

Seismic Anisotropy in the Julian Schist, San Diego CA

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P-wave velocity measurements of a Julian Schist rock sample collected in the Laguna Mountains region of East San Diego County show significant P-wave velocity anisotropy at near surface conditions. Multiple P-wave velocity measurements were taken from orthorhombic cut sample of Julian Schist using the Tico Ultrasonic Instrument with varying parameters of length. A maximum anisotropy of 22.1% was obtained from the P-wave measurements gathered in the X, Y, and Z axes of the Julian Schist sample. Cracks within orthorhombic schist sample demonstrate the need to take measurements with increased pressure parameters as measurements made within the same axis on different locations show p-wave velocity differences of up to 54.0%. This is based on observations of varying numbers of visible cracks on the external surface of rock sample within the same axis of measurement. Increasing metamorphic grade has been known to represent increasing anisotropy within rock units and is an important factor in identifying proximity to faults, general lithologic and structural descriptions of regional rock types, and could have an effect on the Southern California Communal Velocity Model (SCCVM).