


2010 AGU Fall Meeting

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ID# DI43C-04

Location: 3024 (Moscone West)

Time of Presentation: Dec 16 2:25 PM - 2:40 PM

Comparison of Deep Upper-Mantle Melting in Varying Tectonic Environments: Insights from Seismic Observations (*Invited*)

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Seismic observations of low velocity zones in the deep upper mantle or directly atop the mantle transition zone are becoming increasingly common. These low velocity zones are most commonly interpreted as partially molten layers with neutral or negative buoyancy relative to the ambient mantle. The information given by the properties of seismic waves used to probe a region provide important constraints and implications for layer thickness and the extent of partial melting. The tectonic setting in which these layers are detected should also be taken into consideration when interpreting the cause of these features. While observations to date are most commonly located above subducting slabs, similar layers oceanward of subduction and beneath ocean islands are also observed and may require different melting mechanisms, such as the combined effects of increased water content with increased temperature. Detailed observations of these layers are crucial for joint interpretation of seismic observations with mineral physics experiments and/or geodynamics models. Similarities and differences between observations of low velocity layers in a variety of tectonic settings will be discussed, along with implications for interpretation.

Contact Information

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