The San Andreas Fault in Southern California is Almost Nowhere Vertical-Implications for Tectonics

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The San Andreas Fault (SAF) in southern California is in most places non-vertical, based on seismic-imaging, potential-field, earthquake-aftershock, and selected microseismicity studies of the crust. The dip on the SAF changes from southwest (55-75 deg.) near the Big Bend to northeast (10-70 deg.) southeastward of the San Gabriel Mountains, describing a crude propeller shape.

Where traced through the crust in deep seismic studies or projected through the crust from upper-crustal studies, the SAF falls on the immediate northeast side of the well documented upper-mantle high-velocity body of the Transverse Ranges, imaged from P-wave teleseismic tomography. It appears to continue to more than 150-km depth in the mantle along the northeast and north side of this body. We interpret this geometry to indicate downwelling of Pacific Plate lithosphere along the plate boundary. Anisotropy may play a role in the visibility of the high-velocity body to teleseismic P-wave imaging owing to reorientation of the fast direction of olivine in the downwelling.

Biography: **Dr. Gary Fuis** received his B.S. degree at Cornell University in 1966. After completing his Ph.D. at the California Institute of Technology in 1974, he joined the U.S. Geological Survey in Pasadena, California. Between 1974 and 1978 he was in charge of the Southern California Seismic Network Since joining he has focused on earthquakes. When he first joined USGS, he operated and expanded the USGS/Caltech Southern California Seismic Network while in Pasadena. Since 1978 he has been located at the USGS facilities in Menlo Park, California, and he is currently the Associate Team Chief Scientist with the Western Earthquake Hazards Team. Principal contributions over this time include a geological map and mathematical model of deformation for Fort Rock Dome Yavapai County, AZ (PhD thesis), expansion and development of the Southern California Seismic Network in the 1970's in cooperation with the California Institute of Technology (~70 stations added), and seismic imaging, using refraction and reflection techniques, and geologic/tectonic interpretation of a number of continental transects, including (a) one in the Imperial Valley region, California, (b) one in northeastern California, (c) the Trans Alaska Crustal Transect (TACT), (d) the Pacific-Arizona Crustal Experiment (PACE), and (e) the Los Angeles Region Seismic Experiment (LARSE).

SELECTED PUBLICATIONS PERTINENT TO TALK

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