



AWSFL008-DS3

NSF Award Abstract
- #0001941

**Collaborative Research: The Thermal State of
20-25 Ma Lithosphere Subducting at
the Costa Rica Margin, Implications for
Hydrogeology, Fluxes, and the
Seismogenic Zone**

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Award Instrument Standard Grant

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OCE DIVISION OF OCEAN
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GEO DIRECTORATE FOR
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NSF Program 5720 OCEAN DRILLING
PROGRAM

Field Application

Program Reference Code 0000,OTHR,

Abstract

Fisher 0001892 Wheat 0002031 Harris 0001944
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Recommended project is for a multidisciplinary investigation of the thermal state of the subducting lithosphere offshore of the Costa Rica margin. Heat flow measurements will be undertaken in two cruises covering oceanic lithosphere portions offshore of the Nicoya Peninsula that differ in makeup and tectonic style, with the northern portion formed at the East Pacific Rise and the southern portion, separated by an abrupt change in relief, formed at the Cocos-Nazca spreading center. These measurements will be accompanied by seismic and swath bathymetric study, as well as a coring program that will examine changes in porewater chemistry associated with fluid flow in the sediments overlying the crust. These field programs will be accompanied by two numerical modeling exercises that will examine the thermal state of the subduction zone as these two portions of lithosphere subduct. The goals will be to determine the comparative thermal state of the subducting lithosphere in these regions, the associated heat and fluid fluxes responsible for the subducting slab thermal states, and how these variables affect subduction zone processes, including chemical flux rates.

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