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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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