

GP Virtual Seminar Series

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Imaging the lithosphere with Virtual Deep Seismic Sounding (VDSS)

Date: Tuesday, May 19, 2020

Time: 12:30 pm, Pacific Time

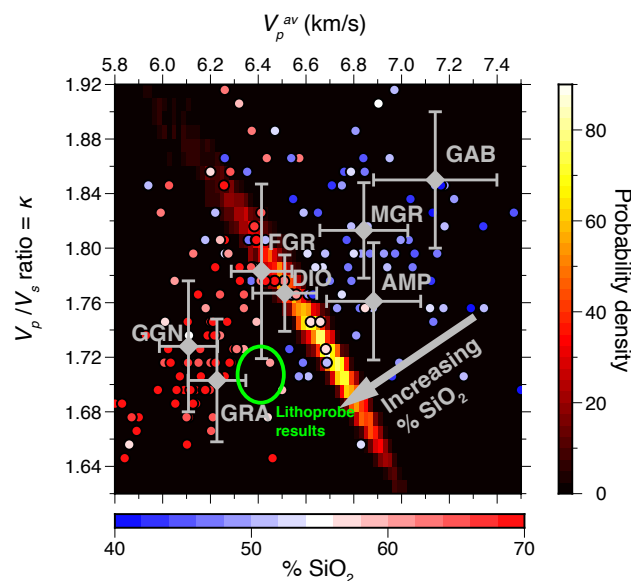
Host: Shunguo Wang

Register to attend:

https://ucsd.zoom.us/meeting/register/tJercumuqzkqHdbJh89cuf_UugDu6jRtRCiW

Because this meeting will be recorded, please make sure that you are comfortable with it before registering.

Joint VDSS-PRF analysis shows an intermediate average crustal composition in the Slave Craton



In traditional reflection seismology, scientists deploy artificial sources at the surface and use them to image the earth's interior. By contrast, in Virtual Deep Seismic Sounding (VDSS), we use "virtual sources" generated by natural earthquakes to achieve the same goal. In this talk, I will present the fundamental ideas of VDSS and how to apply it to the study of lithospheric structures. I will show that, with VDSS alone, we can derive the uppermost-mantle V_p at the VDSS reflection point, and by combining VDSS and traditional P receiver functions, we could constrain the average crustal V_p/V_s ratio, a key parameter closely related to the average composition of the crust. I will also demonstrate the challenges of applying VDSS in a heterogeneous lithosphere and introduce a simple ray-theory-based back-projection method that can successfully image the Moho geometry with VDSS in the presence of moderate lateral heterogeneity.