



AWSFL008-DS3

NSF Award Abstract
- #0305140

**Collaborative Research: Upper Mantle Structure
Beneath the Gulf of California**

NSF Org EAR

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Award Instrument Standard Grant

Program Manager David Fountain

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Abstract

In this experiment, which is part of the NSF Margins initiative on Rifting Continental Lithosphere, the investigators are deploying 18 wide-band ocean bottom seismographs (OBS) in the Gulf of California for a period of 15 months. These seismographs are recording naturally occurring seismicity (over 200 moderate and large earthquakes) from around the globe. Using these seismic recordings, the investigators are constructing images of the mantle beneath the Gulf and the surrounding region, providing a means to evaluate the degree to which mantle processes control lithospheric rupture and the initiation of seafloor spreading in the Gulf of California. The experiment is focused on two questions that are particularly important for achieving the goals of the Rifting Continental Lithosphere initiative: (1) Is the upper-mantle directly underlying Gulf of California extension anomalously hot? (2) To what extent do North-South variations in extensional style correlate with upper-mantle velocity variations? The OBS deployment also provides the means to better characterize seismically active faults within the Gulf of California, improving the assessment of the natural hazards environment of the region. The Gulf of California OBS array builds two ongoing Margins-funded experiments: the NARS-Baja onshore broadband seismic array, and an active-source crustal survey. The ocean-bottom seismic data collected in this experiment will be available to any interested investigator 2 years following instrument recovery through the IRIS Data Management Center.

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