



AWSFL008-DS3

NSF Award Abstract
- #0105456

**MARGINS: Laboratory Experiments on 3-D
Circulation and Temperature Distribution
in Subduction Zones**

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Award Instrument Standard Grant

Program Manager Rodey Batiza

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Abstract

This laboratory study of subduction is motivated by recent seismic and geochemical advances on understanding of subduction and mantle flow attending subduction. The PI proposes laboratory experiments similar to those he has done for ridges and plumes, to investigate subduction processes. There will be four types of analog lab experiments: 1) studies aimed at understanding longitudinal subduction vs. rollback (slab sinking), 2) experiments to study the role of rollback-style subduction on back arc basin spreading and plate motion, 3) experiments to look at the effects of oscillating longitudinal and rollback subduction on the thermal structure of the slab and wedge, and 4) the effects of this oscillation on generation of mantle diapirs in the wedge region. All these experiments have relevance to the processes being studied in the MARGINS program. Part of the work will be done at Australian National University (ANU) with Ross Griffiths, where Kincaid will spend a one-year sabbatical. This will take advantage of the excellent lab facilities available at ANU.

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