



AWSFL008-DS3

**NSF Award Abstract**  
**- #0203799**

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

**NSF Org** OCE

**Latest Amendment Date** April 1, 2002

**Award Number** 0203799

**Award Instrument** Standard Grant

**Program Manager** Amos Winter  
OCE DIVISION OF OCEAN  
SCIENCES  
GEO DIRECTORATE FOR  
GEOSCIENCES

**Start Date** May 1, 2002

**Expires** April 30, 2004 (Estimated)

**Expected Total Amount** \$150456 (Estimated)

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**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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