

## Fabric anisotropies and seismic properties within peridotites in mantle wedge regions

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A dense network of seismic stations has been deployed across the Japan arc to investigate mantle wedge structures. To attain independent petrophysical constraints, we determined the seismic properties of mantle peridotites obtained from various tectonic settings in the mantle wedge regions: Ichinomegata peridotite xenoliths in the back-arc region of the northeast Japan arc, Imono peridotites in the subduction-type Sanbagawa metamorphic belt in the southwest Japan arc, Avacha peridotite xenoliths below the volcanic front, and peridotites in the southernmost Mariana trench. Olivine fabrics vary from (010)[100] pattern (A-type) and/or {0kl}[100] pattern (D-type) to (010)[001] patterns (B-type) depending on the location in the mantle wedge. We calculated the seismic properties of the peridotites from the back-arc and fore-arc regions based on olivine and pyroxene crystal-preferred orientations and single crystal elastic constants. As a result, the seismic anisotropies analyzed on the surface can be explained by the average seismic properties of these mantle peridotites if they consist of a few tens of kilometers thick anisotropic layers in the mantle wedge.