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**Award Abstract #0549051****Magmatic Water along the Central American Arc**

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OCE Division of Ocean Sciences
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NSF Program(s): MARINE GEOLOGY AND GEOPHYSICS

Field Application(s): 0204000 Oceanography

Program Reference Code(s): OTHR,1620,0000

Program Element Code(s): 1620

ABSTRACT

Under this award, the PI will provide a primary data set for magmatic water contents for Costa Rican volcanoes. Existing models for the Central American arc call for greater extents of water recycled to Nicaraguan than Costa Rican volcanoes. In this project the PIs will measure volatile concentrations (H₂O, CO₂, S, Cl, F) in olivine-hosted melt inclusions, by ion and electron probe. Another focus, partly driven by the lack of abundant olivine in Costa Rican tephra, will be the development of new techniques, one a hygrometer based on the rare earth element pattern recorded in clinopyroxenes,

and the other based on the H₂O concentration in clinopyroxenes. The PIs propose to provide a comprehensive dataset for water contents along the Costa Rica-Nicaragua arc sector, including approx. 20 arc volcanoes. This will enable rigorous testing against the existing geochemical gradients, as well as results of seismic imaging and the development of interpretations of the data. The study involves a female graduate student and involves a data set of interest to a broad community of MARGINS workers.

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