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NSF Award Abstract
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**MARGINS: Oxygen Isotope Studies of the
Central American Arc**

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Abstract

In this proposed study the PI and collaborators (Mark Reagan, Iowa; Mike Carr, Rutgers) propose to measure the oxygen isotope values ($d_{18}O$) in Central America Volcanic Arc (CAVA) lavas in order to distinguish mantle wedge processes involving subducted upper crustal materials, from assimilation/contamination of rising magmas with in situ upper crustal materials. In the former case, one would expect a correlation between $d_{18}O$ and proxies of the extent of melting (e.g. U/Th, Na6) and/or mantle source tracers (e.g. $^{87}Sr/^{86}Sr$). In the latter, one would expect correlation of $d_{18}O$ with proxies of contamination, assimilation, and differentiation (like MgO or Mg#). A pilot study of ~30 samples from CAVA show very surprising results- there are correlations between $d_{18}O$ and indices of melting, however large extents of melting and radiogenic $^{87}Sr/^{86}Sr$ are associated with low $d_{18}O$, not high $d_{18}O$ as expected for common sources of slab-derived metasomatizing agents. The PIs propose to collect more $d_{18}O$ data for more well-characterized samples in order to try to understand the puzzling results of the pilot study.

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