

ANISOTROPY AND MANTLE FLOW NEAR KAMCHATKA

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Active subduction of the Pacific plate beneath the Kamchatka peninsula appears to terminate at its intersection with the Aleutian Island chain. Near a dangling slab, sharp lateral gradients of flow-induced anisotropy in the mantle would induce quasi-Love (QL) waves (Love-to-Rayleigh scattering) at $T > 50$ seconds. Asthenospheric slab-parallel flow is consistent with Love waves that arrive from the north at GSN station PET, that is, on the overriding side of the subduction zone. Arriving from the seaward side, however, long-period surface waves lack the scattered waves diagnostic of slab-parallel flow. During 1998–1999 US and Russian investigators maintained a network of 15 broadband portable seismometers on the Kamchatka peninsula, which recorded long-period quasi-Love waves similar to those seen at PET, but with important differences that imply lateral variations in anisotropy. QL waves from the north are not observed at TKI, north of the Aleutian junction at the base of peninsula; therefore evidence for slab-parallel flow beneath the overriding plate does not extend this far north. SKS splitting is weak ($\tau < 1$ sec) throughout the Kamchatka array, but the fast axis shifts from NW-SE at the two northernmost stations to either NE-SW or indeterminate south of the Aleutian junction.