

Seismic Evidence for a Mantle Plume Oceanward of the Kamchatka-Aleutian Trench Junction

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A nonlinear P-wave travel-time tomography was carried out for the mantle structure beneath the northern Pacific. Reports of the Russian networks were used jointly with the catalogs of ISC and USGS NEIC. The tomographic image revealed a cylindrical (~500 km

width), strong (~-3%) low-velocity anomaly that extends vertically upward from a depth of ~900 km (~165E, ~48N) to ~400 km, above which it rises obliquely in the NNW direction to reach the uppermost mantle right beneath the northernmost seamount (Meiji

Guyot) of the Emperor seamount Chain. The ocean floor of Meiji Guyot is characterized by anomalously broad topographic and gravimetric highs, and anomalously high heat flow. These features combined with the tomographic results may be diagnostic of

upwelling activity of the mantle plume.

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