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Global study of mid-mantle discontinuities by observations of multiple-ScS phases[1] RASHNI ANANDAWANSHA, New Mexico State University, LAUREN WASZEK, Jamers Cook University, Australia, BENOIT TAUZIN, Universit de Lyon — The mid-mantle represents a significant transformation in Earths structure, rheology,and composition. In order to understand the thermal structure of the mantle and Earths deep dynamics we need to thoroughly study the seismic structure of the mantle transitions zone (MTZ), which represent a boundary between upper and lower mantle. As the pressure and temperature increases with the depth MTZ undergoes some discontinuities in seismic properties. The 410 km and 660 km depths correspond to major discontinuity jumps which occurs due to mineral phase transition from olivine to wadsleyite and from ringwoodite to bridgmanite and ferropericlase. Seismic tomography models have found that both down-going slabs and up-welling plumes become trapped in the mid-mantle. The underlying cause of deflection of material in the mid-mantle is not well understood. In this study, we use a new data-set collected from intermediate and deep earthquakes around the globe. This data set consist of long period, multiple-ScS phases and their reverberations due to MTZ discontinuities. All the data undergo a similar forward modeling method. We generate maps of the global discontinuities using an adaptive stacking parameterisation technique, which accounts for topography, noise, and data coverage.

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