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NSF Award Abstract
- #0079402

**The Flux of Volatiles from Active MARGINS: the
Central American Volcanic Arc**

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Abstract

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In a subduction zone, the material transfer from sediments of the subducting plate into arc magmas has been identified by chemical tracers, such as Berillium and Boron. In recent years, significant progress has been made towards understanding the element cycles in subduction zones and the time-scales these cycles operate on with the goal of arriving at element budgets of active margins. The vast amount of detailed geochemical information available for arc magmas stands in contrast to the very limited detailed information available for volatile discharges from active margin volcanoes. Volatiles play a pivotal role in element transfers occurring at subduction zones. Despite their importance, comparatively little is known about the ultimate sources of the volatiles in subduction zones. Even less is known about the volatile budgets of any active subduction zone.

The goal of this project is to perform a detailed, systematic study of the sources of volatile discharges and the fluxes of these volatiles to the atmosphere at 3-4 active volcanoes along the Central American Volcanic Arc. The P.I. will attempt to determine the sources of carbon dioxide, water, nitrogen and noble gases and their fluxes to the atmosphere. The Central American Volcanic Arc is one of the best places in the world for such a study because a vast amount of geochemical information on the magmas is available, the amount of fluid contributions is documented to vary along strike of the arc, and crustal contamination is relatively minor and quite well constrained. The study is a "pilot study" targeting these 3-4 volcanoes in order to test whether there is a correlation regarding the sources of volatiles with

the sources of the magmas as identified
geochemically. ***

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