

RCL (MARGINS- related)	An Analysis of Upper Mantle Heterogeneity and Anisotropy in Western North America Using Recordings from Broadband Permanent and Temporary (PASSCAL) Seismic Stations	
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<p>This grant funded several studies of the nature of seismic heterogeneity and anisotropy in the upper mantle. The primary effort has been a three-dimensional tomographic analysis of anisotropic heterogeneity beneath the California region, which found ~2% average anisotropy through the lithosphere with variability correlating with tectonics [Gupta and Gaherty, 2000]. Extension of this model to include azimuthal anisotropy required the development of a new array analysis [Freybourger et al., 2001]. Using regional analyses, we found that models of tectonic and stable North America display over 6% variation in isotropic shear velocity in the upper 200 km, but have virtually identical radial anisotropy over path lengths of >2000 km [Hutko and Gaherty, 2000]. This implies that the significant contrast in thermal and mechanical properties does not correspond to a major difference in large-scale mantle fabric. Finally, we found that anisotropy associated with the northern EPR contrasts sharply with that along the Reykjanes Ridge, which most likely reflects hotspot-fueled buoyant upwelling beneath the Reykjanes [Gaherty, 2001].</p>		
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