

Azimuthal and polarization anisotropy of surface waves in the east Pacific Ocean : evidence of lithospheric anisotropy

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We analyze long-period records at KIP, Hawaii, of GEOSCOPE from around 130 mid-oceanic ridge events along the San Andreas fault, the East Pacific Rise and the Pacific-Antarctica ridge to obtain azimuthal anisotropy of group velocity and polarization anisotropy. The fundamental mode Rayleigh waves show azimuthal anisotropy of around 3% at periods from 30 s to 100 s with the fastest direction parallel to the plate spreading direction. Love waves propagating from the Easter Island at azimuthal angles of 50-60 measured from the plate spreading direction show strong polarization anisotropy. These results are consistent with predictions by Kawasaki (1986)'s model of azimuthal anisotropy of the oceanic upper mantle.