



AWSFL008-DS3

**NSF Award Abstract**  
**- #0001892**

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

**NSF Org** OCE

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**Award Instrument** Standard Grant

**Program Manager** Bruce T. Malfait  
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GEOSCIENCES

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**NSF Program 5720 OCEAN DRILLING  
PROGRAM**

**Field Application 0204000 Oceanography**

**Program Reference Code 0000,OTHR,**

## **Abstract**

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Stein 0001941

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 variable affect subduction zone processes, including chemical flux rates.

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