



AWSFL008-DS3

NSF Award Abstract
- #0203260

**Collaborative Research: Frictional and
Mineralogical Properties of Sediments
Entering Subduction Zones: Controls on Stress
State and Earthquakes**

NSF Org OCE

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Program Manager Amos Winter
OCE DIVISION OF OCEAN
SCIENCES
GEO DIRECTORATE FOR
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Investigator Michael B. Underwood
UnderwoodM@missouri.edu
(Principal Investigator current)

Sponsor U of Missouri Columbia
Office of Sponsored Prgm Admin
Columbia, MO 65211
573/882-7560

NSF Program 1620 MARINE GEOLOGY AND
GEOPHYSICS

Field Application 0204000 Oceanography
Program Reference Code 0000,OTHR,

Abstract

Science Summary: This study will provide laboratory measurements of the coefficient of friction of natural sediments entering the subduction systems of Nankai, and Costa Rica. The frictional studies will be conducted in a combination of ring shear and direct shear experiments at effective confined stresses between 0.1-50 Mpa. Samples will be characterized by X-ray diffraction (for bulk and clay mineralogy) grain-size, SEM/EDS geochemistry, and wet chemistry (for biogenic silica content). The mechanical properties will be compared with the clay mineralogy to determine the effect of clay minerals on the coefficient of friction. The study will assess the role of the smectite to illite transition and opal to quartz reactions on controlling the up-dip limit of seismogenic activity in subduction zones.

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