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**Award Abstract #0549017****Where Have All the Earthquakes Gone?**

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Program Manager: Bilal U. Haq
OCE Division of Ocean Sciences
GEO Directorate for Geosciences

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Investigator(s): J. Casey Moore cmoore@es.ucsc.edu(Principal Investigator)

Sponsor: University of California-Santa Cruz
1156 High Street
SANTA CRUZ, CA 95064 831/459-5278

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ABSTRACT

Pseudotachylytes (frictional melts) are an unequivocal record of seismic slip and their identification in the geologic record provides opportunities to understand deformation and physical conditions during the seismic cycle. In the Kodiak Islands of Alaska, the PI has recently discovered the thickest and most voluminous example of pseudotachylyte in an accretionary prism to date. Although this work has identified the nature and general distribution of this unique lithology, it also has raised many questions that can only be answered by careful documentation of the distribution, structure, and form of the

Kodiak pseudotachylytes at scales ranging from 1:500 to 1:5, as will be done under this award. Such mapping around the seacliffs, headlands, and tidal exposures will not only document the cross-cutting relationships but provide quantitative information on thicknesses, volumes, and geometries. Ancillary field investigations will be conducted at prospective localities for pseudotachylytes and fluidized rocks elsewhere in the Kodiak Islands and in California. Analytical studies of samples will include careful documentation of texture, density, porosity, mineralogy, and chemistry, using optical microscopy, electron microscopy, X-ray diffraction, X-ray fluorescence, and fluid inclusion microscopes, plus resistivity measurements. The broader impacts are that the study has implications for earthquake hazards, that the study involves two female scientists and that the study will be important for the MARGINS community.

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The National Science Foundation, 4201 Wilson Boulevard, Arlington, Virginia 22230, USA
Tel: (703) 292-5111, FIRS: (800) 877-8339 | TDD: (800) 281-8749

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