition from existing qualitative subduction signals, such as Ba/La and $^{10}\text{Be}/^{9}\text{Be}$, to quantitative fluxes such as Ba flux in gm/unit arc length/yr. This is accomplished by employing $^{40}\text{Ar}/^{39}\text{Ar}$ dating techniques to measure the ages of the older units in several large Central American volcanic centers. These new data, along with previously determined volume measurements, enable the determination of average volcanic flux rates for different segments of the arc. Integrating volcanic flux rates with regional geochemical data allows an estimate of element fluxes to be made. From these integrated data several major problems are being addressed, including the physical cause of along-strike variations in subduction signal in Central America, the mass balance of elements cycling through the Central American arc, and the quantity of incompatible elements that are delivered to the deep mantle through subduction.

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